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ABSTRACT

This paper discusses the developmentally appropriate design of child care centers, focusing on the qualities or properties of center design that have been proven to influence child development. The paper suggests that the design of child care centers can be considered in terms of the five main steps in planning and designing a child care facility. First, they should be designed on a neighborhood hub model, incorporating family child care and group care centers of no more than 60-75 children, and located in neighborhoods or at workplaces. Larger centers may be subdivided into clusters of separate buildings with a central core for administrative and support services. Buildings should fit into the architecture of the locale and have adequate indoor and outdoor space (100 square feet per child indoors and another 100 square feet outdoors). Second, site planning is needed to provide a positive orientation (in North America, usually facing south). The buildings themselves should be designed to resemble homes instead of schools, with modified open spaces (semi-enclosed rooms and activity areas) instead of self-contained classrooms. Outdoor areas should be modeled after backyards, with resource-rich activity pockets linked by clear circulation. Third, overall building design needs to accommodate mixed-age groups in a village or house plan with a central core. Fourth, group houses, or modified open spaces, and fifth, outdoor activity spaces, which accommodate developmentally appropriate play yards, are also discussed. Illustrations of the design concepts are included. (MDM)

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The Developmentally Appropriate Design of Child Care Facilities[1]

Gary T. Moore

Article 18 of the UN Convention on the Rights of the Child states that children of working parents should have the right to *benefit* from child-care services and *facilities* for which they are eligible.

We know that *child care matters,* that quality child care provides an enriched environment and leads to positive developmental benefits for children in terms of peer interactions, affect, socioemotional development, and social competence, among other areas of social and cognitive competence. Some controversies remain about the advantages and limitations for infants, about differences between centre-based and family day care homes, but the overwhelming evidence is that child care matters and matters positively.

We also now know that *design matters,* that the design of the *facilities* of child care can have an impact on development. This can operate in two ways. Design features in some cases have been found to have a direct impact on development, but more often design features working in ecological concert with curriculum and family structures and systems. Let me offer just three empirical examples. The U.S. National Child Care Study of 1980 found that the size of groups in which children spend most of their time is a very powerful predictor of the quality of care. Group size has immediate implications for the size of spaces, and for decomposing large centres into smaller houses. Our own research on different plan types, reported in the *Journal of Environmental Psychology* in 1986, has found that what we have been calling a "modified open plan" is highly correlated with exploratory behaviour and positive engagement in activities. Other parts of this research, plus the work of others, has found that secluded play places, or architecturally well-defined activity pockets contribute to greater attention span, more cooperative versus competitive behaviour, and greater caregiver involvement with children as opposed to supervision or passive non-involvement. I've recently heard it said that in Reggio Emilia the physical environment is considered the third teacher.

We've been researching and looking at a whole range of possible impacts of the designed environment on child care for about 15 years. Our experience has been informed by studies conducted by others, and our own experience advising and working with chid care centres, their directors, staff, and children in Canada, the U.S., Australia, and northern Europe especially Scandinavia.

There are many design ideas that one can garner from the good design of child care centres, like the incorporation of columns and structure into activity areas. These may be

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[1] Summary text of a presentation given to the United Nations Conference on the Rights of the Child -- Stronger Families - Stronger Children -- Victoria, Canada, June 21, 1994. My thanks to the Child Care Branch of the British Columbia Ministry of Women's Equality for sponsoring this presentation.

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interesting ideas aesthetically, but do they influence child development? We now know that design matters. The combination of empirical research we have done on the relation between child development and the built environment, other research reviewed from around the work, and reflective practice has led me to believe that there are somewhere around 15 fundamental principles of good design that contribute to child development. They may be organized in terms of the five main steps in planning and designing a child care facility into a cascade of principles that we see in quality child care centres.

Planning: The Neighbourhood Hub Model

1. ***Network of Child Care Facilities***

A comprehensive child care program can be composed of family child care/supervised private home day care, group care centres for larger numbers of children (perhaps as large as 60-75 children), and other child and family resources at the hub of a neighbourhood hub model.

2. ***Favourable Location***

The best locations for child care centres are in the home neighborhood or at the workplace. But a number of positive and negative proximities must be considered (accessibility, away from busy roads, away from noxious or dangerous elements, close to natural features, close to community resources, and large enough site to accommodate the building and a variety of play yards). An ideal location can be on the seams between neighbourhoods.

3. ***Centre Size***

How large should the centre itself be? Evidence from the U.S. National Day Care Study found that the size of group in which children spend most of their time in child care is a very good predictor of quality--smaller is better. We are recommending that no child care centre be larger than 60 to 75 children (25 to 40 would be much better, developmentally speaking). And for each child, we need a total of 9-10 m^2/child [100 gross square feet GSF/c] for the building, and another 9-10 m^2/c [100 GSF/c] for outdoor play yards, drives and drop-offs, and set-backs.

Site Planning

4. ***Positive Orientation***

In most of North America, positive orientation means orienting the building, its play yards, and its indoor activity spaces toward the south to capture as much light and sun as possible. In different climates in other parts of the world, positive orientation may mean facing the building away from the sun, protecting it from the sun, or, in the southern hemisphere, orienting it north toward the sun. It is also desirable to orient the building, its indoor play areas, and its windows to favourable views, and to create favourable microclimates by the way the building defines positive outdoor activity spaces.

5. ***Safe Site Circulation***

Parking and service areas should be away from children, parents coming to and from the centre, and children's play areas.

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Overall Building Design

6. *Village or Campus Plan--Identifiable Houses*

For centres serving over 60-75 children, and even for ones in the 60-75 range, the building can be decomposed into "houses" (pavilions/modules) of, preferably, 25-40 children each. Each house best serves mixed-age groupings (from infants through the oldest preschoolers) where the staff moves with the children. Each house is large enough to have all the activity pockets necessary for developmentally oriented care of these children, its own separate entrance, immediately adjacent play yards, and its own identity (see Figure 1).

7. *Building Core*

The overall organization of the building is two or more houses surrounding a central core. The core can have special facilities shared among the houses (multipurpose motor activity centre, multiuse health and social services area, and special places like a children's library, greenhouse, and animal house), as well as kitchen, staff back-stage, adult lavatories, and administration in the mainstream.

8. *Residential Scale / Home as a Template for Child Care*

Child care centres are not just scaled down schools. For a variety of good reasons, the elementary school is not an appropriate image, template, or precedent for child care centres. Child care centres can be patterned after the prevailing residential imagery and scale of nearby houses--residentially scaled sloped roofs, materials and design details that are compatible with the best residential quality in the surrounding community, vegetation and landscaping, covered entry emphasized, enclosed yards, intimate child play areas to attract attention, etc.--in general, the building as a friend, child scale, a friendly-face entry sequence, soft yet exuberant (see Figure 2).

Houses

9. *Modified Open Space*

Each house can be spatially organized in terms of what we have been calling a "modified open space." Not to be confused with the totally open plan of the 1960s, with all its problems, nor with the double-loaded corridor of many elementary schools, a *modified* open plan is a creative compromise that combines the best of both while minimizing the limitations of each. It is composed of semi-enclosed/semi-open activity pockets, utilizing half walls, open arch ways, glazed or unglazed windows, etc. between different age-appropriate activity pockets. Such modified open space is ideal for mixed-age groupings and for mixed-age houses where age groupings are kept somewhat separate--our research has shown that it maximizes child-child interaction, sharing, participation, cooperation, and supportive staff-child interactions (see Figure 3).

10. *Home Bases for 12-16 Children*

At the heart of each house is a home base where children come at the beginning of the day, end of the day, for lunch, potty breaks, and whenever they need a hug or some down time. Each home base serves the mixed-age family groupings of the entire house. It includes the cubbies, a small kitchenette, an eating cluster, intimate diapering areas/learning bathrooms, separate napping areas as needed, and perhaps a quiet reading-listening area (see Figure 4).

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11. ***Resource-Rich Activity Pockets***

Surrounding the home base are one or more clusters of resource-rich activity pockets (primary activity spaces), one for each of the primary developmentally oriented activities for each age group in that house. Three to four activity pockets can be clustered together, each sized for 2-5 children plus a caregiver. Each activity pocket has a sense of closure, but has cross visibility and is easily visible by an adult. Each pocket has all the teaching materials, displays, and work/play surfaces necessary for that activity (see Figure 5). Examples of the great variety necessary: block area, art studio, music corner, science corner, reading/listening area, sand/water play, etc. Depending on predilection, and applicable child care licensing regulations, these resource-rich activity pockets may be grouped by age (some for infants, toddlers, and older preschoolers), or may be age mixed.

12. **Spatial *Zoning: Noisy/Active/Messy to Quiet/Creative/Clean***

The activity pockets are best zoned to separate noisy from quiet activities, active from more creative, and messy from clean.

13. ***Clear Circulation Which Overlooks***

Each house--its home base and all of its zoned activity pockets--can be organized around a clear, safe circulation path. But far from a corridor or hallway (more appropriate for elementary schools that child care centres), and far from ill-defined or ambiguous circulation paths, the circulation is best when it is clear and overlooks but not interrupts activities (see Figure 6).

14. ***Indoor-Outdoor Connections***

Child care programs are run outdoors as much as indoors (weather permitting). No longer the elementary school model of learning indoors and "recess" outdoors, the developmentally appropriate activities of the best child care programs are held equally outdoors as indoors. Thus the need for wonderful visual and movement connections between in and out--low windows, wide doorways from each house, etc.

Outdoor Activity Spaces

15. ***Developmentally Appropriate Play Yards***

Child care centre play areas can be modelled after back yards, with resource-rich activity pockets zoned appropriately and linked by clear circulation. The scale is that of typical back yards. The diversity of activities is the same as inside (e.g., not only gross motor playing areas, but also intimate reading/listening areas, a garden and perhaps a greenhouse, several quiet areas for nurturing fantasy play, and so on). The same design principles apply as apply inside--immediate indoor-outdoor connections, separate entries to each play area, organized per modified open space, with resource-rich activity pockets for different activities, appropriate zoning, and clear circulation which overlooks.

Many of these design principles are supported by empirical research on the relation between child development and the built environment. Others are based on studies conducted of child care centres overseas, and on our experience advising and working with child care centres, their directors and staff over the past 15 years in Canada, the US, Australia, and northern Europe. This combination of empirical research and reflective professional practice leaves me quite convinced that these fifteen design principles are absolutely critical for the success of any child care centre.

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Captions

Figure 1. A "campus-plan" concept for very large centres.

Figure 2. The home as a template for the child care centre.

Figure 3. Modified open space.

Figure 4. Part of a home base for 8-16 children (entry from the left, toilets and changing area on the back-side of the kitchenette on the right).

Figure 5. Well-defined activity pockets.

Figure 6. Clear circulation which overlooks.

Bio

Professor Gary Moore is a developmental/environmental psychologist and research architect interested in the linkages between the physical environment and child development for over two decades. A Canadian who currently is Professor of Architecture at the University of Wisconsin-Milwaukee, Dr. Moore holds degrees in architecture (University of California, Berkeley) and developmental psychology (Clark University, Worcester, Mass.) and a Ph.D. in environmental psychology (also Clark University). Dr. Moore has produced over 100 scientific and professional papers, reports, and books, with a video in production. His work has been published in 5 languages and 13 countries, he was made a fellow of the American Psychological Association, and he is regularly sought as a consultant and speaker on the provision of child care facilities. For those working directly with the challenges of providing child care, he is perhaps best known for the publication, *Recommendations for Child Care Centers* (now in its 3rd edition and 10th printing), which currently is being excerpted and produced as a video, *Child Care by Design*, funded by the Child Care Initiatives Fund of Health and Welfare Canada. His presentation at the U.N. Conference on the Rights of the Child was sponsored by the Child Care Branch of the British Columbia Ministry of Women's Equality.

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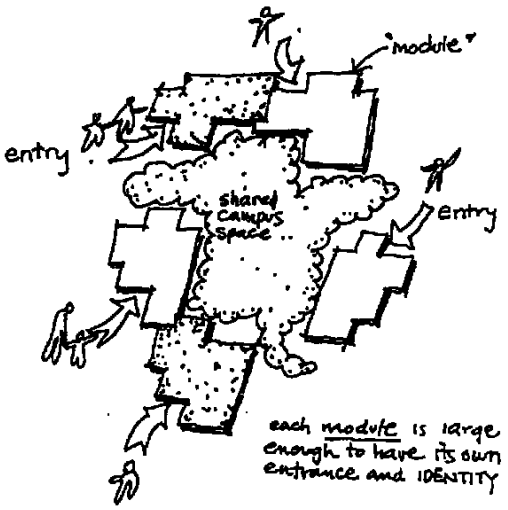

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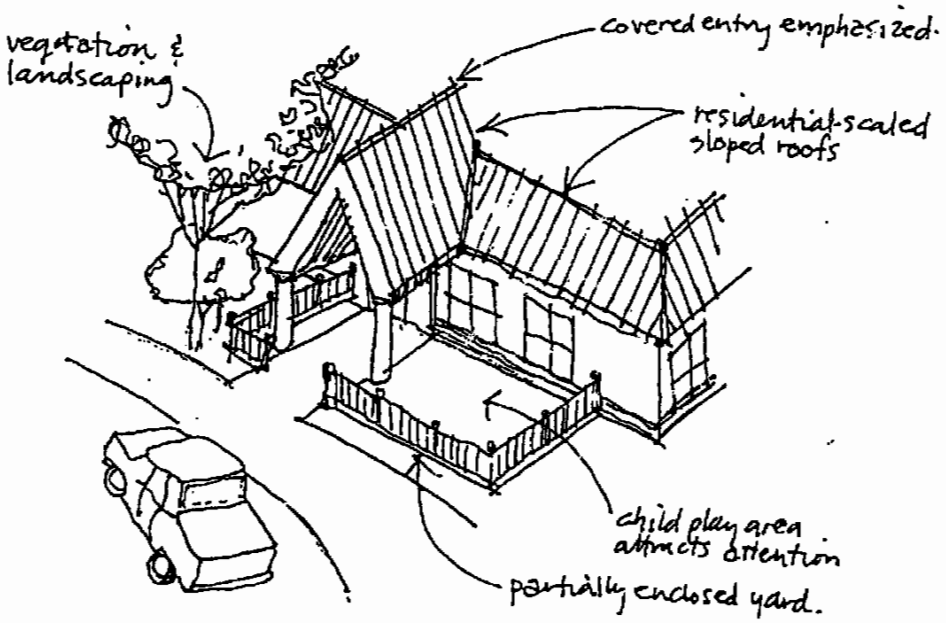

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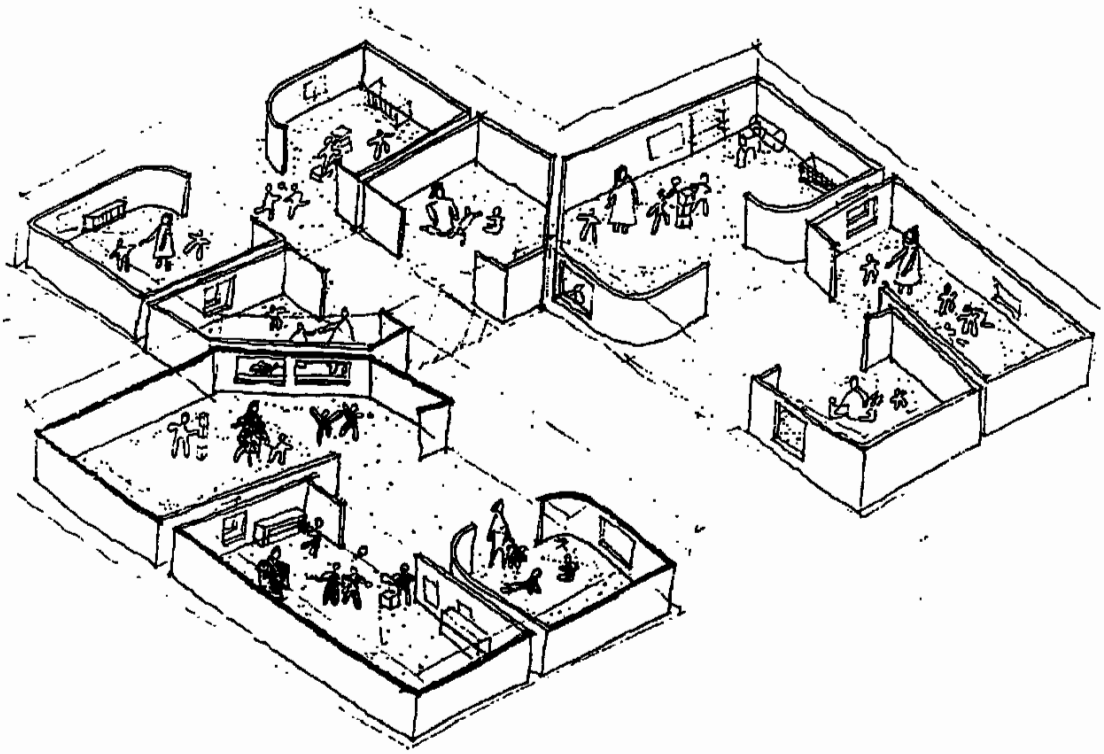

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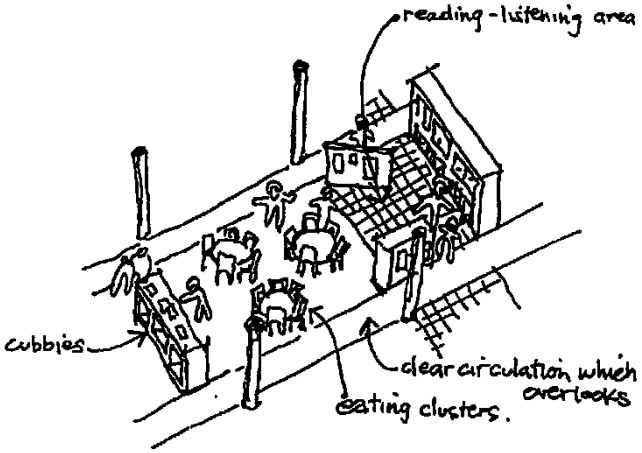

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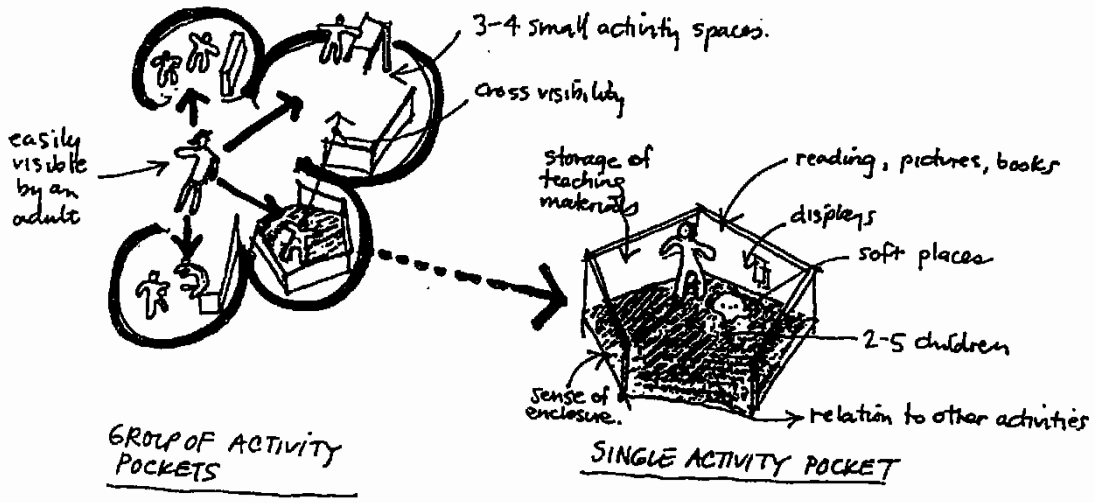

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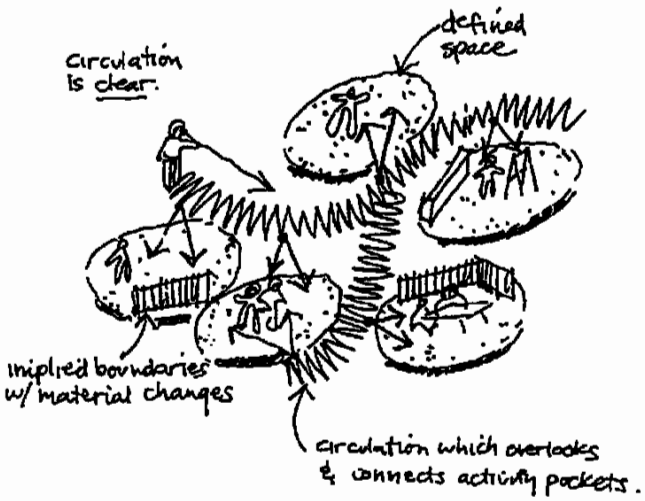

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