

HÅGABY

Hågaby [Hawgabii] has probably existed as a small community for more than 100 generations. This historically sustainable human habitat is situated only four kilometres from the city centre of Uppsala (Figure 4.1). It already existed as a settlement in Neolithic times, into the bronze age and later. In the early part of the 20th century the County board of Uppsala built a home for mentally disabled children in what was then the farmers' village of Hågaby, which continued on as a care home for 70 years.

Its contemporary history started when the area was rebuilt by the municipal residential company Uppsalahem between 1995 and 1998. The old care home for the mentally disabled was at that time transformed into 78 environmentally adapted tenants' apartments (Figure 4.4).

At the same time Uppsalahem sold 2 hectares of land to the tenant owned association, (BRF) Hällen. BRF Hällen commissioned the construction company JM Byggnads AB to build Uppsala's first ecologically adapted housing area. Hällen consists of 22 households in the form of 11 duplexes (Figure 4.4) that were co-planned and co-designed with Uppsalahem's houses to form a practical and aesthetic whole.

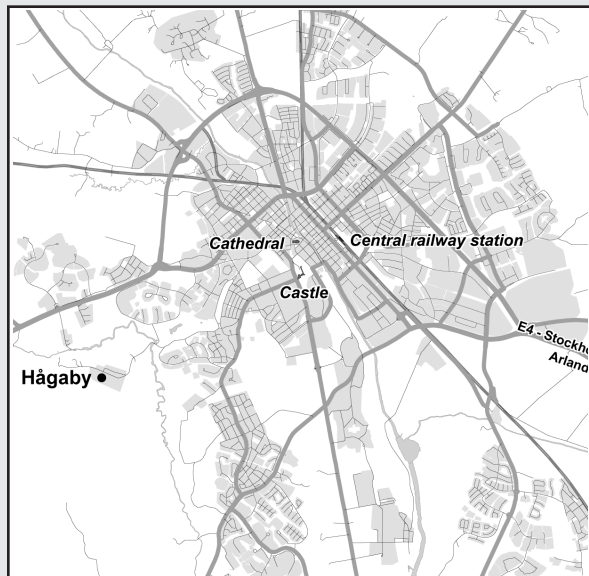


Figure 4.1 Map of Uppsala with location of Hågaby 4,5 km from the city centre.

The renewal of Hågaby thus comprises a total of 100 dwelling units aside from the existing 14 old small houses and three smaller farms. In all of Hågaby there are 350 people, including 120 children up to 16 years of age. The renewed or newly built parts are two administratively separate areas, but in practice all their residents belong to the same community or neighbourhood. There are common systems for solar heating, waste water purification, semi-automatic composting, traffic planning and land use. The new residents co-operate, amongst other things, in a community council that deals with e.g. sharing car, a local food store, and cultivation.



Figure 4.2 Entrance to the Hågaby community centre. (photo: Per G. Berg.)

Since the year 2000, Hågaby has also been one of 11 model communities of different scales (BUP, 2001) within the SUPERBS project (Sustainable Urban Patterns around the Baltic Sea). The project's main objective is to illustrate one example of resourceful habitation in healthy houses within a supportive neighbourhood. The planners and many residents of Hågaby have aimed at – within a couple of years – using less heat, electricity, water, chemicals and materials than in ordinary houses. The aim is also to strengthen the neighbourhood in order to become more socially, economically and organisationally resilient.

It is, however, important to underline the dynamic nature of sustainable habitation. In any local community, it is a process that changes with new knowledge, techniques, changing values and with changes in the social interactions between people. Hågaby is no exception. The physical framework is now built, and some of the systems are running very well. In other respects the quest for sustainability has just begun.

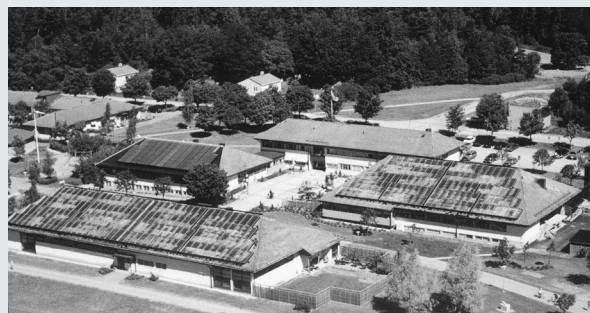


Figure 4.3 Hågaby solar energy plant and community centre. (photo: Per G. Berg.)

4. The city as a sustainable living system

Hågaby as a demonstration model of the conditions required for creating a sustainable living system

Per G. Berg

4.1 Background

- 4.1.1 Developing the roads to sustainable habitation
- 4.1.2 The work to shape Hågaby as a sustainable village

4.2 Conditions for sustainability in living systems

- 4.2.1 Sustainable maintenance
- 4.2.2 Sustainable management
- 4.2.3 Sustainable reproduction
- 4.2.4 Sustainable boundaries
- 4.2.5 Sustainable evolution

4.3 Hågaby as a sustainable living system

- 4.3.1 Hågaby as part of a whole
- 4.3.2 Balance between local and distant support flows
- 4.3.3 Basic community management within the framework of the city and the market
- 4.3.4 The need for neighbourhoods in cultural reproduction
- 4.3.5 Identities and communications in the local community
- 4.3.6 Appropriate adaptation to changes at the neighbourhood level

4.1 BACKGROUND

4.1.1 Developing the roads to sustainable habitation

Municipalities around the Baltic Sea are developing in an era of environmental transition. All over the region, initiatives on different levels have been started, to protect the water, soil, animal and plant species, and other natural resources for the present and coming generations (BUP, 2001). In town planning around the Baltic sea region, we are slowly compiling the necessary knowledge and insights needed for the reconstruction of our cultural centres towards new periods of prosperity and development (Rydén et al., 1997).

In the year 1997, a special issue of *Landscape and Urban Planning* was devoted to the re-emerging interest in community planning in general and the socially defined neighbourhood in particular (Nelischer & Burcher, 1997). It was one result of an international discussion on the importance and value of community (Etzioni, 1993) and the civil society (Putnam, 2000). The background was

In this first chapter the city and its parts are described as a living system. Five properties for sustainability are discussed – firstly for living systems in general and secondly, as applied to the model project Hågaby. A main point made is that living systems in general and urban structures in particular may find a large number of ways to maintain themselves, to manage and reproduce themselves, to develop their boundaries and to evolve. At this stage it will therefore be sufficient to point to general conditions with the model area of Hågaby as an example. In later chapters, I will operationalise these conditions of living systems to more measurable or assessable resources and after that discuss the possibilities for creating a sustainable lifestyle. The latter is – according to the UN Habitat II conference – a basic precondition for preserving the global environment

4. THE CITY AS A SUSTAINABLE LIVING SYSTEM

the decline of local communities in the developed world – something which was especially evident in highly mobile countries in North America and in Sweden (Nelischer & Burcher, 1997). Reasons for weakening neighbourhoods in Sweden was suggested by several authors to be the expansion of television, the increasing use of the car, and (especially in Sweden) the increase of personal living space (Olsson, 1992; Franzén & Sandstedt, 1993). Other feasible reasons for weakening neighbourhoods are the changes in working life, the development of individualistic lifestyles, and the changing family structure (Anderson, 1997).

4.1.2 The work to shape Hågaby as a sustainable village

The results reported in the case studies from Hågaby (Chapters 4-6) are the fruit of more than 10 years of planning a small experimental community in Uppsala. Over the years, the concept of sustainability has been widened in this project to comprise not only the required physical resources. Instead a complex and exciting model has emerged, that covers six strong aspects of sustainability: physical, economic, biological, organisational, social, and cultural (including aesthetic) dimensions. It has also evolved to include both reconstruction of existing buildings and the building of advanced new housing. The development of the site will continue, and this report gives the status of the model area from spring to autumn 2000.

This report is partially based on planning documents, a large body of research results within the areas of ecological technology, construction and habitation. It is also based on innumerable discussions over more than a decade among builders, expert consultants, and the residents of

the newly built area of Hällen. Most of the material is in part based on work with the model project and with the *neighbourhood research* taking place at the department of Landscape Planning Ultuna.

The report has some predecessors. In 1997 a booklet on sustainability in communities was completed within the framework of the Baltic University Programme (Andersson, et al., 1997), where scenarios were presented for the model community Hågaby with regard to a number of physical and non-physical resources (Berg, 1997). The perspective was for eight and 25 year periods and the resources chosen represented various aspects of sustainability e.g. social, organisational, economic, and physical. Only three years later, a brief picture can be presented confirming the overall tendencies in these scenarios. Some of the ingredients of sustainability were introduced ahead of the predicted schedule, and some are planned during 2002 or later.

Students, teachers, researchers, active planners, and other interested parties are invited to take part in the exciting evolution of the small community of Hågaby. In other model projects of the Baltic University Programme other aspects (see other reports of this series) of sustainability are emphasised. The “speciality” of Hågaby is the relation between sustainability perspectives and their respective critical factors. Let me stress that we have never and will never claim our model examples as perfect or as self-evident solutions for communities outside Hågaby. I firmly believe, however, that Hågaby is an unusually clear pedagogical example on strategies adopted, in accordance with the Habitat Agenda – UN’s habitation conference in Istanbul 1996 (UNCHS, 1996). This text should mainly be interpreted in that context.

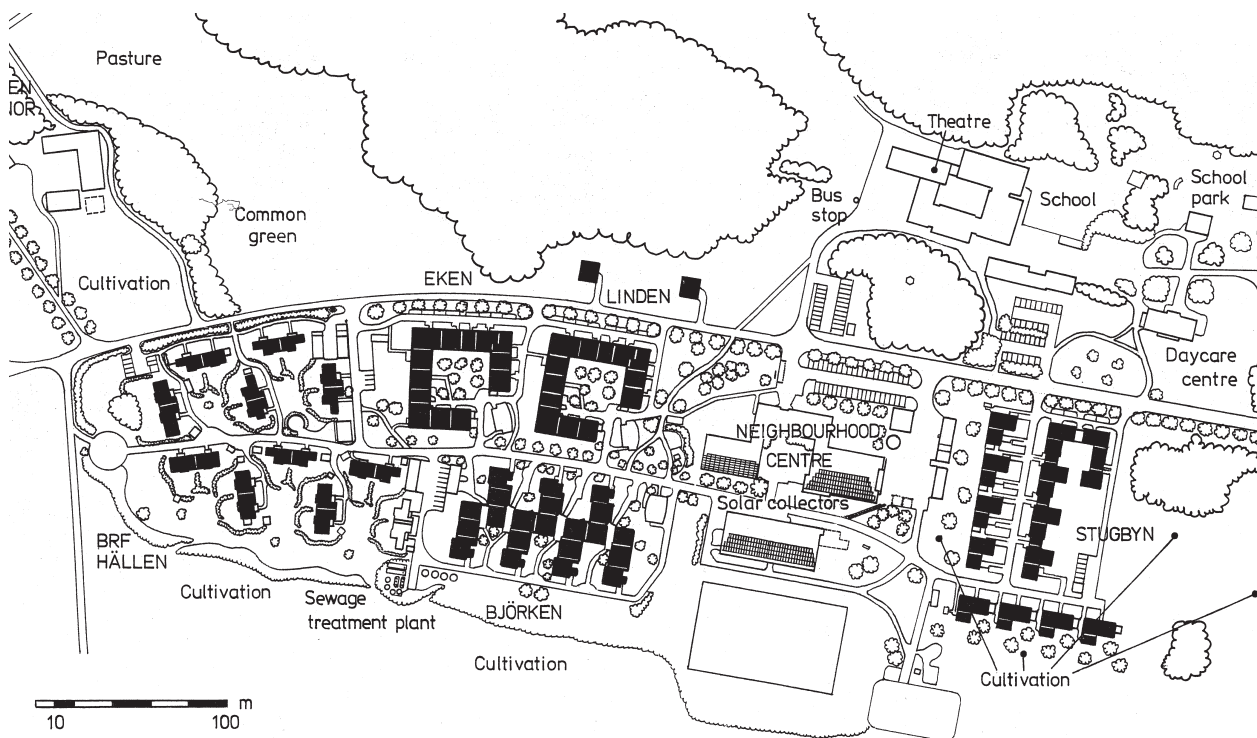


Figure 4.4 Plan of the Hågaby area. Present plan of Hågaby with 100 apartments in five main groups of houses: rebuilt *Eken*, *Linden*, *Björken*, *Stugbyn* (designed by architect Mikael Dunge and landscape architect Lennart Pedersen.) and new built *Hällen*. (designed by architect Greger Wolter and landscape architect Anna Svensson in co-operation with the residential group.)

4. THE CITY AS A SUSTAINABLE LIVING SYSTEM

4.2 CONDITIONS FOR SUSTAINABILITY IN LIVING SYSTEMS

Cells and organisms as well as populations and ecosystems must solve some elementary tasks in order to continue to live (Villem, Solomon & Davis, 1985; Campbell, 1996). Individual inhabitants in a modern city are not an exception, if they wish to stay alive and healthy. Even the whole culturally moulded city – if considered as a living system – must fulfil certain fundamental conditions (Odum, 1989). This can be done in various ways, on various scales and with variable efficiency depending on the culture and its organisation. But the general conditions as such are universal. Let us now investigate the common properties of these conditions.

4.2.1 Sustainable maintenance

Any living system needs some kind of life support. Every cell, every organ, every individual, every natural or cultural community needs energy and molecular building blocks to be conceived, developed and born, to grow, mature or just to exist (Odum, 1989; Campbell, 1996).

Northern agricultural villages in Finland as well as big Polish cities need a never ending flow of food, fibre and fuel as well as waste re-circulation activity at various levels in order to survive and keep their cultures going. In the future, all supply and waste streams must be without poisonous chemical contents and all must be linked together in small, mid-sized, or large cyclic flows. Resource theory defines the limits for *maintenance of sustainable systems* (Månsson, 1992; Holmberg, 1992).

4.2.2 Sustainable management

Any living process must be controlled or managed. Any plant, animal, fungus or food web at sea or on land, disposes of a number of biological structures and steering systems. The controlling system is based on the genetic code and is expressed as messenger molecules (Campbell, 1996), cellular or ecological roads, and communication networks (biological infrastructure) (Odum, 1989). In city centres or suburbs, there are also various infrastructures and ordered systems installed for their continuous management. They are used for transportation, communication, service (maintenance), and protection of urban structure and function.

Three basic levels of management are active in different proportions in urban cultures (Lindblom, 1977; Henderson, 1993). The first is the planning, governmental or municipal level of *public common interests*, for instance the legal system and public transport in many municipalities. The second is the *market* level, controlling and enhancing consumption and the exchange of goods and services. The third is the self-organising local level - *the civil society* - in neighbourhoods, at work-places and in families.

Our tools for *cultural management* are laws, rules, traditions, orders and informal rules, for instance in child rearing. The physical controlling equipment includes roads, tracks, pipes, telecom-lines and networks used for conveying data, information, knowledge and sometimes insights and wisdom.

4.2.3 Sustainable reproduction

All living systems must be able to reproduce their living patterns for new generations. The universal molecules of inheritance, DNA and RNA, constitute formulas and procedures for duplicating any life forms (Judson, 1979). The biochemical codes guarantee eternally new coevals and communities, which exhibit identical basic functions but with variations in design and expression. In human societies (and several animal communities), cultural or taught behaviour must also be reproduced or inherited.

Urban and agricultural cultures, as well as tracks or memories of earlier cultures, are continuously being transferred to new generations with the help of texts, languages, electronic imprints or practical skills (Braudel, 1979; Trivers, 1985). We teach our children at schools and universities and later on, in practice and in adult education, to secure a new version of a – hopefully – more skilful and wise species, *Homo sapiens*.

4.2.4 Sustainable boundaries

All living systems must be able to design and protect their boundaries. Cellular walls, skin, bark, and even forest glades and other transition zones between natural biomes have conserving or protective biological patterns for the boundary zone (Odum, 1989). In human culture, physical and non-physical boundaries are important features to nurture and sustain, in order to conserve identities and define responsibilities in the community (Alexander et al., 1977; Malmberg, 1980).

Boundaries are important in communities for defining private and public spaces – places where individuals or groups can develop their personal or local culture and places where people or groups can meet and communicate (Alexander et al., 1977; Gehl, 1996). In this way doors, hedges as well as designed neighbourhoods or city limits - and their opposite: streets, commons, squares, parks and city green spaces – define each other.

Completely rigid boundaries or an absence of boundaries are as problematic in the city as they are in nature. The analogy should, however, always be drawn cautiously due to the great differences between natural and cultural systems.

4.2.5 Sustainable evolution

All living systems must also be able to adapt to changes. Nitrifying bacteria have evolved gel-protected cysts in dry conditions (Berg, 1986), tree's roots have evolved a co-operation with fungi to adapt to parasitism (Alexander, 1971), and animals adapt to winter by increasing their skin insulation, by improving their heat exchange capacity and by eating more energy-rich food (Odum, 1989). Changes in weather, climate, as well as biological invasions and other environmental stresses, pose demands on living creatures for adaptable physiologies, behavioural changes and the ability to employ new feeding sources.

All human communities must also possess a certain degree of adaptability, growth and maturation in order to survive (Berg, 1993; Berg & Nycander, 1997). New knowledge and its application in new technology as well as new values and their resulting new policies may be considered as strong societal change forces.

4. THE CITY AS A SUSTAINABLE LIVING SYSTEM

Rapid growth of the world's population and consumption are characteristic forces of change in our time. The adapting power of our species is of course great. But there are limits to adaptive change, beyond which human values are jeopardised and the quality of life decreases (UNCHS, 1996). Like other living systems, urban communities will therefore only cope with change when remaining within certain limits (Toffler, 1980).

4.3 HÅGABY AS A SUSTAINABLE LIVING SYSTEM

4.3.1 Hågaby as part of a whole

Hågaby is only a small part of a greater living system – the city and its life-supporting hinterland. It may, however, be pedagogically instructive to utilise the neighbourhood level in order to illustrate the five conditions for life. These conditions for living systems should be used with some caution. Here they are used as investigative tools in order to better understand the meaning of *sustainable living systems*. In the real world, we always have to take into account the irrationalities of cultural human beings.

In this section I will argue – using Hågaby as an example - that a balance between local and distant resource use, may be the optimal way to achieve sustainability in our urban environments around the Baltic Sea. The hypothesis

emerging from this is that this principle should apply in many cases – from the *almost* self-sufficient small town intertwined with close production and recirculation of nutrients, water, and energy – to the city centre neighbourhood, that is *almost* entirely dependent on central technical systems and distant life support systems.

I will furthermore try to show that the steering power of society can be appropriately divided between the public, the market and the local community levels. I give examples to illuminate the importance of the neighbourhood in the reproduction of our culture. The boundaries in Hågaby have been designed to strengthen both identity and communication. Lastly, I will give examples of local adaptations to changes in the surrounding world.

4.3.2 Balance between local and distant support flows

The modern suburb is commonly 100% dependent on distant physical life support with regard to food, water, material, and to handling waste streams. Energy resources (especially electricity) are also mostly provided by distant sources in modern communities – although it can always be formally argued that a substantial amount of the (passive) heat needed for life support in any house at any place on earth is basically of solar origin (Odum, 1989). This distant life support is rational in a narrow sense, since large-scale systems may be more efficient, more economical and have the potential to offer higher standards with



Figure 4.5 Hågaby area from above. (photo: Per G. Berg.)

4. THE CITY AS A SUSTAINABLE LIVING SYSTEM

regard to supervision, nutrient conservation, hygiene, and waste cleaning.

Local physical life support is characterised by short transport, few or no middlemen, community control and robustness, as well as possible contributions to community social and organisational life (Berg, 1993).

In Hågaby, physical life-support is still being organised and developed. An estimate of the present status of local and distant flows of physical resources at the beginning of the year 2000 can, nevertheless, be seen in Table 4.1.

Time will show if it is appropriate to develop local life-support further. From a resilience perspective, the area is, for a number of reasons, already prepared for an increased local life-support if needed. Firstly, this is because there is a growth in knowledge and skill in the art of physical resource production among many of the inhabitants, and secondly because, raw material, water, and arable land are present in ample amounts in the area. There are, however, few reasons for increasing local self-support too much since this will impair a reasonably comfortable everyday life for the residents. The alternative to an increased local life-support is instead that the central systems become more and more non-polluting and more and more resource efficient. Another alternative is to reduce the consumption rates of the community. Some first steps to do this have been taken, with more planned in the future (see Table 4.2).

The overall pattern is that most of the physical life support will in general be provided by municipal systems outside Hågaby, and a smaller but important part of life-support will be produced locally. The overall need for life support can be successively decreased through the development of a resourceful life-style among the residents and the continued introduction of energy efficient equipment in the area.

4.3.3 Basic community management within the framework of the city and the market

The urban culture is increasingly developing towards a functional partitioning into purely residential areas, shopping and service places, activity centres and cul-

tural reservations (SNA, 1994; Garreau, 1992). Market dominated planning makes room for car infrastructures, zoning of the city, and desocialisation of the neighbourhood (Paterson, 1997). On the other hand, drawbacks of the centrally planned city infrastructure, production, and habitation, has become more and more obvious in many economies with dominating central planning (Rydén, et al. 1997).

A reasonable balance for the future would be a division of management power: between the governmental and municipal level, the market level and the local community self-organising level (Alexander, 1977; Berg 1996). The model neighbourhood in Hågaby strives to find this good balance – where local decisions are made with regard to appropriate subjects. Land use, local environmental programmes, informal economic sustainability, local services and cultural activities, awareness of the place, its history and nature, children's activities and neighbourhood communications are examples of questions where the local level should be an efficient manager or part-manager. The theory of such common responsibilities or properties is often referred to as *common property theory* (Ostrom, 1992). Table 4.3 summarises some activities where the local community in Hågaby has had substantial influence on organisation, maintenance or development.

The functions integrated community is becoming more and more extinct in our modern urban cultures. There may be a number of rational reasons for this development. It remains, however, to prove the disadvantage of keeping and developing a (limited) core of local governance, a basic process for developing local community life as a strategy for managing the city of tomorrow in a sustainable manner. The market and the municipality are important management levels, but they will be crippled if they cannot rely on the controlling power within the civil society in families, local companies and neighbourhoods (Asplund, 1991; Henderson, 1993).

Table 4.1 Physical life-support in Hågaby. Division between local and distant sources, Jan. 2000. Figures in **bold** are the potential resource amount, that can be used if needed or desired. To further increase local production and use, new investments are needed.

Physical resource	Percentage of local production or management	Percentage of distant production or distribution
Heat production	10-15% (solar collectors and wood fuel) 20%	85-90% (district heat)
Water production	<1% (local ground water) 10%	>99% (municipal water)

Table 4.2 Conservation potential of selected physical resources in Hågaby.

Physical resource	Percentage of resource saved or transformed, after reconstruction in 77 rental apartments (2000)	Total potential of resource efficiency (in % of Swedish average) for all 100 new and old apartments
Heat energy saved	30%	50%

4. THE CITY AS A SUSTAINABLE LIVING SYSTEM

Table 4.3 Townscape cybernetics. Situations where local management have played or will play an important role in Hågaby but still remain within the framework of common markets and central governance.

Situations	Examples			
Land use	Front yard, back yard or garden planting and maintenance.	Allotment organisation and maintenance.	Semi-private common green development and maintenance.	Sports activities and play ground planning.
Services	Foundation, organisation and maintenance of local food-shop.	Organisation and maintenance of small company structures in Hågaby.	Influence on local public transport in Hågaby as well as co-operative car-use solutions.	Development of software requirements for local communication system (LCS).
Leisure	Neighbourhood football.	Community cinema and theatre.	Community choir and music group.	Childrens sports activities, summer and winter.
Environment	Local waste water treatment.	Local waste sorting.	Local household composting.	Resourceful lifestyle.
Culture	Historic mapping of the area.	Development of festivities and celebrations.	Mapping of valuable land-scape types and elements.	Formation of local community council (LCC).

Table 4.4 Levels and examples of community cultural reproduction in Hågaby.

Level	Examples				
Family	Reproduction of basic social behaviour.	Conveying special skills, knowledge and insights among family members.	Support of special training and hobbies.	Informal discussion about events in communities, cities, nations and the world.	Philosophical discussion about ethics, nature, values.
Kindergarten	Reproduction of basic daily rhythms of life (activity, rest, play, eating, creation).	Basic training of communication, empathy and social behaviour in small groups of children and adults.	Practise and inheritance of co-operation behaviour.	Learning sound habits of eating, food, hygiene, exercise and outdoor life in natural and cultural landscapes.	Tranquil (unstressed) and stimulating play. Physically demanding play for children with strong wills and power.
School	Reproduction of theoretical subjects.	Reproduction of handicrafts and practical knowledge.	Reproduction of culture in theatre plays, arts and music.	Reproduction of seasonal ceremonies and school traditions.	Systematic study of the local community as a reference point for learning about the world.
House Cluster	Basic neighbourhood level of co-operation and communication.	Unit for reproduction of simple common property, economical and practical activities.	Unit for reproduction of routines for basic neighbourhood security.	Basic unit for inspiring neighbours in local outdoor environment and entrance design.	Primary support level for security and help in the neighbourhood as well as for the reproduction of this pattern.
Community (Hågaby as a whole)	Main reference level for children for various basic functions in society.	Basic unit for reproducing organisational assets like local food-shop, carpools and telecommunication systems.	Basic level for social generators like neighbourhood council, residential host, local shop and neighbourhood cinema.	Basic model for cultural reproduction through for instance the school, the historical society and the cultivation club.	Reproduction of the communitys democratic system when speaking for all its residents.

4.3.4 The need for neighbourhoods in cultural reproduction

The local community in modern urban environments plays a diminishing role in upbringing, education and as a model of human culture for its inhabitants. This development has been challenged for a number of social (Olsson, 1992), organisational (Alexander et al. 1977; Falkheden, 1999), environmental (Eriksson, 1995; UNCHS, 1996) and economical reasons (Henderson, 1993; Meeker Lowry, 1995).

In the model project of Hågaby, a number of measures have been taken to strengthen the community and to improve its potential for cultural reproduction (see Table 4.4). Cultural reproduction takes place when teachers and pupils

in the local school explore the universe of knowledge. It happens when parents instruct their children how to use a bicycle, a drilling tool or sort waste. It also occurs when the historically committed people of any community pass on the stories and mysteries of the place to children, to visitors or to new residents. Cultural reproduction also occurs when inhabitants create recurring rituals, ceremonies and celebrations that involve many people in the community (Shaffer & Anundsen, 1993).

In Hågaby, all households have well-planned indoor and out-door private as well as public spaces, suitable for teaching and learning everyday life skills and knowledge. The house clusters have access to spaces and premises

4. THE CITY AS A SUSTAINABLE LIVING SYSTEM

where various activities can occur. The community as a whole has many premises, meeting points and activities that support communication and transfer of cultural values. Hågaby has one local school, three play schools (and a municipal school a few minutes bus ride from the community). There are also a large number of (mostly informal) play, music and sports activities, and a considerable number of meeting places and activity nodes.

4.3.5 Identities and communications in the local community

Boundaries in human cultures constitute a paradox. On the one hand they are important for creating privacy, protected territories and identity for anyone living in the city or town (Malmberg, 1982; Berg, 1996). On the other hand they are necessary for defining meeting grounds, delimiting communication scenes and forum spaces - indoors and outdoors of the urban environment (Alexander, 1977; Gehl, 1996). A task in Hågaby has been to try and combine these two necessary properties of boundaries, but not just as one compromise solution. Instead there has been an aim to form a complementary balance between the human need for both identity and communication.

The 12 buildings with 22 new households in Hällen have been specially designed and placed (see Figures 4.4 and 4.6) to allow visibility and create a sense of control over the apartment and the connected garden. The distances between houses and between private outdoor plots and gardens were also chosen to allow for both privacy and some personal expression in the spaces between buildings.

All built and rebuilt apartments in Hågaby have also been designed to optimise the outdoor spaces. The private territories most often face south or west. Outside the private zones, a semi-private common green, a square, or a village road has always been placed as a buffer zone to the public spaces. Adjacent to the different housing groups, semi-public spaces and roads, and public spaces and roads, complete the outdoor structure – from private to public. Figure 6.8 in Chapter 6 shows this division between private, semi-private, semi-public and public spaces in the greater neighbourhood of Hågaby.

In the newly-built area of *Hällen*, great attention has been given to forming protected and practical but at the same time aesthetic entrances – in order to both welcome visitors and also to express individuality and to form a gradual vault of increasing privacy towards the entrance door. The private outdoor spaces have been complemented for all apartments in Hågaby by the planting of rows of bushes and flowers. To reinforce the need for privacy and insight protection, some places have also been equipped with semi-secluded wooden or living fences. Even cloth awnings contribute to this purpose.

The spaces between buildings in Hågaby have been optimised to encourage spontaneous meetings between residents. Examples are the placement of mailboxes in groups, the careful placement of laundry facilities at path crossings, the organisation of the inner pedestrian street through the community and the concentration of community services at the centre of Hågaby (see Figures 4.4 and 6.9). Indoor meeting premises, like the festivity and ceremonial hall, seminar rooms, workshops, and commu-

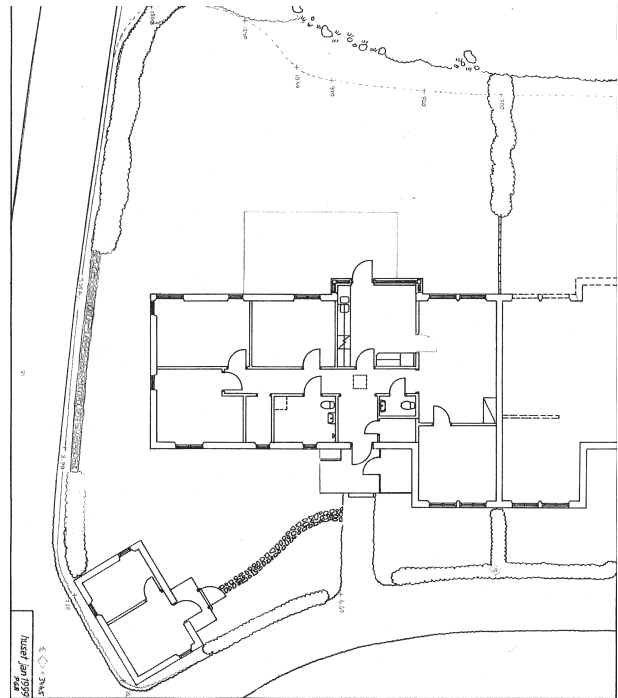


Figure 4.6 Basic plan of an individual house in Hällen with private outdoor space.

nity house all contribute to casual and planned encounters between the residents. There are also outdoor meeting places and items, predominantly placed in the boundary zone between different groups of buildings, that support communication and neighbourhood “glue,” like the central square, common grounds, several mini-squares, benches, mailboxes, a circular hard and even surface (“the circle”), play grounds, and the bus stops (Fig. 4.4).

In the future, many of these very physical aspects of interfaces between residents will also be complemented by various electronic interfaces: communication screens in apartments, in common houses and perhaps even in rain protected, outdoor transportation nodes. In Table 4.5, various examples of boundaries and their functions in Hågaby have been summarised.

4.3.6 Appropriate adaptation to changes at the neighbourhood level

Changes in communities are inevitable. As knowledge increases, the technology also evolves (Wadensjö, 1987). The dynamics of human values gives rise to fluctuations in policies and human preferences (Andersson et al. 1997). But change will – in a true democratic society – with necessity have to occur at a limited speed if the democratic foundations, the accumulated insights and wisdom of a society are to be maintained (Toffler, 1970; SOU, 1998).

Consequently images for the future and analysis of the surrounding world must be done, in small basic communities like Hågaby as well. A changing work life with more IT-based tasks and professions will also have an impact on the local neighbourhood of Hågaby. Other changes include the emerging mobility of the labour market, as well as the resulting local economies evolving in communities complementing the municipal, national and world markets (Berg, 1996; Andersson, 1997).

4. THE CITY AS A SUSTAINABLE LIVING SYSTEM

The challenge of environmental issues will create other changes in the very local units of society. The quest for creating sustainable communities everywhere will have a profound impact on the life style of urban culture and physically rearrange any townscape from the dense city core to the most thinly populated agricultural town (UNCHS, 1996).

Hågaby is ready for reasonable change in the outside world, but will at the same time try to treasure the local emerging culture and organisation of the place. Table 4.6 outlines some basic changes and their impact on the local community of Hågaby.

Table 4.5 Boundaries at different levels in Hågaby and their functions.

Boundary level	Examples of boundaries and their functions				
Private houses and spaces	Local houses' physical boundaries - for climate, view and audio protection of the residents.	Windows – light, sound and smell inlet, connection between outdoors and indoors, and view protection.	Outdoor entrances and arbours: zones of individual manifestation, meditation, family, and friendly meetings and visits.	Private path and road boundaries – enhance private movement including gates for discouraging free public movement.	Home fences, stone boundaries and planted areas, defining private spheres, and meeting zones with neighbours.
Semiprivate meeting areas and paths	House cluster boundaries, towards public squares, connected play and common land, and defining semiprivate meeting and playing spaces.	Entrance zones, inviting gathering between neighbours and family members, and manifesting local identity.	Path and road boundaries like bushes and fences, guiding public mobility outside semiprivate zones, and strengthening the feeling of security within house clusters.		
Semi-public areas, houses and roads	Neighbourhood boundaries—delimiting the local community of Hågaby from others, and also defining the public squares and the common grounds on larger townscape levels.	Local squares and semi-public halls' boundaries, defining meeting places in neighbourhoods, and inviting guests for special celebrations and meetings.	Entrances and exits to neighbourhood – manifest the transition zone between neighbourhoods and display some of the characteristics of the place.	Local common neighbourhood special houses – neighbourhood office, residential host office, local reception.	Community common ground – playgrounds, common greens and sports fields, invitation to meetings, plays and celebrations among residents of various ages in Hågaby.
Public spaces, houses, roads and paths	Public neighbourhood square – boundary forum between the public and the residents.	Public neighbourhood road and bicycle road – main public entrances to the natural, and cultural landscape of Hågaby.	System of public paths – the great leisure zone of Hågaby with access to forests, meadows, river banks and the grazing ground around the Håga hill.	Public school park – a walking zone under the oldest and biggest trees of Hågaby.	Local public shops and services – the service zone with food shop, barber, handicraft shop and sports centre.

Table 4.6 Significant societal changes and some corresponding adaptations in Hågaby.

Major Societal Changes	Resulting adaptation changes in Hågaby			
Emergence of information technology	Introduction of high-capacity internet and neighbourhood intranet.	Introduction of global telephone services and local low-price telephone systems.	Evolution of a modern corner-store with both global and very local goods.	Evolution of local informal and formal economic systems.
Higher mobility in work life and life-long education	Part-time local work and study places in households and local offices.	New application of computers and telecommunication systems.	Strengthening the local community to balance greater mobility.	Development of new car sharing and a local bicycle culture.
Evolution of eco-technologies	Introduction of local and distant biofuels in basic heating.	Development of recycling, local urine-sorting and sewage treatment.	Development of cultivation on four levels and of automatic composts.	Construction and reconstruction of healthy buildings.
Previously weakened local communities	Evolution of neighbourhood council and residential host.	Evolution of local shop, school and cafeteria.	Evolution of the private to public space gradient.	Strengthened local culture and historic awareness of residents.
Increasing market dominance over government and civil management	Adaptation: Evolving a local informal economy.	Adaptation: Evolving informal social connections (cinema, sports).	Adaptation: Evolving complementary organisational services.	Adaptation: Evolving stable local rentals and fees in housing.

4. THE CITY AS A SUSTAINABLE LIVING SYSTEM

Is Hågabý a sustainable living system ?

Hågabý is *not* a sustainable living system in itself. It has, admittedly, some potential for transformation to a self-sustained system – at least with regard to physical life-support. But this is actually not a goal. Important goals are instead to produce an appropriate balance between local and distant life support, to form a functioning division between local and distant management and to create the appropriate preconditions for some of the basic cultural reproduction of human culture. Other goals

are to make room for both privacy and meetings and to form an adaptive community in a world of change.

The Hågabý example shows that it is practical and efficient for the community to have some local influence on the basic conditions of sustainability. It also implies that any local community will be more robust and prepared for times of crises, if it has some experience of self-reliance, with regard to its basic life support, economy, communication and organisation.

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