

THE WINSTON CHURCHILL MEMORIAL TRUST OF AUSTRALIA

**Report by Timothy Penny
2006 Churchill Fellow**

To study and evaluate innovative primary and secondary school designs that illustrate alternative models applicable for Tasmanian schools and changing pedagogy.

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INTRODUCTION

School design is an interesting marker of our culture. Historically, the Australian approach to designing schools was very prescriptive. It reflected an education philosophy that was oriented to group learning, universal curriculum and highly compartmentalised.

School design for the 21st Century has needed to change to reflect the changing pedagogy. A new approach to teaching that gives emphasis to individual learning, small group learning, and interdisciplinary curriculum, needs a new architectural solution. New architecture requires flexible spaces, should be environmentally sustainable and has integrated technology for learning 'anywhere, anytime'.

My desire to study more deeply emerging innovation grew out of my practice as an architect undertaking school design for both Government and Independent schools.

The Fellowship gave me the opportunity to travel through Finland, Denmark, Holland and the east coast of USA to study a range of different schools. I had the opportunity to meet with teachers, community representatives, students and designers to understand how schools come to be, which is now a platform to design innovation for how schools in the 21st Century could be.

I would like to acknowledge, with thanks, the many people who took the time to share their schools with me; particularly Sinikka Salakari and Karkkainen Kaisu in Finland, Hellerup Skole staff, Poul Erik Madsen and Vagn Olsen in Denmark, Harry Streep III and Angela Benefield in New York and Rene Schaap and his generous hospitality in Groningen.



Aurinkolhati School



Beacon High



Willemspark

EXECUTIVE SUMMARY

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The Fellowship was to study and evaluate innovative primary and secondary school designs that illustrate alternative models for Tasmanian schools.

Travel was undertaken between May and June 2007, and included Helsinki, Copenhagen, Amsterdam and Groningen in the Netherlands, and New York and Philadelphia in the USA. I had the opportunity to visit a range of schools, most recently completed, some under construction and some well-established exemplar schools.

Highlights

- *Arabia School, Helsinki – ‘open school for the village’*
Stage 1 of multi-stage development in the outer suburb of Arabia, Helsinki.
- *Aurinkolhati School*
The design incorporates teaching areas as individually articulated cells around a dramatic three-storey community space.
- *Hellerup Skole*
A skole without classrooms and a very clearly articulated vision of innovation that percolates through every detail and day-to-day activity.
- *Montessori College, Oost, Amsterdam*
Willemspark Montessori Primary School, Amsterdam
Both remarkable facilities designed by architect Herman Hertzberger.
- *Groningen Community School Project*
This programme is challenging the conventional paradigms of school to realise the potential of innovation / education / community for the entire community



Arabia School

Aurinkolhati School

Hellerup Skole

Montessori College

Willemspark

Conclusions

Key aspects of innovation in school design are –

- Vision, process and team approach to design are essential.
- The relationship between the plan and the curriculum can be a difficult thing to achieve and requires the shared confidence of all participants, because the answer is not known at the beginning and will continue to evolve.
- Details matter, and function and innovation are not mutually exclusive.
- Innovation has a relationship to Government policy through support and funding.

Implementation

The key elements of the Fellowship will be implemented and disseminated by –

- Professional development for peers through the Royal Australian Institute of Architects' seminars.
- Sharing of information through various school associations, ie Catholic Education Office Independent School Principal's Association and D.O.E
- Application to ongoing and future project through my practice.

FELLOWSHIP PROGRAMME

3 – 9 May 2007 – Helsinki, Finland

- Arabia Comprehensive
- Soininen School
- Aurinkolahti School

10 - 19 May 2007 – Copenhagen, Denmark

- Hellerup Skole
- Fredericia Gymnasium
- Copenhagen International School
- Naerum Gymnasium
- Danish Design Skole
- Ega Gymnasium

20 May – 1 June 2007 – Amsterdam, Netherlands

- Montessori College Oost
- Appollo School Amsterdam
- Willemspark Montessori School
- Vensterscholen Programme Groningen
- Vensterscholen Oosta Park
- Vensterscholen Tuinwijk / Paddepoel
- Vensterscholen Hoogkerk
- Vensterscholen Vinkhuizen

2 – 16 June 2007 – New York

- Beacon School
- Millenium High
- Barusch College
- The School of the Future
- Eastside High, Newark
- High School of the Future, Philadelphia

17 – 20 July 2007 – San Francisco

21 July 2007

Return to Hobart, Australia

IT'S ALL IN THE PLAN

Observations on how schools are put together

Cultural Patterns

A general observation of contemporary school design philosophy is that the Northern European school plans have developed from the idea that school equals home / community. Whereas, the Australian tradition has predominately originated from the idea of school is an institution

'The school's pedagogy is based on theories from Sweden, Italy and the USA, taking the individual child as the starting point. The school is planned with nine home areas' - Hellerup Schole.

'It's not uncommon to see parents and families throughout the school', Arabia Comprehensive. It was evident that in the innovative schools, a holistic philosophy to learning was embraced. Learning often used community resources, parent support and various schools had developed enterprise relationships with business and industry. This approach to education also was evident in the architecture of the schools. Historically, the classroom was the core element of the school and they were connected with efficient circulation and the communal space was the gymnasium / hall. Contemporary school planning, by contrast, has home areas that can be configured with flexibility, contingent on the teachers pedagogy. These spaces have all the associated support spaces in which a broad range of activities can occur. Hellerup Schole is a school 'without classrooms'.

It was evident that the language of school design expresses the unique and individual character of each school, rather than the traditional pattern of a uniform design applied universally. The internal environment uses a design palette of modern architecture.

The schools visited had a high degree of visual transparency with a wide range of materials, finishes and colour palettes.

This architecture includes the use of floor-to-ceiling glazing partitions, passive solar design to maximise light and sun, high quality materials and finishes, integrated services, furniture as spatial dividers, and lightweight internal construction for future expansion / adaptation.

It was interesting to note that the responsibility for curriculum development and pedagogy was predominately the responsibility of government instrumentalities overseeing school curriculum. However, there was a high level of engagement of families / parents via school governance structures, ie Hellerup student group could include parent representation and reported to the local government committee, which enabled students to have a say in teachers employed at Hellerup. Innovative school designs enabled both the community and the schools to use the facilities eg. Soininen School becomes a residential facility over the summer.

Innovative schools are developing more community engagement and the architecture is reflecting the changes needed for learning / teaching in the 21st Century.

School Plans

A significant innovation of contemporary school planning is the common social space that is the focus and centre of the schools.

This creates a strong sense of school community / identity and vibrancy. It is also efficient planning that minimises circulation, particularly for secondary schools. In Denmark and Finland where meals are provided, this activity occurred adjacent to the central space. Interestingly, most schools had large multi-purpose gymnasiums which were rarely used for school gatherings, as it was considered too formal. It is the common space where school groups gather.

Schools use these central spaces for a range of activities including structured learning, informal learning and socialisation. This model is also being applied to more traditionally planned schools. Fredericia Gymnasium was predominately a single-level pavilion layout linked with internal corridors. The redevelopment will incorporate a three-level common space that will bring together the dispersed school activities into the central space that will become the 'hub' of the school.

The schools I visited could be characterised into different planning types. Generally, the European space standards for general learning areas are not as generous for either secondary or primary schools relative to Tasmanian schools. The general planning philosophy is for very efficient and space use, planning that doesn't compromise movement or efficiency, but creates a sense of opportunity for socialisation for all year grades.

a) *The Arena*

This model has a central space, which is the 'hub' of the school. All other school functions are connected to this space. It creates a strong sense of school focus and has the echoes of a vibrant shopping mall or contemporary office or lobby / workspace. These spaces have large open volumes with multiple levels (up to three-storeys high). They have open balconies, stairs and open mezzanines at various levels. Adjacent to the mezzanines are flexible learning areas that utilise the spaces as break-out areas for small group learning / activity areas as an adjunct to core class activity.

Incorporated into the design is a stage space with provision for lighting control for school assemblies, student performance or community use. The planning philosophy also aligns specialist learning areas, such as performing arts, music and food technology adjacent to this public space to facilitate multi-flexible use.

At the ground floor level these atria are typically adjacent to the main school entry. The entry includes security control and an administration representative as the first point of contact for students / public. Interestingly, the school administration is often planned at an intermediate level near staff and support areas. This invites visitors to 'come into' the school, rather than remaining at the periphery.

Examples of these schools include – Arabia Comprehensive, Aurinkolhati School, Hellerup Skole, Fredericia Gymnasium (under construction), Naerum Gymnasium and Montessori College Oost.



Aurinkolhati School

b) *The Street*

This is the typical Tasmanian model where for reasons of economy and efficiency, the streets have evolved to be external covered ways. The walkways typically link separate buildings. The European solution is to have these spaces as internal areas that provide the socialisation and spill-out spaces, where the learning environment is not limited to classrooms.

This design model has evolved from traditional school planning. The design characteristic is the articulation of linked circulation and public internal space that incorporates a range of spatial experiences.

The design analogy is school as a constructed community and the design of the street is an urban social experience and also links the various school activities.

There were a range of innovative solutions that utilised vertically linked spaces and natural light in tall spaces, with skylights for internal spaces where large floor plates preclude access to natural light. The spaces incorporated stairs, alcoves and semi-private / transition spaces that enable flexible uses for both individual and group learning. Generally, all these spaces have access to data. Planning that utilised circulation space with teaching / learning spaces on one side only enable the building design to incorporate extensive glazing for natural light and often opened out to external spaces that were an adjunct to classrooms (particularly in the primary schools).

The planning of activities along the 'street' used a mix of activities to create a diversity of character, these activities included café / canteen / eating space, art and performance spaces, knowledge areas linking with interactive learning areas, fitness centre and student support moving through to year group class areas. The management philosophy was to enable student access to all areas whilst the school is open.

Examples of these schools include – Vensterscholen Tuinwijk, Vensterscholen Vinkhuizen, Millenium High and High School of the Future.



Vensterscholen Programme Groningen

c) *Mini City*

This model has a range of interconnected buildings and spaces. Often with 'in-between' spaces that have been taken up by the school as the school has expanded.

This planning typology articulates the individual elements of the school functions as discrete architectural elements, with interconnecting circulation spaces. This includes schools that have developed various individual buildings over the life of the school, often with irregular in 'in-between' spaces that have not been planned, but are utilized by the school in interesting ways, innovation out of necessity. These spaces often have irregular geometry that is suitable for break-out spaces for small learning groups.

This paradigm has also been applied to new schools and is particularly relevant for a large school. The design creates a diverse range of buildings in the scale of the neighbourhood context and avoiding institutional design. Within the school planning, particular functions that are curriculum linked are planned as functional groups. This provides a critical spatial mass for architectural treatment and the facilities were planned to form centres within the school, such as music / performing arts, art / design materials. In addition, these centres were also given a specific vocational focus in senior secondary schools.

Examples of the schools include – Vensterscholen Vinkhuizen (which also combined a state and catholic primary school in a common campus), Montessori College Oost, Copenhagen International School and Tuinwisk Vensterscholen.



Oost

d) *Pavilion*

This plan uses the interrelationship of building and landscape to provide a range of learning spaces, inside and out. Typically, these schools were in a semi-urban, suburban context where there was sufficient open space.

Interestingly, the northern European climate did not preclude designs that used external learning spaces, although it was most evident in the vensterschools. Typically, these schools incorporated the use of purpose-designed courtyards that included hard and soft landscaping for both informal and more structured group activity. Extensive use of glazing provided good teacher control and supervision. The vensterschools incorporated the use of public gardens for the use of both the school and the residents. The management of the green space was the responsibility of local government, and included governance structures for the school communities to have a role in development, use and maintenance. It was my observation that developing the interrelationship between learning environment / natural environment and sustainable environment is an emerging design trend that is yet to realise its full potential. It was also interesting to note the different cultural attitudes to student supervision and individual responsibility. The need to build fences and barriers around schools was not evident, and green space was shared with the community.

Examples of these schools include – Vensterscholen Groningen, Hellerup Skole and Aurinkolhati School.



Vensterscholen Vinkhuizen

DETAILS MATTER

Details matter in designing innovative schools. Typically, all the schools were well constructed utilising high quality materials. Reflecting the priority given to the value of the facilities within a context of life cycle costing. External expression of the school architecture was diverse and the range of materials used included:-

- Prefinished metal cladding systems;
- Double glazed curtain walls;
- Off form concrete with high quality finish;
- Glazed decorative brickwork;
- Stainless steel and/or copper cladding;
- Limited use of timber.

Internal finishes were also of a high quality, purpose designed and consistent with the architectural expression.

Examples include:-

- Off form concrete contrasting with warm yellow timber lining at the Hellerup School. The timber lining providing visual relief and also specifically designed for acoustic attenuation;
- Concrete slab floor with in situ colouring contrasting with detailed brickwork and timber roof structure at the Tuinwijk Venster school.
- Feature wall linings were used for dramatic effect such as the blue tile wall at Vinkhuizen or the double storey timber screen/stair in the Danish Design Schole foyer.

Other internal finishes also included polished stone/tile floors, purpose designed acoustic ceiling, individually designed joinery. Home areas incorporated soft furnishings and domestic lighting and integrated display that enabled personalisation by each class group.

In relation to realising the potential of spaces it was my observation that, particular attention was applied to:-

- integration of IT throughout the facilities;
- design of edges for informal small group learning;
- textural quality to provide new and interesting spaces and / or to create emotional response such as the use of waxed timber seats integrated into the public space at the Willenspark Montessori School;
- capacity for more than just classrooms the special planning enable a range of formal and internal activity to occur;
- invention enabled some schools to reconfigure space as the curriculum demands changed. Such as the simple of acoustic material to convert a under used spaces into a recording music studio at Beacon High or Hellerup Skole designing in 'redundancy unresolved areas' for future planning;
- Designing spaces that can accommodate a range of different activities cafeteria = performance space = exhibition gallery = classroom = community space and much more (Aurinkolahti / Fredericia Gymnasium / Oost).

It is important to note that all the key aspects of these schools have not compromised the basic requirements of good quality spaces, such as –

- excellent acoustic design;
- good natural light. It was interesting to note that the percentage of wall/window within classrooms varied significantly from school to school. Other innovations for designing with light included integration of shading controls, discrete overhead / high-level lighting and lighting systems for multifunction use; and
- predominant use of natural ventilation with automated control.

IT'S NOT JUST ARCHITECTURE

Innovation can be incorporated into the design of schools through aspects other than building, but in turn informs design.

Innovation by policy

The Groningen Community Schools are a community resource of which the school is part. The facilities include a wide range of social services, sports facilities and Government services. The centres have an independent management and the facility operates from 6am to 11pm. The schools are designed to function autonomously and to have spaces used out of school hours. Parents are

encouraged to participate. The philosophy is that the relationship between school / community / home is encouraged to be less compartmentalised for better learning outcomes. It is also an intensive use of a significant asset.

Measure It

The education benchmarking within the EU saw Denmark slip in Education ranking and Finland scoring well. As a consequence there has been significant investment in new secondary schools, such as Hellerup, Ega, Fredericia, Orestad. In addition There has been investment through the EU, through the Universities of Helsinki and Copenhagen to research the outcomes of the new schools. Measuring and assessing design is good policy.

Design Process

The European schools have a consultant procurement process that is similar to the Education Department of Tasmania. It fosters a diversity of approach and enables schools to have a dialogue with the design team to enable a focus on the school's vision for innovation. Diversity, within a design framework, is also designing in innovation.

By contrast, some USA schools visited have a highly structured management approach for undertaking the design of schools. Some schools had very limited opportunity to work with the architects. However, once the facility was occupied the approach was for the school community to find the ways and means to tailor the spaces where they need to be developed further, motivated by the desire to deliver the best education outcome possible. This was often facilitated through corporate or individuals funding specific projects, or the schools taking up enterprise opportunities that also aligned with educational outcomes.

RECOMMENDATIONS

The Fellowship has provided a unique opportunity to study a diverse range of schools, which have very similar educational philosophy and pedagogy to Tasmanian schools.

My recommendations are –

- promote exemplar projects to school organisations;
- apply the principles to our practice for new and future projects;
- advocate policy direction within independent schools and government that forms the platform for better educational outcomes through the collaboration of school design, pedagogy, and curriculum development;
- develop design skills within the Tasmanian community by providing professional development through the Royal Australian Institute of Architects and design seminars in association with the University Seminar Facility of Architecture; and
- advocate for research investment so benchmarking can enable design innovation to be measured, evaluated and disseminated.