

# a bibliography of design value

for The Commission for Architecture and the Built Environment

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# 1 ■ introduction

## **the bibliography**

This *bibliography of design value* represents a systematic attempt to collate research that examines the 'value added by good design in five key areas:

- Health
- Education
- Crime (& safety)
- Housing
- Social inclusion (& regeneration)

The bibliography provides a first attempt to bring together knowledge in these key areas of public and private sector interest. It offers a clear evidential base to back arguments that better design adds social, economic and environmental value and is therefore a worthwhile investment.

No claim is made that the bibliography is comprehensive in any of the areas examined. Indeed, in some of the area (particularly crime and housing) it may merely represent the tip of the iceberg. Nevertheless, 135 sources have been brought together mainly from across the English speaking world which together start to make a strong case that better design adds value.

In the main the bibliography reviews existing published sources. Some of the entries, however, represent work in progress and a few represent the outcomes of discussions the authors had with key individuals in the field.

## **the structure**

The bibliography is listed alphabetically by author in its five substantive sections. An introductory page in each section also lists the titles of the publications reviewed for easy reference of the subject matter covered in each section.

Individual entries contain:

- a bibliographic reference
- a brief description of the project aims, objectives and research methods
- an outline of key findings
- where appropriate a comment about the validity of the research
- further information, including where available contact details for the author or funding agency

Additional references are included at the end of each section. These are references that have been identified during the course of the study, which may offer further evidence. The research team has not, however, examined them.

# 2. health

## main references:

1. Keeping Hospitals Alive
  2. A Post-Occupancy Evaluation of Wayfinding in a Pediatric Hospital: Research Findings and Implications for Instruction
  3. Hospital Design and Working Conditions
  4. The Second Low Energy Hospital Study Report
  5. Limiting Violence through Good Design
  6. Building a 2020 Vision: Future Healthcare Environments
  7. Design Quality in PFI Hospitals
  8. 50 Years of Ideas in Health Care Buildings
  9. Design Trends: New Directions for Health Facilities – A Value-driven View
  10. Design Evaluation of Six Primary Care Facilities for the Purpose of Informing
  11. Future Design Decisions
  12. What Good Strategic Design Can Do
  13. Hospital Design: Room for Improvement
  14. Hospital Design, Health & Well-Being
  15. Designing for Health: Architecture, Art and Design at the New South Tees Hospital
  16. Making Space for Consumer Needs in Health Buildings
  17. Architect and Associate at RTKL Health Ltd
  18. Health Facilities Note 01: Design for Patient-Focused Care
  19. Environments for Quality Care: Health Buildings in the Community
  20. A Better Building's Benefits
  21. Good Design = Healthy Living
  22. Alzheimer's Special Care Units
  23. An Investigation to Determine whether the Built Environment Affects Patients' Medical Outcomes
  24. Patient-Focused Architecture for Health Care
  25. The Exeter Evaluation
  26. Case Study: A Study of Greenwich District Hospital, Royal Devon and Exeter Hospital, Wonford and Pinderfields Hospital, Wakefield
  27. A Study of the Effects of the Visual and Performing Arts in Healthcare 1999-2002
  28. Technical Note No7: How to Achieve Design Quality in PFI Projects
  29. View Through a Window May Influence Recovery From Surgery
  30. Effects of Interior Design on Wellness: Theory and Recent Scientific Research
  31. How Design Impacts Wellness
  32. Stress Recovery During Exposure to Natural and Urban Environments
  33. Post-Occupancy Evaluation of a General Hospital
-

Bartlett School of Architecture, DHSS, (1986)

### **Keeping Hospitals Alive**

Electrical Design, September 1986, pp33-35

#### ***Aims & objectives; research method:***

Research funded by DHSS: to evaluate the effectiveness (through measurement) of ward daylighting in Nucleus wards ('Nucleus' is the template of design data to simplify the design, construction and cost; 100 Nucleus projects completed, 1975-1986).

#### ***Key findings:***

- The greater the total glazed area in a ward, the greater the daylight factor (5% daylight factor appears well-lit, 2% daylight factor only partially acceptable)
- Occupants need to be able to identify the daylight as coming from the skylights; constrained rooflight openings an issue
- Direction of view out of windows important; open views preferred
- Great contrast between lighting levels of the ward and the nurses station an issue; very uncomfortable for the occupant to move between the spaces, and constrains observation of the wards by staff

#### ***Comment:***

#### ***Further information:***

Kevin Mansfield, The Bartlett, contact details tel: 020 7679 5907  
Copy of article held.

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Brown B, Wright H & Brown C, 1997

### **A Post-Occupancy Evaluation of Wayfinding in a Pediatric Hospital: Research Findings and Implications for Instruction**

Journal of Architectural and Planning Research, Vol 14, no 1, Spring 1997

#### ***Aims & objectives; research method:***

Multiple research methods were undertaken to assess wayfinding and highlight areas for improvement. Methods included: interviews, logs, photographed traces, behaviour observation and cognitive maps.

#### ***Key findings:***

- 65% of staff said that visitor wayfinding requests disrupt their work; particular staff were interrupted hundreds of times a week for directions to the pediatric unit
- 34% of visitors reported that signs were confusing
- Specific wayfinding complaints result in a marked sense of feeling lost
- Simple floor layouts provide easiest wayfinding; inpatient and outpatient areas should be visually distinguishable

#### ***Comment:***

The research does not seek to quantify the impact of wayfinding issues. The data is particular to one hospital, and establishes guidelines based upon the issues identified.

#### ***Further information:***

Copy of article held.

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Carver A, 1990

### **Hospital Design and Working Conditions**

In Moran R et al (Eds), **Building for People in Hospitals: Workers and Consumers**, Ireland, European Foundation for the Improvement of Living and Working Conditions, pp85-92

#### ***Aims & objectives; research method:***

An overview on the influence of the physical environment on working conditions. The paper outlines a number of practical examples with an emphasis on how these can be anticipated by the hospital design team at the design stage.

#### ***Key findings:***

The overview of research identifies:

- Poorly designed, overcrowded patient care areas were found to be the main contributing factors to the nurses' feelings of frustration, leading to increased medication errors, staff dissatisfaction and negative attitudes often taken out on patients (study of unsafe working practices, 1983)
- Time-distance studies show that horizontally planned facilities have a distinct advantage over vertically planned facilities (time-distance basis).
- Example: poorly considered strategic/facilities design can lead to increased employee injuries, increased sick leave due to injury, delays in patient movement, decreased motivation, increased risk of hospital liability.

#### ***Comment:***

Discussion of the negative impacts of design (problems), evidence primarily anecdotal. The importance of the briefing process to avoid problems (and how problems can be overcome at the design stage) is not addressed.

#### ***Further information:***

Contact chapter author via European Foundation for the Improvement of Living and Working Conditions, Loughlinstown House, Shankill, Co. Dublin, Ireland  
Copy of chapter held.

Cundall Johnston & Partners, Powell Moya & Partners, W.A. Fairhurst & Partners & Summers & Partners, 1987

### **The Second Low Energy Hospital Study Report**

London, DHSS

#### ***Aims & objectives; research method:***

The basis of the study was to identify potential energy- and cost-saving measures in the design of a 'Nucleus' hospital ('Nucleus' is the template of design data to simplify the design, construction and cost). The functional content of the proposed Ashington District General Hospital (adapted to a Neutral Nucleus form) was adopted as the datum for all energy and cost considerations.

#### ***Key findings:***

- Adoption of the energy and site strategy measures specified would potentially lead to a reduction in delivered energy consumption by 66.75% from the datum (ie that of the Neutral 'Nucleus')
- The total additional capital cost of all of these measures over that of the Neutral 'Nucleus' represents an increase of only 8.42%

**Comment:**

Quantified empirical data (energy requirements and cost implications) were established (through calculation) for the 'Neutral' model; however individual hospitals will vary in form, content and function, requiring individual energy and cost datums, rendering the identified data of general use only.

**Further information:**

Copy of index and executive summary held.

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Francis S, (forthcoming 2001)

**Limiting Violence through Good Design  
in Violence in Healthcare (2<sup>nd</sup> edition)**

Oxford, Oxford University Press

**Aims & objectives; research method:**

A chapter in a forthcoming book which draws together (from published literature and built projects) current ideas on the contribution of design to eradicating violent behaviour in hospitals. Both passive design for calming environments and safety/security measures are addressed.

**Key findings:**

- A&E :incidents of violence higher in urban areas
- Conflicting brief requirements: privacy and protection
- Concludes by establishing principles for design of healthcare buildings, including:
  - Avoid disorienting places, and places of concealment and provide escape routes (staff member trapped and murdered by a patient in one example)
  - Personal space and territoriality of different spaces important
  - Comfortable ambience (views, lighting, heating, noise levels) to distract the patients and put them at ease

**Comment:**

Review on crime and design (generally and with regard to hospitals). Emphasis on establishing guidelines and qualitative design measures. Anecdotal assessment of projects to illustrate design issues.

**Further information:**

Susan Francis, MARU (South Bank University) ([maru@sbu.ac.uk](mailto:maru@sbu.ac.uk), or [francis@sbu.ac.uk](mailto:francis@sbu.ac.uk))

Copy of chapter held. Note: not for reproduction or publication without permission of Susan Francis.

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Francis S & Glanville R, (forthcoming 2001)

**Building a 2020 Vision: Future Healthcare Environments**

London, Nuffield trust/RIBA Future Studies

**Aims & objectives; research method:**

One year study, jointly funded by The Nuffield Trust and RIBA Future Studies Unit, that has scanned and synthesised key issues and trends from policy, research and practice.

**Key findings:**

- Research on health buildings: a recent research study (MARU – unpublished) piloted the development and application of a framework on design quality in relation to selected PFI hospitals; ideas about care planning not innovative, IT strategies not well developed, designs demonstrated neither depth of thought nor innovation in space and form

**Comment:**

The study seeks to draw conclusions from the synthesis of existing data/theory.

**Further information:**

Susan Francis ([maru@sbu.ac.uk](mailto:maru@sbu.ac.uk) or [francis@sbu.ac.uk](mailto:francis@sbu.ac.uk))

Excerpt of document held. Note: not for publication/reproduction without permission of Susan Francis.

Francis S, Glanville R & Causley N, (unpublished, 2000)

**Design Quality in PFI Hospitals**

Study commissioned by NHS Estates.

**Aims & objectives; research method:**

A framework of design quality developed; six first-wave PFI hospital schemes evaluated to establish whether the factors of design quality defined in the framework by function, sustainability and perception were addressed, and how they were addressed in relation to site, building concept and fabric.

**Key findings:**

Strong emphasis on:

- strategic planning of the estate for future development
- organisation of access & movement within building for both efficiency and legibility
- planning relationships for efficiency and convenience
- integration of services and structure
- safety, security of site and building
- robust, durable & easy to clean materials

Issues less well articulated:

- selection of location is largely pragmatic and 'stand alone'
- lack of reference to health need & services profile
- social and civic role of the hospital does not emerge
- technology as an agent of change is not apparent
- construction emphasises issues of process rather than concept
- standards are largely based on existing documents, modified by 'affordability criteria'

**Comment:**

Detailed study identifying the drivers, problems and current emphasis in the development of PFI hospitals. Areas for further study identified. +9 The design quality framework established is in line with current CIC Design Quality Indicators programme, and the NHS Estates' toolkit for evaluating design quality (Tony Jones, NHS Estates).

**Further information:**

Susan Francis, MARU (South Bank University) ([maru@sbu.ac.uk](mailto:maru@sbu.ac.uk), or [francis@sbu.ac.uk](mailto:francis@sbu.ac.uk))

Copy of executive summary and conclusions held. Note: not for use, reproduction or publication without permission of Susan Francis, as information confidential.



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Francis S, Glanville R, Noble A & Scher P., 1999  
**50 Years of Ideas in Health Care Buildings**  
London, Nuffield Trust

***Aims & objectives; research method:***

Tracing the links between the ideologies and development of health care buildings, describing the interplay to date of ideas, theory and practice.

***Key findings:***

- The 1960's-70's was a period of ideas and initiatives, prompting debate about the nature of health care design
- 1980's-90's: financial incentives and competition; 'design to reduce operating costs'
- Current ideas: the 'therapeutic environment' is one that contributes to the healing process: theory/research is by three different groups: scientists psychologists and designers

***Comment:***

Primarily a review of literature and practice.

***Further information:***

Susan Francis MARU (South Bank University) ([maru@sbu.ac.uk](mailto:maru@sbu.ac.uk), or [francis@sbu.ac.uk](mailto:francis@sbu.ac.uk))  
Excerpt of book held.

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Jonassen J, 1995

**Design Trends: New Directions for Health Facilities – A Value-driven View**  
Journal of Healthcare Design, Volume 7, 1995, pp85-94

***Aims & objectives; research method:***

The paper discusses different models to achieving the highest value and effectiveness in a healthcare system, through organisational, cultural, payment-system, physical environment and facility-type changes essential to a new paradigm.

***Key findings:***

- Figures indicate that nearly 40% of all health dollars are spent on hospitals – over twice what is spent on doctors.
- Factors identified as having an impact upon effectiveness are: noise, light, air quality, nature, materials, aesthetic form.

***Comment:***

Discussion of the issues with reference to some scientific studies; impact or 'value' not quantified. Detailed design guidelines at the detailed level for noise, light and colour; more strategic design considerations are not covered.

***Further information:***

Copy of paper held.

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Kantrowitz M and Associates, 1993

### **Design Evaluation of Six Primary Care Facilities for the Purpose of Informing Future Design Decisions**

Martinez, CA., The Centre for Health Design, Inc.

***Aims & objectives; research method:***

Identification of design issues ('trends' – the current culture of healthcare provision), and case study evaluation of six facilities, to establish their response to the different trends.

***Key findings:***

- Evaluation of the case studies: physical and spatial emphasis.
- The case studies illustrated the move towards a less-clinical, more welcoming environment.
- There is a shift towards smaller-scale facilities; some examples of decentralised functions to enhance the concept of 'individual care'.
- Social spaces introduced, including patient education rooms, community rooms, staff interaction rooms.
- Outcomes: staff feel that good design helps them do their job better, increasing job satisfaction; patients and visitors feel valued when the facility design allows them dignity, and have more confidence in the standard of care.

***Comment:***

Qualitative discussion, no quantified data. Useful literature summary.

***Further information:***

Min Kantrowitz & Associates, Inc., P.O Box 792, Albuquerque, NM 87103  
Excerpt of document held.

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Komiske B, 1998

### **What Good Strategic Design Can Do**

Aesclepius, Summer-Fall issue, 1998

***Aims & objectives; research method:***

Article presenting key statistics measuring the value of design as a strategic investment, from the experience of involvement in two new children's hospitals in the USA. Bruce Komiske is Executive Director of the Children's Hospital Foundation at Westchester Medical Center, N.Y.

***Key findings:***

- Market share increased 20.5% in 3 years
- Outpatient/emergency visits increased 25% the first year
- Patient satisfaction increased 5.5% after opening
- Monthly volunteers grew from 40 to 400
- House staff applicants doubled in one year
- Annual giving to the hospital increased from \$125,000 to \$1.5million
- More print columns were devoted to the hospital opening than any other event in the state's history

***Comment:***

Presentation of quantified data attributed to design, although other factors may be involved.

**Further information:**

[www.healthdesign.org/administrator](http://www.healthdesign.org/administrator)

Excerpt of article held

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Lawson BR & Phiri M, 2000

**Hospital Design: Room for Improvement**

Health Service Journal (HSJ), 20 January 2000, pp24-27

**Aims & objectives; research method:**

3-year project (ongoing) funded by NHS Estates. The study is comparing patient 'outcomes' treated in a refurbished/new hospital building compared with those treated in 'conventional' wards, through questionnaires and evaluation of records.

**Key findings:**

- Mental health patients in the new unit spent less time in intensive care (average of 3.9 days compared with 13.1 days), and were more likely to be judged to have made good progress by staff (79% compared to 60%)
- The level of verbal outbursts and of threatening behaviour was significantly reduced in the new ward
- Orthopaedic patients in the refurbished ward required less analgesic medication than the patients in the conventional ward

**Comment:**

At this stage, the research has not yet identified/quantified specific design variables, or established the cost effectiveness of design measures (subject of ongoing research).

**Further information:**

Ongoing research: **The Impact of Healthcare Architecture on Patient Health Outcomes.**

Professor Bryan Lawson ([b.lawson@sheffield.ac.uk](mailto:b.lawson@sheffield.ac.uk))

Copy of article held

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Leather P, 2000

**Hospital Design, Health & Well-Being**

Nottingham, Institute of Work Health & Organisations

**Aims & objectives; research method:**

To identify aspects of design which contribute towards the creation of a therapeutic environment for patients. The work compared three environments pre and post redevelopment. The schemes included a brighter cardiology ward with better views out and clustering of beds in smaller groups; enhanced artificial lighting and decoration in a waiting area with better seating; and a coronary angiography daycase unit with better beds and patient facilities, larger windows and a visitors area.

**Key findings:**

- The new ward was seen as more pleasant, relaxing and welcoming with a corresponding improvement in patient mood (less stress - lower pulse and mean arterial blood pressure readings); shorter post-operative stays (8 days down from 11 days); and lower drugs intake (DF118 and Tamezepam)

- The waiting areas received similar more positive appraisals as comfortable, friendly and personal and better attention capacity from occupants during stroop tests.
- The daycase unit again benefited from positive appraisals, less stress in patients and a higher general arousal.
- The researchers concluded that the design of hospitals is an important factor in promoting patient well-being and needs far greater specification.

**Comment:**

Research based on only three spaces, but clear beneficial trends in patient health recorded and associated efficiencies in medical resourcing.

**Further information:**

Phil Leather, University of Nottingham, [phil.leather@nottingham.ac.uk](mailto:phil.leather@nottingham.ac.uk)  
Summary of Findings Held

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Macnaughton J, White M & Purves G

**Designing for Health: Architecture, Art and Design at the New South Tees Hospital**

Application to NHS Estates

**Aims & objectives; research method:**

The research project will evaluate the extent to which a planned approach to architecture, art and design in a major tertiary care NHS Hospital has a beneficial impact on patients' and visitors' experience of the hospital and on patient and staff well-being. The project will assess whether any perceived benefit represents good value for money. Proposed project duration 36 months.

**Key findings:**

Research proposal – under consideration, 2001

**Comment:**

**Further information:**

Dr Jane Macnaughton, CAHHM, University of Durham ([jane.macnaughton@durham.ac.uk](mailto:jane.macnaughton@durham.ac.uk))  
Copy of funding application held; information confidential due to current status of application and not to be released, reproduced or published without express consent of Dr Jane Macnaughton

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Marmot A, 1990

**Making Space for Consumer Needs in Health Buildings**

In Moran R et al (Eds), **Building for people in hospitals: workers and consumers**, Ireland, European Foundation for the Improvement of Living and Working Conditions, pp25-30

**Aims & objectives; research method:**

This paper discusses effective and efficient use of hospital space, and the contribution that therapeutic environments can make. The evaluation of the use of space (and its potential) in the hospital stock of a District of a quarter of a million people is used to illustrate the issues.

**Key findings:**

- A detailed database of the hospital stock and its use status was established enabling an evaluation of potential efficiencies.
- Two major costs are incurred at the time of construction: creating the building shell and the other are the building services that go within it (the ratio of these costs in hospitals are roughly

one to one). In addition to these basic costs, there is additional expenditure on 'scenery' (furniture, fittings, things on the wall, lights).

- The amount of money spent on the 'scenery' increases over time: over the life of a building, the shell will be built only once, the services will be replaced at 15-20 year intervals, whilst the 'scenery' will be replaced many times. The 'scenery' expenditure becomes more significant than both the services and the shell.
- Studies show that the 'scenery' is the most significant perceptual element of the environment.
- These issues are not understood in the NHS; 'scenery' budgets frequently cut.

**Comment:**

Useful discussion of the scale of NHS estates/hospital stock and the attendant statistics: population, costs (capital, maintenance, staff) etc.

**Further information:**

Alexi Marmot, Alexi Marmot Associates, mail@aleximarmot.com  
Copy of chapter held.

Mazuch R, interview 28<sup>th</sup> February 2001

**Architect and Associate at RTKL Health Ltd**, with extensive experience of healthcare design and knowledge of current theory and research.

**Aims & objectives; research method:**

Mazuch identifies physiological responses to the physical environment and links these to healing processes and recovery times.

**Key findings:**

- "A well designed environment causes the body to produce more endorphins – a chemical that increases pain threshold, reduces the need for anaesthesia and boosts recovery" (BD, 31.03.2000, p5)
- Physiological responses: colour, light and temperature can enhance the release of serotonin in the body, dilating the cardio-vascular system and enhancing productivity and healing.
- Smell is also important, it can also promote serotonin, reducing the need for anaesthesia, but also has practical applications in the workplace: a commercial HQ in Tokyo actually disperse smells via the air conditioning system, carefully designed and varied to respond to the circadian rhythms, promoting wellbeing and productivity.
- An affinity with the outside world is important; problems occur when the patient is more remote from the natural environment. A technological solution that has been used is a 'biolight', a screen that has diurnal variance in light levels and quality, to mimic the change of light from day to night.
- Terminology is an issue: 'waiting room' and other terms are clinical and predispose the perception that the experience will be long-drawn out and uncomfortable. A response to this is to name rooms and areas after flowers and natural elements, e.g. 'the willows'.
- Way-finding is important, violence to staff is an outcome of confusion and frustration.
- The types of research are very disparate; there is a lack of an overall synthesis enabling comprehensive design guidelines to be commonly used.

**Comment:**

**Further information:**

Richard Mazuch ([RMazuch@RTKL.com](mailto:RMazuch@RTKL.com)), 020 7306 0404

Copy of interview notes and attached bibliographies held; see also article: **How architecture can make you better**, Building Design, March 31 2000, p5, copy of article held.

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NHS Estates, 1993

### **Health Facilities Note 01: Design for Patient-Focused Care**

London, HMSO

#### ***Aims & objectives; research method:***

The document compares cost outcomes in terms of capital cost, annual cost and life-cycle cost of both a conventional hospital and a patient-focused hospital, through comparison of models. Patient-focused care differs in operational structure from traditional care, including strategic design, resource management and function issues: services are localised (decentralised), the scale of units, staff roles and team relationships are different.

#### ***Key findings:***

- In previous reports a 40% increase in productive staff time was hypothesised, and claims were made that staff and patient satisfaction would increase.
- The 'like-for-like' comparisons suggest that the patient-focused hospital model requires a larger area overall than the conventional model.
- Energy consumption in a patient-focused hospital with localised services would be substantially higher than the conventional model.
- Comparisons suggest that 10% reductions in staffing costs are possible with patient-focused care.
- Capital Costs: patient-focused hospitals are likely to cost more in initial outlay than the conventional hospital.
- Annual costs and life-cycle costs: there is a closer correlation between the range of annual (revenue) cost comparisons for patient-focused and conventional care.
- If staff savings are offset against increased capital costs then potentially patient-focused care can be provided without an overall cost penalty.

#### ***Comment:***

The document includes a good discussion of the background and principles behind patient-focused care including brief summaries of the findings of key reports from the USA. The cost comparison models do not seem to take into account the indirect impact that can accrue from patient focused care (the improvements in morale, effectiveness and recovery times). The report identifies some functional omissions/incorrect assumptions in the NHSE patient-focused care model, perhaps questioning the validity of the findings.

#### ***Further information:***

NHS Estates, 1 Trevelyan Square, Boar Lane, Leeds, LS1 6AE  
Excerpt of document held

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NHS Estates, 1994

### **Environments for Quality Care: Health Buildings in the Community**

London, HMSO

#### ***Aims & objectives; research method:***

Primarily design guidance, identifying new strategies for providing local health services. Discussion of broad themes in designing for healthcare, illustrated in a section of case studies with anecdotal/qualitative evaluations.

**Key findings:**

- Checklist to assess the quality of the environment included.
- Patient-centred design principles identified and illustrated with quotes from users.

**Comment:**

Benefit/outcomes not empirically measured/justified.

**Further information:**

NHS Estates, 1 Trevelyan Square, Boar Lane, Leeds, LS1 6AE  
Excerpt of document held.

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Parker D, 1991

**A Better Building's Benefits**

Modern Healthcare, December 9, 1991

**Aims & objectives; research method:**

Parker is a senior partner at Anshen+Allen Architects in San Francisco; the content of the excerpt is based upon his experience in the design of hospital buildings and the cost benefits that can accrue.

**Key findings:**

- Good design can produce cost savings in terms of reducing staff turnover and optimising the efficient use of staff resources (the number of beds per nurse)
- Reducing staff turnover (and the costs inherent with retraining and recruiting), and reducing staff requirements through efficient design, alongside the savings gained through reduced patient stays, could amount to savings of \$10.18 million per year

**Comment:**

The excerpt does not provide the background data to substantiate the assertions of quantifying reductions in staff turnover and patient stays. As this article is ten years old, potentially savings would be of a greater magnitude today.

**Further information:**

[www.healthdesign.org/healtharch](http://www.healthdesign.org/healtharch)

Copy of an excerpt from the article held

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Purves G, (forthcoming)

**Good Design = Healthy Living**

PhD, University of Durham

**Aims & objectives; research method:**

Drawing from the experience of designing 30 general practice surgeries, the work seeks to use empirically-based science research and the qualitative methodologies of social science research

**Key findings:**

None as yet

**Comment:**

**Further information:**

Geoffrey Purves CAHHM – Centre for Arts and Humanities in Health and medicine, Durham University ([geoff-purves@geoffreypurves.fsnet.co.uk](mailto:geoff-purves@geoffreypurves.fsnet.co.uk))  
Copy of notes, bibliography and contacts held.

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Regnier V, 1998

**Alzheimer's Special Care Units**

Places, Vol 12, no 1, Fall 1998, pp 38-41

**Aims & objectives; research methods:**

Award for research on the design of a special care unit, with jurors' comments. Via interviews and observation of the patients in the unit, the researcher assessed the success of the various aspects of the design in improving the patients' quality of life.

**Key findings:**

The final data analysis demonstrated that environmental factors have clear health and quality of life effects, independent of other quality care characteristics, which in effect translate into specific design interventions.

- Unobtrusive and secure exits reduce paranoid delusions
- Increased bedroom privacy and 'away spaces' in common areas reduce verbal agitation among residents
- A manageable number and variety of common spaces reduces physical agitation and confusion
- Sensory environments where sights and sounds are controlled yet understandable by residents, reduce misidentification syndrome of self and others
- Supportiveness for resident autonomy through a safe, prosthetic environment reduced misidentification syndrome
- Aggression among people with Alzheimers is reduced with the development of an environmental behaviour model, which includes 8 concepts: exit control, wandering paths, individual spaces, common spaces, outdoor freedom, residential character, autonomy support, sensory comprehension.

**Comment:**

This project was able to determine which design features and combination of features actually improved the quality of life and health outcomes for residents of specialised Alzheimer's units. This unique achievement in the field potentially impacts not only on millions of dollars of construction investment but also on the regulations and approaches to care for this sector of the population.

**Further information:**

Copy of article held.

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Rubin HR & Owens AJ, 1996

**An Investigation to Determine whether the Built Environment Affects Patients' Medical Outcomes**

Martinez, California: The Center for Health Design Inc.



***Aims & objectives; research method:***

Review and critique of existing literature, with summary table of the effects of the healthcare environment on patient outcomes. A model was established ('the environment-outcome interface'), and a research agenda for ongoing study proposed, for subsequent consultation.

***Key findings:***

- Detailed findings of individual studies listed in summary table; 49 entries listed.

The Environment-Outcome Interface:

- The designed environment can help or hinder caregiver actions.
- The designed environment may interact with patient characteristics.
- The designed environment can directly reinforce or damage health, affecting illness etiology and severity.

***Comment:***

Very comprehensive literature review table summarising aims, methods and key findings, with comments on study validity.

***Further information:***

Haya Rubin at The Johns Hopkins University, Baltimore, USA, [h Rubin@welchlink.welch.jhu.edu](mailto:h Rubin@welchlink.welch.jhu.edu)  
Copy of document held

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Scher P, 1996

**Patient-Focused Architecture for Health Care**

Manchester, Faculty of art and Design, Manchester Metropolitan University

***Aims & objectives; research method:***

A qualitative discussion of some of the issues illustrated with 3 examples of patient-focused architecture.

***Key findings:***

- Criteria established for patient-focused healthcare design.

***Comment:***

Criteria established through qualitative discussion of theory, research and anecdotal evidence, benefits not measured or quantified.

***Further information:***

Peter Scher at ARTS for HEALTH, Faculty of Art and Design, The Manchester Metropolitan University, All Saints, Oxford Road, Manchester, M15 6BH  
Excerpt of document held.

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Scher P & Senior P, 1999

**The Exeter Evaluation**

Manchester, Arts for Health

***Aims & objectives; research method:***

The study (commissioned by the Royal Devon and Exeter Healthcare NHS Trust and funded by the Arts Council of England) is an evaluation of the different elements of the visual/physical environment through questionnaires/interviews with staff, patients and visitors. The subject of the

study is the Exeter Health Care Arts (EHCA) Project. The study is quantified in terms of the % of the sample that evaluated the element as positive/beneficial or negative etc. Directed questions (for example: regarding morale) are also used.

**Key findings:**

- The display of visual arts in the hospital is perceived to have a positive effect on the morale of patients and staff.
- Users greatly appreciate art works with 'local' content.
- Awareness of EHCA could be improved amongst users, including clinical staff.
- EHCA: capital and revenue elements are equivalent to 0.1% and 0.025% respectively of the Trust's spending.
- Over a third of the front-line clinical staff (42.6%) considered that the arts have a positive effect on the healing process and about a quarter (23.6%) considered that the arts produced therapeutic benefits. 89.1% considered that the quality of the environment where healthcare is delivered does have observable effects on users.

**Comment:**

The study is concerned with artworks within the hospital; as the evaluation is based upon qualitative (perceptual) responses from the buildings' users, it is difficult to ascribe quantifiable benefit/outcomes (including direct and indirect economic impact and therapeutic benefit).

**Further information:**

Peter Scher or Peter Senior at ARTS for HEALTH, Faculty of Art and Design, The Manchester Metropolitan University, All Saints, Oxford Road, Manchester, M15 6BH  
Excerpt (summary, introduction, evaluation, conclusions) of the document held.

Space Syntax, 2000

**Case Study: A Study of Greenwich District Hospital, Royal Devon and Exeter Hospital, Wnford and Pinderfields Hospital, Wakefield**  
London, UCL

**Aims & objectives; research method:**

Crime and security study undertaken in 1992 for NHS Estates involving computer analysis of building layout and locations of crime incidents. Techniques were developed for identifying likely crime 'spots' and tackling existing problems using layout.

**Key findings:**

- Spatial design and patterns of movement/activity strongly related to location of reported incidents
- Spatial design important policy tool in the fight against crime

**Comment:**

Empirical data, and material findings (statistics of 'before' and 'after') not available.

**Further information:**

Tim Stonor, Managing Director, Space Syntax  
Copy of website excerpt held; see also [www.spacesyntax.com/hospitals/hospitals](http://www.spacesyntax.com/hospitals/hospitals)  
Outcome of study: **Nucleus Study Pack, Vol 1: Security**, for the Department of Health

Staricoff RL & Duncan J (forthcoming phase 1 research report, 2001)

## **A Study of the Effects of the Visual and Performing Arts in Healthcare 1999-2002**

Chelsea and Westminster Hospital Arts and The King's Fund

### ***Aims & objectives; research method:***

An investigation of the levels of awareness, attraction and enjoyment of the visual and performing arts, as well as changes in mood, effect on stress and degree of appreciation of the role of the arts in healthcare. An evaluation form with scores for questions in a pre-established scale provides the basis for a quantitative and statistical analysis; physiological responses are also measured.

### ***Key findings:***

- Preliminary findings showed that in general there was significant differences in scores regarding the performances; it appears that staff tended to rate performances lower than patients and visitors; this can partly be attributed to differences in the age and sex distributions of the three populations (staff, patients and visitors).
- Regarding responses to the overall environment; all three populations (staff, visitors, patients) rated effects upon mood, stress levels and the pleasantness of the environment, at a similar level.
- Performances appeared to be more effective than visual arts in helping people to take their minds off their worries.

### ***Comment:***

The preliminary findings (above) have since been supplemented and comprehensively analysed (phase 1 of the study now complete); interim findings will shortly be published in booklet form or on the Internet. The whole study is due to be completed by June 2002.

### ***Further information:***

Further information to be available shortly, for further details contact Dr Rosalia Lelchuk Staricoff, Director, Research Project, Chelsea and Westminster Hospital Arts  
([research.project@chelwest.nhs.uk](mailto:research.project@chelwest.nhs.uk))

Copy of research proposal and interim report held.

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Treasury Taskforce, 2000

## **Technical Note No7: How to Achieve Design Quality in PFI Projects**

London, HMSO

### ***Aims & objectives; research method:***

Primarily a practice note addressing process and procurement issues and the relationship with design quality. The note covers all types of PFI project (health, education, infrastructure etc), and illustrates key points with case study insets.

### ***Key findings:***

- Case study inset: Central Middlesex Hospital Ambulatory Care and Diagnostic Centre (ACAD)  
– “This project includes the provision of improved-quality elective care at significantly lower case costs (an estimated 25% reduction on previous in-patient costs)”.

### ***Comment:***

### ***Further information:***

[www.treasury-projects-taskforce.gov.uk](http://www.treasury-projects-taskforce.gov.uk) & [www.ogc.gov.uk](http://www.ogc.gov.uk)

Excerpt of document held

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Ulrich R, 1984

**View Through a Window May Influence Recovery From Surgery**

Science, Vol 224, 27 April 1984, pp420-421

***Aims & objectives; research method:***

Records (between 1972 – 1981) on recovery of patients in a Pennsylvania hospital were examined to determine whether assignment to a room with a natural setting outside the window might have restorative influences.

***Key findings:***

- 23 surgical patients with windows onto natural settings had shorter post-operative stays in hospital, received fewer negative evaluative comments in nurses' notes and took fewer potent analgesics than 23 matched patients facing a brick building wall.

***Comment:***

The findings are clear, but potentially limited; benefit identified of a natural view over a monotonous one, although views through windows onto more vibrant urban scenes not assessed, therefore the precise elements conducive to benefit not defined.

***Further information:***

Roger Ulrich, College of Architecture, Texas A & M University, College Station, Texas 77843-3137.

Copy of article held

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Ulrich R, 1991

**Effects of Interior Design on Wellness: Theory and Recent Scientific Research**

Journal of Health Care Interior Design: 3, pp97-109

***Aims & objectives; research method:***

The article seeks to link 'indirectly' relevant research and theory (health psychology, behavioural medicine etc) to issues in health facilities design, and integrate it with new findings and theory from health design research. The concepts of stress and supportive design are discussed, and examples of design strategies that promote wellness are outlined. The theory serves as an organising framework for discussing findings obtained from scientific research.

***Key findings:***

- 'Stress' as a concept is the fundamental root of the theory; 'supportive design' hinges on ameliorating/avoiding/coping with stress as an outcome of the physical/social environment.
- Stress is a well-established concept in health-related fields; well over 100 studies have shown that stress is linked with psychological, physiological and behavioural dimensions of wellness.
- Economic implications: supportive design can enable healthcare savings (not quantified in the paper)
- 3 Key factors in the theory of supportive design: sense of control (including privacy, way-finding, noise etc); social support (frequent/prolonged contact with family and friends); positive distractions.

- Much existing research linking these 3 factors to stress and wellness, but little research making the further link to the physical environment and design variables.

**Comment:**

The article bridges two different spheres of research, drawing together many examples of existing literature. Design suggestions (some fundamental/structural, some more 'cosmetic') are made throughout the text. The piece concludes with the 3 key factors, but fails to draw together the comprehensive suggestions. A number of the research examples quoted are quantified with empirical data.

**Further information:**

Roger Ulrich, College of Architecture, Texas A & M University, College Station, Texas 77843-3137.

Copy of article held; see also book chapter for further detail on some of the analysis quoted (copy held): Ulrich R, 1990 **Effects of interior design on wellness: theory and recent scientific research**, Third Symposium on Healthcare design, San Francisco, CA, 1990; in Marberry S.O. (Ed), 1995), **Innovations in Healthcare Design**, New York, Von Nostrand Reinhold, pp. 88-104

Ulrich R, 1992

**How Design Impacts Wellness**

Healthcare Forum Journal 24, September/October 1992

**Aims & objectives; research method:**

Article presenting the theory of 'supportive design' to produce stress, illustrated with reference to scientific research studies.

**Key findings:**

- "Research has linked poor design to anxiety, delirium, elevated blood pressure, increased pain medication, and longer hospital stays following surgery. Conversely, research has shown that good design can reduce stress and anxiety, lower blood pressure, improve postoperative courses, reduce the need for pain medication, and shorten hospital stays."
- Acutely stressed patients exposed to 'serene' pictures have lower blood pressure than those exposed to either 'exciting' pictures, or no pictures.
- Myocardial infarction patients with high social support have more favourable long-term survival rates than those lacking such support.
- Sensory deprivation stemming from lack of windows on intensive-care units is associated with high levels of anxiety and depression, and with high rates of delirium and temporary psychosis.

The advantages of 'supportive design':

- Stress reduction: patients, staff, visitors.
- High levels of patient satisfaction impacts upon facility marketing and business considerations.
- Attractive facility to prospective employees; reduces staff turnover.
- Lower patient care costs: reduction in analgesic consumption; shorter hospitals stays; shorter costly acute-care stays.
- Costs: supportive design costs no more than poorly configured facilities; facility design and construction costs are relatively small compared to staff expenses, facility operation etc.

**Comment:**

Concise presentation of the theory; some direct (therapeutic and economic) benefits are discussed (but not quantified). Emphasis on the level of patient satisfaction perhaps reflects the market-oriented system of healthcare in the US.

**Further information:**

Roger Ulrich, College of Architecture, Texas A & M University, College Station, Texas 77843-3137.

Copy of article held; see also book chapter for further detail on some of the analysis quoted (copy held): Ulrich R, 1990 **Effects of interior design on wellness: theory and recent scientific research**, Third Symposium on Healthcare design, San Francisco, CA, 1990; in Marberry S.O. (Ed), 1995), **Innovations in Healthcare Design**, New York, Von Nostrand Reinhold, pp. 88-104

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Ulrich R, Simons R, Losito B, Fiorito E, Miles M & Zelson M, 1991

**Stress Recovery During Exposure to Natural and Urban Environments**

Journal of Environmental Psychology (1991) 11, pp201-230

**Aims & objectives; research method:**

The aim of the study was to investigate the impact of different sorts of environments (natural and urban settings) upon physiological responses, in particular the effect of reducing stress. 120 subjects watched a stressful film, and were then exposed to videos of different environments, and physiological assessments were undertaken.

**Key findings:**

- Recovery from stress was quicker and more complete when subjects were exposed to natural rather than urban environments
- Responses to nature include a positively-toned emotional state, positive physiological activity and sustained attention/intake.

**Comment:**

The investigation was conducted in almost 'laboratory' conditions, and the results transposed to reflect physical environments in reality, perhaps omitting complex and discrete factors present in experiencing 'real' environments.

**Further information:**

Roger Ulrich, College of Architecture, Texas A & M University, College Station, Texas 77843-3137.

Copy of document held.

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Van Wagenberg AF, 1990

**Post-Occupancy Evaluation of a General Hospital**

In Moran R et al (Eds), **Building for People in Hospitals: Workers and Consumers**, Ireland, European Foundation for the Improvement of Living and Working Conditions, pp155-171

**Aims & objectives; research method:**

The chapter describes models for post-occupancy evaluation, and comparisons are made with models and methods used by others. A post-occupancy evaluation (POE) is the measurement of the functioning of a building in use against the goals in the formal programme as well as against the goals of the architect and other specialists.

**Key findings:**

- POE should form part of the design and planning process; unfortunately this is not usually the case.

- The relationships between four levels of decision-making and performance criteria for a building are established.
- Many POE models do not deal directly with the value of architectural style or architectural intention in relation to user activities and opinions.

**Comment:**

Useful discussion of the emphasis and elements of POE.

**Further information:**

Contact chapter author via European Foundation for the Improvement of Living and Working Conditions, Loughlinstown House, Shankill, Co. Dublin, Ireland

Copy of chapter held

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**additional references:**

Bailey J, Glendinning C & Gould H, 1997

**Better Buildings for Better Services: Innovative Developments in Primary Care**

Oxford, Radical Medical Press Ltd

Bush-Brown A, 1996

**The Healing Environment**

in Valins, M.S. and Slater, D. (eds) **Futurecare: New Directions in Planning Health and Care Environments**

Oxford, Blackwell Science Ltd

Cammock R, 1981

**Primary Health Care Buildings: Health Centres, Neighbourhood Clinics and Group Practice Surgeries: A Briefing and Design Guide for Architects and Their Clients**

London, The Architectural Press

Critchlow K & Allen J, 1995

**The Whole Question of Health**

London, The Prince of Wales' Institute of Architecture

Department of Health, 1996

**Choice and Opportunity: Primary Care: The Future**

London, HMSO

Downie RS (ed), 1994

**The Healing Arts; An Oxford Illustrated Anthology**

Oxford, Oxford University Press

Haldane D & Loppert S (eds), 1999

**The Arts in Health Care: Learning from Experience**

London, The Kings Fund

Hall-Dendy A, 1997

**Banking on Design Quality in PFI**

Hospital Development, Vol 28, issue 2, p8

Hogan P, 1995

**Building Bridges: Designing for Elderly People**

Access by Design, May - August 1995, No 67, p 14

Horam J, 1997

**Horam Gets Tough on Designers and Builders at PFI Conference**

Hospital Development, Vol 28, issue 3, p10

Hosking S & Haggard L, 1999

**Healing the Hospital Environment**

London, E&FN Spon

Kuffner DJ, 1996

**Patient-Focused Design**

in Valins, M.S. and Slater, D. (eds) **Futurecare: New Directions in Planning Health and Care Environments**

Oxford, Blackwell Science Ltd

Long K & Lewis J, 2000

**Doubts over PFI Hospitals**

Building design, 22 September

Maxwell G, 1997

**In Search of Design Values**

Hospital Development, Vol 28, issue 3, p13

NHS Estates, 1991

**Health Building Note 46, General Medical Practice Premises for the Provision of Primary Health Care Services**

London, HMSO

NHS Estates, 1995

**Health Building Note 36, Local Healthcare Facilities**

London, HMSO

NHS Estates, 2000

**Procure 21, Building Better Health**

Leeds, NHS Estates

North West Regional Health authority, 1996

**Designing Primary Healthcare Premises: A Resource**

Liverpool, North West Regional Health Authority

Nugent R, 1995

**Shaping the Future: New Horizons**

Hospital Development, Vol 26, issue 7, pp11-12

O'Marberry S (ed), 1997

**Healthcare Design**

New York, John Wiley & Sons Inc.

O'Marberry S (ed), 1995



**Innovations in Healthcare Design**

New York, Van Nostrand Reinhold

Palmer S, 1999

**No2: The Physical Environment**

Policy Futures for UK Health 1999 Technical Series,  
London, Nuffield Trust

Parker J, 1997

**Urban Landscapes**

Hospital Development, Vol 28, issue 3, pp21-24

Picker Institute, 1998

**Consumer Perceptions of the Healthcare Environment – An Investigation to Determine  
What Matters** (working paper)

California, The Centre for Health Design

RIBA, 1997

**Future Premises for Primary Health Care: Report on a Symposium (2 April 1996) and a  
Workshop (3 December 1996) organised by the RIBE Health Buildings Design Quality  
Forum**

London, RIBA/NHS Estates

Richter-Green N, 1987

**Women's Center Given Touches of Delight and Comfort**

Architecture, Vol 76, no 1, January 1997, p 70

Scher P, 1995

**First Fruit: The Orchards Health and Family Centre**

Hospital Development, Vol 26, issue 5, pp21-25

Scher P, 1997

**Letter From Norway: 'Human Centred' Design**

Hospital Development, Vol 28, issue 9, pp5

Senior P & Croall J, 1993

**Helping to Heal, The Arts in Health Care**

London, Calouste Gulbenkian Foundation

# 3 ■ education

## main references:

1. Teaching Methods and the Design of Buildings for Early Childhood Education
  2. School Design and Management: Three Examples in France
  3. Does Design Make a Difference?
  4. The Relationship Between School Design Variables and Scores on the Iowa Test of Basic Skills
  5. School Works Project
  6. Hackney Community College: Impact of the New Campus
  7. Exploring the Relationship Between High School Facilities and Achievement of High School Students in Georgia
  8. Research for Design Decision Making
  9. Design Value in University Building
  10. Makeover @ School: Review of Literature
  11. Building Better Outcomes: The Impact of School Infrastructure on Student Outcomes and Behaviour
  12. Deteriorating School Facilities and Student Learning
  13. Influence of the School Facility on Student Achievement: School Building Age
  14. Influence of the School Environments – Research Abstracts
  15. Can Noise Levels at School Gymnasias Cause Hearing Loss: A Case Study of a Physical Education Teacher
  16. Where to Study...: Understanding the Importance of the Physical Environment to Students in Making Location Decisions
  17. Design of Child Care Centres and Effects of Noise on Young Children
  18. Sir John Colfax School, Dorset
  19. Business Week/Architectural Record Awards 2000
  20. Effects of Student Population Density on Academic Achievement in Georgia Elementary Schools
  21. Anecdotal Evidence from Three Schools
  22. (Research Report RR242) Building Performance: An Empirical Assessment of the Relationship Between Schools Capital Investment and Student Performance
  23. Educating By Design: Creating Campus Learning Environments that Work
  24. School Design Factors for Improving Student Learning
  25. Architecture Can Teach ... and the Lessons are Rather Fundamental
  26. The Innovative Pilot High School at Poitiers. Futuroscope: 10 years on – The Innovative Pilot High School
-

Abdul Rahim A, 1994

### **Teaching Methods and the Design of Buildings for Early Childhood Education**

PhD., Oxford Brookes, 45-6131

#### ***Aims & objectives; research method:***

An investigation into the relationship between educational theories and methods, and the design of the buildings. Criteria for teaching approaches and layout-types (multi-cellular, open-plan and flexible) were established and evaluated with reference to 12 schools in the UK and Malaysia.

#### ***Key findings:***

- Evidence from the case studies suggested that there was a closer match between teaching approach and building layout where the headteacher and staff had been involved in the briefing for the building
- There were more design related problems in converted or adapted buildings particularly old buildings than in purpose-built accommodation.

#### ***Comment:***

The study is primarily concerned with identifying matches or mismatches between layout and teaching approach; the impact of different design variables/layouts is not quantified.

#### ***Further information:***

[www.theses.com](http://www.theses.com)

Extracts from thesis held

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Alt P, 2000

### **School Design and Management: Three Examples in France**

Administration et éducation, issue 86

#### ***Aims & objectives; research method:***

Paper: three case studies of new school building projects, written by the Proviseur of the Lycée Maximilien Vox. One case study examines a participatory approach to design, one examines designing for integration (technological and functional), and the final one designing a conducive climate for learning.

#### ***Key findings:***

- Good design is important; but the school management/implementation is more so.
- The Ministry of Education recognises the importance of design; they appoint the school principal 'in advance' to ensure the design and implementation are undertaken with the future function of the school in mind.
- Collège Yves Montand in Allauch, near Marseilles. Integration of design and technology pays off:
  - The repeat rate among sixth graders is only 2.5%, compared with 11.3% for the Academy as a whole and 9.8% nationally.
  - The rate of progression from sixth to tenth grade is 71.5% whereas the Academy and the national norm is about 64.5%.
  - Vandalism is on the wane and occurs less often than elsewhere, despite the large size of campus.
- Lycée Léonard de Vinci in Levallois-Perret, Paris. Conducive learning environments pay off:
  - 13.2% of the tenth grade intake are (academically) two years behind (compared with the national average of 6.7%), yet the baccalauréat success rate in 1999 was 84%, whereas the Academy and National norm was 78%, giving it a relative added value of 7.7%.

- The rate of progression from tenth grade to baccalauréat was 73% whereas the national norm was only 57%.
- The number of enrolment applications from private school pupils has steeply risen (17.4% of the tenth-grade pupils come from these schools).

**Comment:**

The article presents convincing comparisons against national averages, although causality is not proven, as many other factors may be involved (no direct comparisons of 'before' and 'after'; no examination of the direct impact of specific variables).

**Further information:**

[www.oecd.org/els/pdfs/EDSPEBDOCA029](http://www.oecd.org/els/pdfs/EDSPEBDOCA029)

Copy of article held

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The American Institute of Architects, 1997

**Does Design Make a Difference?**

(the conference proceedings of AIA Committee on Architecture for Education, September 27-28 1997), USA, The American Institute of Architects

**Aims & objectives; research method:**

Conference papers summarised and drawn together; mainly reviewing/presenting theory and literature, and discussing issues with reference to case studies.

**Key findings:**

- Glen Earthman mentioned research demonstrating relationships between performance, achievement, behaviour and the built environment; also 4 recent studies showing the standardised test scores of students in above standard schools being from 1 to 11 percentile points higher than those from students in standard buildings.
- John Eberhard discussed how physical surroundings affect the way people work; yet in 1996 the General accounting Office reported that 60% of American school buildings had a major flaw, and 30-40% in every region had been deemed inadequate.

**Comment:**

General theoretical review; 'hard' empirical data not presented.

**Further information:**

Copy of document held.

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Andersen S, 1999

**The Relationship Between School Design Variables and Scores on the Iowa Test of Basic Skills**

Unpublished Doctoral Dissertation, The University of Georgia

**Aims & objectives; research method:**

This study explored the relationship of 38 middle school design elements, identified in the literature and student achievement as measured by the eighth grade Iowa Test of Basic Skills (ITBS). 50 middle schools within 14 counties studied.

**Key findings:**

- 27 DASM (Design Appraisal Scale for the Middle) design factors had significant positive correlations to the composite ITBS scores.
- 7 of the factors (multifunctionality, play areas, activity pockets, green areas, exit doors to the outside, overall impression, and administration centrally located), entered into the prediction equation for all components of the ITBS.

**Comment:**

**Further information:**

Copy of research abstract held

[www.coe.uga.edu/sdpl/researchabstracts/scottandersen](http://www.coe.uga.edu/sdpl/researchabstracts/scottandersen)

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The Architecture Foundation, ongoing research

**School Works Project**

London, DFEE

**Aims & objectives; research method:**

Seeks to understand the important indirect effects of school buildings on self-esteem, morale and pride of pupils and staff. The project is being tested in practice through a collaborative enquiry in a London secondary school in which the architectural needs of the school will be evaluated, solutions implemented and the impact monitored.

**Key findings:**

- The project is yet to be implemented, however a related literature review has been undertaken. It revealed very little literature on the linkage between the condition of the built environment in schools and achievement.
- The review indicated that the design of school buildings is an important contributor in developing a more effective academic environment
- Research by the national Commission on Education which profiled 11 effective inner-city secondary schools recognised the quality of the physical environment to be a key component of their success.
- Participatory approaches to school improvement help to improve pupil behaviour and reduce truancy, bullying, noise and vandalism. This is achieved through a sense of ownership of resulting changes.
- Staff and pupils can be profoundly affected by where they are in the school and the behavioural expectations created by that particular environment.

**Comment:**

Potentially a valuable project when completed.

**Further information:**

Matthew Horne, DEMOS, [Matthew@demos.co.uk](mailto:Matthew@demos.co.uk) 020 749 5330

Introductory Report Held

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Ashman I, 22<sup>nd</sup> March 2001

### **Hackney Community College: Impact of the New Campus**

Information from Ian Ashman, Deputy Principal

#### ***Aims & objectives; research method:***

Data and anecdotal evidence of the impact of the new Shoreditch campus of Hackney Community College.

#### ***Key findings:***

- Clear evidence of a significant rise in Hackney recruitment since the new Shoreditch campus opened (% of Hackney residents up from 65% to 80%) and also of drawing in a significant cohort from Tower Hamlets (a new feature 25% of full time 16-19's compared to 5% before).
- Retention and achievement have also risen since the campus opened, but causality can not be proved.
- There is clear evidence of less vandalism and more respect for the environment in new buildings.
- In summary buildings help but academic achievement and particularly "reputation" are more influential on student choice.

#### ***Comment:***

#### ***Further information:***

Copy of notes held. Contact: Ian Ashman, Deputy Principal, Hackney Community College ([iashman@comm-coll-hackney.ac.uk](mailto:iashman@comm-coll-hackney.ac.uk))

See also: Penning-Rowsell A., 1999, **New landscapes of learning**, Landscape Design 280, pp32-34 (copy held)

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Ayers PD, 1999

### **Exploring the Relationship Between High School Facilities and Achievement of High School Students in Georgia**

Unpublished Doctoral Dissertation, The University of Georgia

#### ***Aims & objectives; research method:***

This study explored the relationship between certain design features, identified in the literature and student achievement as measured by the Georgia High School Graduation Test (GHSGT); 27 public high schools studied.

#### ***Key findings:***

- School design variables explained approximately 6% of the variance related to English and Social Studies, 3% of the variance related to Science, and 2% of the variance related to both Mathematics and Writing.

#### ***Comment:***

#### ***Further information:***

[www.coe.uga.edu/sdpl/researchabstracts/pattiayers](http://www.coe.uga.edu/sdpl/researchabstracts/pattiayers)

Copy of research abstract held

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Biehle J & Boney C, 1999

### **Research for Design Decision Making**

Presentation at the “Better Schools for a New Century” conference, sponsored by The American Institute of Architects, at the Moscone Convention Center, San Francisco, April 9-10 1999

#### ***Aims & objectives; research method:***

A presentation about quality versus cost decisions in building construction and renovation programmes.

#### ***Key findings:***

- Over the life of a building, operation and maintenance is by far the greatest cost, dwarfing both construction and design costs.
- A small increase in money spent during the design phase can have an enormous positive effect on the life-time costs of the facility.

#### ***Comment:***

#### ***Further information:***

James Biehl, AIA, Chair (Committee on Architecture for Education) at [rkitec@aol.com](mailto:rkitec@aol.com)  
Copy of conference review held: Fielding R, 1999, **Better Schools For a New Century**,  
designshare.com ([www.designshare.com/Research/AIA/AIABetterSchools/Intro](http://www.designshare.com/Research/AIA/AIABetterSchools/Intro))

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Caldwell I, ongoing research

### **Design Value in University Building**

London, HEFCE

#### ***Aims & objectives; research method:***

To try and define quality in university buildings by benchmarking other buildings

#### ***Key findings:***

- The work is just beginning, although the research director suggests that he can empirically demonstrate that high quality buildings help to world-class academics, for example at Imperial College.

#### ***Comment:***

No details available at present

#### ***Further information:***

Ian Caldwell, Director of Estates, Imperial College, London, [i.caldwell@ic.ac.uk](mailto:i.caldwell@ic.ac.uk)

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Clark H, n.d.

### **Makeover @ School: Review of Literature**

SENJIT (Special Educational Needs Joint Initiative for Training)

#### ***Aims & objectives; research method:***

Literature review of different themes within the broad subject of school buildings, and their design, impact, implementation and funding.

#### ***Key findings:***

- Very little existing literature on the influence of the physical environment of schools

- Refers to research (Cooper, 1985) assessing the views of teachers on the buildings/ function/ physical environment, concluding that whether or not physical environments are themselves capable of disabling education, the teachers' belief in their capacity to do so could prove self-fulfilling by lowering their morale and motivation.
- Earthman et al (1995): study in North Dakota found an indication that a 'positive relationship existed between student achievement and building condition and between student behaviour and school condition.
- Very little existing literature on the potential of premises in promoting learning
- Hallam (1996): involving pupils in creating an attractive physical environment and generally encouraging them and their families to actively participate in school life has been demonstrated to have a positive impact on attendance levels and makes vandalism much less likely to occur.

**Comment:**

Useful evaluation of the scope and content of literature.

**Further information:**

[www.ioe.ac.uk/teepnnp/SENJIT\\_Helenview](http://www.ioe.ac.uk/teepnnp/SENJIT_Helenview)

Copy of document held

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Department of Education, Training and Youth Affairs, n.d

**Building Better Outcomes: The Impact of School Infrastructure on Student Outcomes and Behaviour**

Australia, Schooling Issues Digest

**Aims & objectives; research method:**

Reviews a broad range of research studies which examine the possible causal linkages between building design and student outcomes.

**Key findings:**

- Student academic achievement improves with improved building condition
- Individual factors, such as lighting levels, air quality and temperature and acoustics, have an effect on student behaviour and outcomes, although there is limited quantitative evidence available on some of these factors
- New emerging trends in school building planning and design and their impact on student outcomes and behaviour have yet to be evaluated using a rigorous research methodology
- In one study in the US, students in modernised or new buildings scored consistently higher (7-8% higher scores) in maths, 'composite' and vocabulary assessment. Other studies have repeated the findings and demonstrated better teacher attitudes.
- Many studies demonstrate the linkage between building condition and performance registering jumps in performance of more than 10% when moving from sub-standard to above standard conditions
- Key variables include natural and artificial lighting, colour, air quality and temperature, acoustics, school size, furniture and classroom design.

**Comment:**

The studies reviewed vary in their sample size as well as in the degree of correlation between achievement and building condition.

**Further information:**

Kenn Fisher, OECD Programme on Educational Building, [jason.coutts@detya.gov.au](mailto:jason.coutts@detya.gov.au)



Copy of Report Held

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Frazier L, 1993

**Deteriorating School Facilities and Student Learning**

ERIC Digest, Number 82

Eugene Oregon: ERIC Clearinghouse on Educational Management

***Aims & objectives; research methods:***

Short article citing a 1991 study in Washington DC linking the relationship between school building conditions with student achievement.

***Key findings:***

1. After controlling for other variables, such as a student's economic status, it was found that as a school's physical environment improved, the students' test scores improved an average of 5.45%.
2. If a school improved its condition from poor to excellent, an increase of 10.9% on test scores could be expected.

***Comment:***

By implication, this article is reinforcing the view that a well designed school environment benefits pupils on many levels, and certainly is an aid in helping them to achieve their potential.

***Further information:***

[www.ed.gov/databases/ERIC\\_Digests/ed356564.html](http://www.ed.gov/databases/ERIC_Digests/ed356564.html)

Copy of article held.

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Jago E & Tanner K, 1999

**Influence of the School Facility on Student Achievement: School Building Age**

USA, The University of Georgia

***Aims & objectives; research method:***

Summary of existing literature, posted on the University of Georgia web-site.

***Key findings:***

- Plumley (1978) examined the relationship of school building age and student achievement of 4<sup>th</sup> grade students in Georgia: the older the school buildings without elements of modernisation, the lower the composite vocabulary, reading, language, work study and mathematics scores on the ITBS.
- Chan (1979) studied 8<sup>th</sup> grade students in Georgia: the achievement scores of pupils assigned to modernised school buildings were consistently higher than those assigned to non-modernised buildings.
- McGuffey and Brown (1978) approximately 3% of the variance in the achievement test scores can be explained by the age of the facility after removing the variance caused by socioeconomic factors.
- Ikpa (1992): as the age of the school building increased, the achievement test scores tended to decrease.

***Comment:***

The research discussed does not separate out the physical variables (configuration, amenities, design etc) that contribute to the function of a school building, and relate to its age.

**Further information:**

[www.coe.uga.edu/sdpl/researchabstracts/age](http://www.coe.uga.edu/sdpl/researchabstracts/age)

Copy of summary held, see also copy of summaries of Chan T.C., (1979), Plumley J.P., (1978) held

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Jago E & Tanner K, 1999

**Influence of the School Environments – Research Abstracts**

Georgia, University of Georgia, School Design and Planning Laboratory

**Aims & objectives; research method:**

A broad literature review looking in some depth at a range of key variable influencing educational effectiveness.

**Key findings:**

- Noise can have a detrimental affect on student performance, both between classrooms and external noise. Bronzaft and McCarthy (1975) found that on the side of the building 220 feet from an elevated subway track lagged anywhere from 3 months to a year behind their peers on the quiet side of the building.
- Aesthetic factors are critical to school design and planning with significant enhancement in performance including greater motivation and energy levels was found in school buildings and individual rooms of higher aesthetic standards
- Taylor & Gousie (1988) found that architectural settings can help establish cultural values, stimulate or subdue, aid creativity or slow perception.
- Edwards (1991) found an 8.5% decline in achievement scores for students attending schools in poor condition
- Children in modern building have significantly better attitudes to learning
- Open plan layouts encourage more positive teacher attitudes, with teachers exhibiting more permissive, supportive, warm and sympathetic attitudes to students.
- Lighting levels and quality of daylighting and artificial lighting is critical to levels of productivity. (SDPL recommends at least 20% of wall space be devoted to windows)
- Colour also affects student achievement with researchers finding that careful colour choices can reduce absenteeism and promote positive feelings about schools (cool colours in classrooms and hallways, warmer colours in sports areas)
- A study of 14 schools demonstrated that lower density levels in classrooms can lead to higher achievement

**Comment:**

Much detail, some contradictory evidence, but a very useful source of information.

**Further information:**

Kenneth Tanner, School of Design and Planning Laboratory, University of Georgia

<http://www.coe.uga.edu/sdpl/researchabstracts/>

Copy of Summaries Held

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Jiang T, 1997

**Can Noise Levels at School Gymnasias Cause Hearing Loss: A Case Study of a Physical Education Teacher**

Conference paper presented at the 133<sup>rd</sup> ASA/NOISE-CON 97 meeting, State College, Pennsylvania, June 17<sup>th</sup> 1997

***Aims & objectives; research method:***

Brief review of previous research identifying hearing loss as an outcome of the physical environment of schools; case study showing analysis of a physical education teacher who suffers from noise induced hearing loss (NIHL).

***Key findings:***

- Previous research: 61% of teachers found “uncomfortable” noise levels frequent at schools; physical education teachers (77%) complained of noise in gymnasias most.
- Research in Canada (1998) found that gymnasias were as noisy as factories, whilst research undertaken in 1996 measured average sound levels in a school gymnasium as 94.4dB, 10 times greater than that of the safety limits for industrial workers.
- In the case study, measurements were undertaken: the gymnasias had poor acoustic qualities and sound levels were between 90.8dB and 106.41dB, exceeding safety limits by 300%.

***Comment:***

***Further information:***

[www.acoustics.org/133rd/2paaa7](http://www.acoustics.org/133rd/2paaa7)

Copy of conference paper held

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Matzdorf F, ongoing research

**Where to Study...:Understanding the Importance of the Physical Environment to Students in Making Location Decisions**

Higher Education FM Research & Application Forum

***Aims & objectives; research method:***

To understand how the quality of university environments can impact on the choices made by students when choosing universities

***Key findings:***

- The final report is still to be published and may not be publicly available
- Some indication given that positive link between quality of physical environment and student choice has been proven by the research.

***Comment:***

The results will be available to those institutions that are part of the Forum, and not necessarily to others. Could be a highly significant report.

***Further information:***

Fides Matzdorf, Sheffield Hallam University, [f.matzdorf@shu.ac.uk](mailto:f.matzdorf@shu.ac.uk), 0114 225 3892

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Maxwell LE & Evans GW, n.d.

### **Design of Child Care Centres and Effects of Noise on Young Children**

Paper published on Design Share web-site

#### ***Aims & objectives; research method:***

Review of recent literature plus an outline of design issues related to noise and child care centres, from the authors' current research.

#### ***Key findings:***

- Potential for auditory effects (hearing damage) and non-auditory effects (physiological, motivational and cognitive effects).
- Physiological effects: high blood pressure levels due to school decibel levels from 95 to 125 dBA peak.
- Motivational effects: children suffer from learned helplessness, poor motivation and lower tolerance of frustration in noisy schools.
- Cognitive effects: noisy environments foster attention deficits and reduced academic achievement (reading skills in particular).

#### ***Comment:***

#### ***Further information:***

[www.designshare.com/Research/Lmaxwell/NoiseChildren](http://www.designshare.com/Research/Lmaxwell/NoiseChildren)

Copy of paper held

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Morrell P, 28 April 2000

### **Sir John Colfax School, Dorset**

Information from Paul Morrell of Davis Langdon & Everest

#### ***Aims & objectives; research method:***

Anecdotal evidence.

#### ***Key findings:***

- "The Headmaster of the new Sir John Colfax School in Dorset (built by Jarvis under a PFI arrangement – and, incidentally, with Barry Lucas involved in the early days) attributes at least part of the 4% improvement in A to C GCSE grades to the anticipation of moving into a better building."
- "The school also has an above-average number of pupils staying on for 6<sup>th</sup> form studies. This school, incidentally, cost well above DfE norms – but is still described as "uninspiring" architecturally."

#### ***Comment:***

Direct causality is difficult to attribute, although this anecdotal evidence seems to reinforce the research (listed elsewhere in the bibliography) that suggests that investment in the physical environment reflects how staff and students perceive themselves to be 'valued', impacting upon morale and hence results.

#### ***Further information:***

Paul Morrell at Davis Langdon Everest, Princes House, 39 Kingsway, London WC2B 6TP, (tel) 020 7497 9000

Copy of letter from Paul Morrell to Stuart Lipton held.

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Nussbaum B, 2000

**Business Week/Architectural Record Awards 2000**

Business Week, November 6, 2000

***Aims & objectives; research method:***

Article outlining the winning schemes.

***Key findings:***

- Quebec's Saint-Hyacinthe School doubled enrolment after its new building went up.

***Comment:***

***Further information:***

Excerpt from article held.

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O.Rouke, Swift D, 2000

**Effects of Student Population Density on Academic Achievement in Georgia Elementary Schools**

Georgia, University of Georgia Dissertation

***Aims & objectives; research method:***

Aimed to determine if density (crowded conditions) impacted the academic achievement of elementary school students. Students of high and low abilities were tested across 48 schools using a multiple regression analysis.

***Key findings:***

1. Density in classrooms affects performance of school children
2. Architectural square footage above 100 square feet per child significantly increases performance
3. Other studies have found similar impacts of density on the behaviour patterns of handicapped children (more aggressive behaviour patterns exhibited at higher densities) and amongst toddlers.

***Comment:***

A rigorous study

***Further information:***

<http://www.coe.uga.edu/sdpl/researchabstracts/swift2000>

Summary of Findings held.

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Patel M, n.d

**Anecdotal Evidence from Three Schools**

London, DFEE

***Aims & objectives; research method:***

Anecdotal evidence from three schools.

**Key findings:**

- A new building cut down the time lost through movement of pupils around the site, estimated at 45 minutes per day, per child.
- Better environments can encourage pupils to do homework in school after school hours

**Comment:**

Anecdotal only

**Further information:**

Mukund Patel, Head of Architecture, DFEE  
Copy of Summary Held

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PricewaterhouseCoopers (& DfEE), 2000

**(Research Report RR242) Building Performance: An Empirical Assessment of the Relationship Between Schools Capital Investment and Student Performance**

London, HMSO

**Aims & objectives; research method:**

Analysis of the relationship between capital investment and student performance: review of existing literature; qualitative analysis of 27 schools; quantitative (statistical) analysis of investment and student performance in 1916 schools.

**Key findings:**

- Capital investment has a strong influence on three key factors: staff morale, pupil motivation, learning time.
- Staff morale: teaching quality identified in one case study as the predominant influence on pupil attainment; teaching environments have a major impact on morale of staff which impacts upon quality of teaching: the visual environment gives strong messages about the value placed on the staff/students, and staff were observed willingly spending much more time after school in their classrooms.
- Pupil motivation enhanced: they display pride in their surroundings
- Increased learning time: reorganisation/replacement of facilities enables more time spent teaching instead of supervision or pupil movement. Quantified in one example: a net gain of 7 minutes per day per teacher (10 previously and 3 now); with 8 staff this equals about one hour per day, 180 hours per year or 10% of a teacher. The design of playgrounds and the hall has enabled a reduction of lunchtime assistants from 8 to 5; resources have been switched to direct educational expenditure.
- Parental support has increased: attributed to the recognition of the quality of new facilities.
- Teacher recruitment enabled: a Head of Technology chose to work at a school on a lower salary point (than the alternative school) due to the new facilities.

**Comment:**

Focus of report on capital investment, of which design of facilities is only one of many factors. Useful qualitative (anecdotal) examples, design issues are more difficult to establish from the quantitative analysis.

**Further information:**

Copy of document held.

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Strange CC, 2001

**Educating By Design: Creating Campus Learning Environments that Work**

San Francisco: Jossey Bass

***Aims & objectives; research methods:***

This book deals with the complexities of campus settings and how they contribute to student learning. Four key components of campus design are physical environment, aggregate or masterplan characteristics, organisational and social factors.

***Key findings:***

3. The four conditions for successful learning - inclusion, safety, involvement and community.
4. Good design is seen as crucial to an effective educational environment.

**Comment:**

***Further information:***

Book not held

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Tanner CK, n.d.

**School Design Factors for Improving Student Learning**

USA, The University of Georgia, published on website

***Aims & objectives; research method:***

The paper seeks to identify the design principles that are conducive to learning; establishing the learning goals and activities and matching them with the 'right' building structures. The work draws on current theory, discussing the nature of learning.

***Key findings:***

- The paper outlines a model elementary school developed within the SDPL (School Design and Planning Laboratory) that responds to the function of learning; research underway to assess whether construction costs are less than for a traditional institution.
- Student achievement is lower in large, high-density schools.
- Large schools with small spaces for learning (high student density, such as 2000 students per high school) have more discipline problems.

**Comment:**

The paper aims to present the 'model' school complex, and draws primarily on existing theory/ research to introduce the issues; empirical data or justification not presented.

***Further information:***

Kenneth Tanner, School of Design and Planning Laboratory, University of Georgia,

[www.coe.uga.edu/sdpl/sdpl](http://www.coe.uga.edu/sdpl/sdpl)

Copy of paper held

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Taylor A et al, 1988

**Architecture Can Teach ... and the Lessons are Rather Fundamental**

In Context, Winter, p31

***Aims & objectives; research method:***

To identify how the building can be used as a teaching tool based on almost thirty years of studying the effects of learning environments in the behaviour and learning of children.

***Key findings:***

- People should be considered an integral part of the environment, the environment affects people and they in turn affect the environment
- The architectural environment as a work of art can affect behaviour, it can stimulate or subdue, aid creativity or slow mental perception, cause fear or joy, etc.
- The environment can be designed, engineered and provisioned to serve as an additional teaching tool

***Comment:***

No evidence offered

***Further information:***

Article Held

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Technology Editorial, 1998

**The Innovative Pilot High School at Poitiers. Futuroscope: 10 years on – The Innovative Pilot High School**

PEB Exchange No33 February 1998

***Aims & objectives; research method:***

Article on the first ten years of a pilot school in operation; part of the Futuroscope complex near Poitiers; the concept of a theme park, surrounded by a high technology development (unlike any other) was first conceived in 1983.

***Key findings:***

- Despite the innovative approach to the complex as a whole (function, design and relationship), there remain design problems at a detailed level involving the relationship between the evolving pedagogy and the built-in obsolescence and lack of flexibility of the accommodation.
- The high school was already modifying buildings that were only 2 to 3 years old.

***Comment:***

***Further information:***

[www.oecd.org/els/education/peb/pubs](http://www.oecd.org/els/education/peb/pubs)

Copy of article held

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**additional references:**

Bowers B.E., Howard D. and Burkett A., 1987

**Physical Environment and Student Achievement**

Environment and Behaviour, Vol 29, no 7, pp133-150



Chan T.C., 1979

**The Impact of School Building Age on the Achievement of Eighth Grade Pupils from the Public Schools in the State of Georgia**

Unpublished doctoral dissertation, University of Georgia, Athens

Cooper I, 1985

**Teacher's Assessments of Primary School Buildings: The Role of the Physical Environment in Education**

British Educational Research Journal, 11 (3), 253-269

Duckenfield M (ed), 1995

**'OECD Programme on Educational Building' in Schools for Cities**

Earthman G.I., 1995

**A Statewide Study of Student Achievement and Behaviour and School Building Condition**

USA: Virginia, EDRS Availability

Fielding, R., 2000

**How Large Should a School Be?**

Glaeser, E. L., 1999

**Learning in Cities**

Journal of Urban Economics, Vol 46, no 2, September 1999, p 254

Hallam S, 1996

**Improving School Attendance**

Oxford, Heinemann Educational

Jamieson P., Fisher K., Gilding, A., Taylor P., Trevitt A., 2000

**Place and Space in the Design of New Learning Environments**

HERDSA (Higher Education Research and Development) Vol 19 No 2, July 2000, pp221-237

Lackney, J.A., 2000

**Awarding Innovative Educational Design: The School Construction News & Design Share Awards 2000 Program – Commentary**

[www.designshare.com](http://www.designshare.com)

Ikpa V.W., 1992

**The Norfolk Decision: The Effects of Converting from a Unitary Educational System to a Dual Educational System upon Academic Achievement**

USA, Norfolk City Schools, Virginia, ERIC Document Reproduction Services No. ED34658

McGuffy C.W. & Brown C.L., 1978

**The Impact of School Building Age on School Achievement in Georgia**

CEFPI Journal, 16, 6-9

OECD, 1996

**Schools for Today and Tomorrow: An International Compendium of Exemplary Educational Facilities**

Programme on Educational Building – PEB Papers

OECD, 2000

**The Appraisal of Investments in Educational Facilities**  
OECD

Lord Polumbo, 1995

**Design Quality in Higher Education buildings; keynote address**  
London, Thomas Telford Publishing

Penning-Rowell, A., 1999

**New Landscapes of Learning**  
Landscape Design, no 280, May 1999, pp32 - 34

Plumley J.P., 1978

**The Impact of School Building Age on the Academic Achievement of Pupils from Selected Schools in the State of Georgia**  
Unpublished doctoral dissertation, The University of Georgia, Athens

Stone, S., 1997

**Landscapes for Learning: Creating Outdoor Environments for Children and Youth**  
New York: J Wiley & Sons

Royal Fine Art Commission, 1996

**Design Quality in Higher Education Buildings**  
London, Thomas Telford Publishing

Weinstein C.S., 1979

**The Physical Environment of the School: A Review of the Research**  
Review of Educational Research, Vol\_49, no 4, pp577-610

# 4 ■ crime (& safety)

## main references:

1. Briefing Note 7/00: An Evaluation of Secured by Design Housing within West Yorkshire
2. Safe and Sound
3. An Assessment of the Police's Secured by Design Project
4. Burglary of Domestic Dwellings, Findings from the British Crime Survey
5. Housing Layout and Crime Vulnerability
6. Benefit-Cost Analysis and Crime Prevention
7. Utopia on Trial: Vision and Reality in Planned Housing
8. Criminogenic Associations and British Housing Design
9. Residential Crime and the Neighbourhood
10. Safer Cities and Domestic Burglary
11. The Lighting & Crime File
12. Cops in Cul-de-sac Scrap
13. Empty Spaces, Dangerous Places
14. Designing Safer Communities: Crime Prevention through Environmental Design Handbook
15. Safety and Security in private Sector Housing Schemes
16. Guide for Crime and Disorder Reduction through a Public Lighting Strategy
17. Bexley Town Security Project - Executive Summary & Final Report
18. Lighting and Crime
19. Crime Free Housing
20. The Effect of Better Street Lighting on Crime and Fear: A Review, Crime Prevention Unit Paper No. 29
21. The Theory and Practice of Crime Prevention Through Environmental Design: A Literature Review
22. Crime Prevention through Environmental Design
23. Crime Prevention and Security in Great Britain
24. Preventing Crime: What Works, What Doesn't, What's Promising
25. Physical Environment and Crime
26. Safe Cities: Guidelines for Planning, Design and Management

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Armitage R, 2000

### **Briefing Note 7/00: An Evaluation of Secured by Design Housing within West Yorkshire**

Home Office

#### ***Aims & objectives; research method:***

To examine the impact of Secured by Design (SBD) principles by measuring levels of crime and fear of crime perceptions on SBD estates (2 refurbished estates and 25 new estates) in West Yorkshire.

#### ***Key findings:***

- In housing estates refurbished to SBD standards crime rates dropped by between 54 and 67%
- A statistically reliable difference of 26% fewer crime events per dwelling was recorded in new SBD estates to a comparable sample on new non-SBD estates.
- Rates of burglary were twice as high in non-SBD estates as in SBD estates
- There was no displacement of crime on SBD estates to, for example, motor vehicles, with 42% fewer vehicle crimes in SBD estates
- Residents feel safer in SBD estates - 11% as opposed to 19 % in non-SBD estates feel very unsafe on their streets at night
- The average extra cost for building new houses to SBD standards is £440 (£600 for a refurbishment). Given average burglary losses of £1,670 and the low incidence of burglary on SBD estates, the extra investment is worthwhile

**Comment:**

In the main statistically reliable findings conclusively demonstrating the value of territoriality, surveillance and basic security principles

**Further information:**

Policing and Reducing Crime Unit, Home Office,  
<http://www.crimereduction.gov.uk/securedesign12>  
Copy of Note held

Brennan D, Zelinka A, 1997

**Safe and Sound**

Planning [USA] August 1997, pp4-10

**Aims & objectives; research methods:**

Recognising the relationship between the physical environment and crime is important in dealing with neighbourhood crime. Successes of the CPTED (Crime Prevention through Environmental Design) system are briefly examined in cities such as Phoenix, Chiapas Mexico, Broward County & Sarasota Florida, Irvine California, and Minneapolis.

**Key findings:**

- Comments from practitioners emphasise the need for local area maintenance, good property management and "activity support" - encouraging positive activities and land uses in places where undesirable activities are likely to occur.
- Acknowledgement of the link between safety and a neighbourhood's economic success, especially in the area of retail trade is highlighted.
- Randall Atlas, an architect and criminologist mentions the key role of planners. Firstly, by reviewing the proposals for new development to assure that CPTED principles have been applied, and secondly, as facilitators for existing developments where problems arise, where the planner is responsible for bringing together the various players - residents, property owners, neighbourhood representatives and city departments, and brokering solutions to problems.

**Comment:**

The role of the planner is seen to be critical, while the role of planning in the United States can be more proactive in the design process.

**Further information:**

Copy of article held.

Building Research Establishment, 1999  
**An Assessment of the Police's Secured by Design Project**  
Watford, BRE

***Aims & objectives; research method:***

To assess the impact of the Secured by Design (SBD) initiative by looking at the experiences of tenants and levels of crime on ten housing estates subject to SBD principles

***Key findings:***

- SBD boosts perceived feelings of safety and successfully cuts crime
- SBD could be improved by better street lighting and making streets more private by giving priority to defensible space criteria and other alternatives which reduce access and flow rates of people
- Rear access to homes should be avoided

***Comment:***

A rigorous two year study

***Further information:***

Tim Pascoe, BRE, 01923 664000  
Copy of summary article only

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Budd T, 1999  
**Burglary of Domestic Dwellings, Findings from the British Crime Survey**  
London, Home Office

***Aims & objectives; research method:***

Reports on the British Crime Survey which measures crimes against people living in private households

***Key findings:***

- Lack of security and living in a detached house increases risk of burglary
- 10% of all British Crime Survey crimes are burglary against domestic premises (1,639,000 in 1997)

***Comment:***

***Further information:***

[www.homeoffice.gov.uk/crimeprev/bri.htm](http://www.homeoffice.gov.uk/crimeprev/bri.htm)  
Extract from report held

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Chih-Feng Shu S, 2000

## **Housing Layout and Crime Vulnerability**

Urban Design International, Vol.5, pp177-188

### ***Aims & objectives; research method:***

Using space syntax analysis the research examines the relationship between spatial layouts in housing estates and urban areas and spatial distribution of property offences based on crime reports provided by the police. The work is based on three socio-economically distinctive towns.

### ***Key findings:***

- The findings provide evidence for scepticism about the idea of territoriality and defensible space but support the idea of natural surveillance
- Other things being equal, property crimes tend to cluster in those globally or locally segregated areas, particularly in cul-de-sac footpaths and rear dead end alleys, but also in those segregated short cul-de-sac carriageways which Oscar Newman considered to be key to increase local surveillance
- Positive features which make spaces safer include integrated through roads with front entrances on both sides, more passers by on the street, more visible neighbours on the streets, good visual relations to the public realm rather than seclusion, more linear integrated spaces and visual continuity between spaces
- Houses in cul-de-sacs suffer up to five times more burglaries than those in linear streets

### ***Comment:***

The results contradict much of analysis of the Secured by Design initiative. It is nevertheless an apparently rigorous study, and like the SBD work detects a clear (albeit different) relationship between design (spatial layout) and crime.

### ***Further information:***

Simon Chih-Feng Shu, c/o Bartlett School of Graduate Studies, University College London,  
<http://www.spacesyntax.com/housing>

Copy of article held

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Chisholm J, 2000

## **Benefit-Cost Analysis and Crime Prevention**

Canberra, Australia, Australian Institute of Criminology

### ***Aims & objectives; research method:***

Discusses cost-benefit analysis as a technique to determine whether crime prevention activity is a cost-effective activity. The paper brings together and discusses a number of examples from around the world.

### ***Key findings:***

- Displacement of crime needs to be taken into account when considering the benefits of any situational (area-related) crime prevention strategies.
- Situational crime prevention strategies adopted in the Kirkholt Housing Estate near Rochdale in the late 1980s resulted in a £5 saving in reduced burglary costs for every £1 spent on target hardening and removal and a range of community based prevention initiatives i.e. neighbourhood watch.

### ***Comment:***

Few details on examples given.

**Further information:**

John Chisholm, Australian Institute of Criminology, Canberra, <http://www.aic.gov.au>  
Copy of report held

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Coleman A, 1985

**Utopia on Trial: Vision and Reality in Planned Housing**

London, Hilary Shipman

**Aims & objectives; research method:**

To measure the impact of design in housing on human behaviour. The work mapped 4099 blocks in and around London over a five year period recording a range of incivilities, and comparing the results against statistics on children in care, levels of crime and frequencies of fires.

**Key findings:**

- Crime and incivilities can be directly related to design variables
- The defensible space theories of Oscar Newman are supported
- Key design concerns relate to anonymity in estates determined by numbers of dwellings and numbers per entrance, availability of escape routes and penetration points, ease of surveillance, the relationships between public and private spaces, and movement routes across the estate.

**Comment:**

Coleman's work has been criticised as methodologically flawed. Nevertheless the scale of the work makes the findings difficult to dismiss and much of her work reflects findings of other theorists before and since, particularly Oscar Newman.

**Further information:**

Alice Coleman, Department of Geography, Kings College, London  
Summary article held

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Cozens P, Hillier D & Prescott G, forthcoming

**Criminogenic Associations and British Housing Design**

Pontypridd, Wales, University of Glamorgan

**Aims & objectives; research method:**

To explore the perceptions of various crucial stakeholders in society, relating to the criminogenic capacity of characteristic housing designs. In so doing to test Newman's Defensible Space theory and Crime Prevention Through Environmental Design (CPTED) strategies. Contrasting versions of five housing types were photographed and showed to respondents (burglars, planning professionals and police officers) to gauge their perceptions.

**Key findings:**

- Newman's theory of defensible space and CPTED strategies are clearly supported
- Multiple dwelling units were perceived to be more criminogenic than single dwelling units
- Visible signs of decay were seen to increase criminogenic activity and reduce defensibility emphasising the importance of a well maintained physical fabric
- Terraced housing was identified as the most defensible form of high density development
- All three groups considered vulnerability to crime as related to house type with high rise flats most vulnerable then low rise/walk-up flats, then terraced housing, then semi-detached housing and finally detached housing

**Comment:**

A rigorous piece of research with an extensive literature review, but not based on actual recorded crime levels.

**Further information:**

Paul Cozens, School of Technology, University of Glamorgan, pmcozens@glam.ac.uk  
Copy of article held

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Darwood J, 1987

**Residential Crime and the Neighbourhood**

Swansea, University of Wales

**Aims & objectives; research method:**

Tests the hypothesis that dwellings whose physical design and proximate land uses increase surveillance of, and hinder access for, the potential offender will be less vulnerable to criminal activity. Draws on police crime records and surveys; analysing evidence of inter- and intra-neighbourhood levels of crime in eight neighbourhoods in Swansea.

**Key findings:**

- Most residential crime is opportunistic and can be influenced by environmental factors
- Four key variables are identified which increase the vulnerability of dwellings - location on a corner site, possession of two points of access, not being overlooked at the front, and having a poor image.

**Comment:**

Consistent findings across seven of the eight areas sampled

**Further information:**

PhD Thesis  
Copy of abstract held; see also [www.theses.com](http://www.theses.com)

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Eklom P, Law H & Sutton M, 1996

**Safer Cities and Domestic Burglary**

London, Research and Statistics Directorate, Home Office

**Aims & objectives; research method:**

Evaluates the impact of the Safer Cities programme funded by the Home Office between 1988 and 1995. The programme included over 500 schemes across the country set up to prevent domestic burglary. Most concerned physical security measures. The analysis draws from over 300 schemes with data gathering and analysis on an industrial scale. GIS was used to collate and analyse the data.

**Key findings:**

- Under most conditions, but particularly in areas of high crime risk, the cost of preventing a burglary through Safer Cities action was less than the financial cost of that burglary to victims and the state.
- More intensive measures to reduce crime seemed to prevent displacement to neighbouring areas and improved residents' perceptions of their area



**Comment:**

Physical measures are limited to target hardening and therefore do not really relate to intrinsic design concerns

**Further information:**

[www.homeoffice.gov.uk/rds/horspubs/](http://www.homeoffice.gov.uk/rds/horspubs/)

Summary of report held

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Institution of Lighting Engineers

**The Lighting & Crime File**

Rugby, The Institution of Lighting Engineers

**Aims & objectives; research method:**

Addresses the linkage between crime and lighting through drawing together research and case studies on the subject

**Key findings:**

- 10 lighting units protecting 50 properties can be operated for 13 years for the cost of a typical burglary
- Increased lighting encourages people to use the streets and reduces fear of crime
- Re-lighting schemes seem to coincide with a reduction of crime, in the mid 80s a scheme in the Erdington Hall area in Birmingham led to a 45% reduction in crime

**Comment:**

Not all the research reported is methodologically robust, but together offers a strong case.

**Further information:**

The Institution of Lighting Engineers, Lennox House, 9 Lawford Road, Rugby, Warwickshire, CV21 2DZ

Copy of report held

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Fairs M, 1999

**Cops in Cul-de-sac Scrap**

Building Design, Issue 1418

**Aims & objectives; research method:**

Article discussing research by Bedfordshire Constabulary aiming to test Secured by Design principles, as presented at a local authority forum in Bedford in October 1999.

**Key findings:**

- Cul-de-sac layouts show substantially less crime than other layouts
- Defensible space principles help to reduce crime and disorder

**Comment:**

Research not in the public domain

**Further information:**

PC Peter Knowles, [peter.knowles@bedfordshire.police.uk](mailto:peter.knowles@bedfordshire.police.uk) Bedfordshire Constabulary, 01234 842805

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News article held

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McKay T, 1998

### **Empty Spaces, Dangerous Places**

ICA Newsletter, Vol.1, Issue 3, pp2-3

#### ***Aims & objectives; research method:***

To investigate the link between patterns of crime and under-utilised or vacant space; briefly discusses the experience of two case studies and the limited literature on the subject.

#### ***Key findings:***

- Criminals consciously scan the environment to look for criminal opportunity and for places that tolerate and support these activities i.e. drug dealing, prostitution, etc. Empty, under-utilised places provide a 'good environmental cue' to criminals because of their lack of obvious activity, ownership or maintenance. They are equally intimidating to non-criminals
- A large undeveloped lot in the Victoria Hills community of Kitchener, Canada accommodated much illegal activity that resulted in constant police call-outs. To address the problem the plot was transformed in 1995 into a community garden that effectively assigned a purpose to the space. Crime incidents in the three surrounding buildings dropped by 30% immediately and by 49% and 56% in the two subsequent years. The lower crime rates were accompanied by a boost in community pride, greater social interaction between ethnic groups and a reduced fear of crime
- The deleterious effect of empty space in communities needs to be recognised by policy makers

#### ***Comment:***

#### ***Further information:***

Tom McKay, Peel Regional Police, Canada

[http://www.ismcpi.org/ica/reference/empty\\_spaces](http://www.ismcpi.org/ica/reference/empty_spaces)

Copy of Newsletter held

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National Crime Prevention Council, 1997

### **Designing Safer Communities: Crime Prevention through Environmental Design Handbook**

Washington, DC: National Crime Prevention Council

#### ***Aims & objectives; research method:***

This document focuses on CPTED (Crime Prevention through Environmental Design) which offers a framework to resolve neighbourhood and community problems and provides opportunities for prevention in new and refurbished developments. CPTED looks at an area's physical features and their influence on crime and the opportunity for crime. Design principles of access control, surveillance and territoriality are examined in case studies.

#### ***Key findings:***

Some of the cited benefits for communities include:

Municipal Leadership:

- increased collaboration among city agencies to improve public safety
- improved perception of safety and livability in public areas and neighbourhoods
- more revenue from safer and busier business districts

- efficient application of local laws and procedures to address crime and the quality of life
- enhanced consideration of public safety in planning, development, and redevelopment projects
- increased use of public parks and recreation facilities, made safer by CPTED strategies

Local Law Enforcement:

- less crime in neighbourhoods and business areas
- increased opportunities to develop crime prevention partnerships with residents
- enhanced crime prevention and problem-solving skills for officers
- identification of potential crime problems in the community before they become serious
- development of neighbourhood priorities related to crime and quality of life
- recognition that crime prevention is everyone's responsibility

Community Residents:

- opportunities to participate in community crime prevention
- improved sense of security and quality of life through reduced fear of crime
- fewer crimes committed in neighbourhoods, fewer residents victimised
- increased interaction among residents and stronger neighbourhood bonds
- new crime prevention and problem solving skills
- enhanced knowledge of city government agencies and other resources

**Comment:**

This document stresses the knock-on effects of a community's collaboration on design decisions using the CPTED framework. There is also an excellent list of resources/organisations in the crime prevention field, researchers and other experts with contact details, and an annotated list of reference materials

**Further information:**

Excerpts from the document held

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Noble J & Jenks M, 1989

**Safety and Security in private Sector Housing Schemes**

London, The Housing Research Foundation

**Aims & objectives; research method:**

To investigate relationships between the physical characteristics of road layouts, the incidence and nature of reported and unreported accidents and near misses, and residents' opinions about safety for pedestrians and drivers. The study involved detailed analysis of one large residential area containing a diversity of road types.

**Key findings:**

- Accidents can be reduced by building roads that restrain vehicle speeds and discourage non-access traffic
- Three times more accidents occurred on traditional roads than along DB32 roads
- More accidents and near misses occurred as numbers of dwellings on roads and their lengths increased, mainly related to the roads specifications which allowed and encouraged higher speeds (30mph and above)
- Most accidents occur where vehicles manoeuvre (at junctions)
- Long strait roads should be avoided in favour of restricted road lengths and bends
- shared surface roads are no more or less safe than roads with footways
- A correlation was found between relative accessibility and incidents of crime

**Comment:**

The study looked at one case study only covering an area of 2,500 houses. Definitive conclusions are difficult to draw except that the relationship between accidents and speed is important and that design can be used as a means to reduce vehicle speeds.

**Further information:**

John Noble  
Summary of report held

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Painter K, n.d

**Guide for Crime and Disorder Reduction through a Public Lighting Strategy**

Rugby, Institution of Lighting Engineers

**Aims & objectives; research method:**

Case studies work in Dudley to examine the linkage between better lighting and levels of crime

**Key findings:**

- For every £1 spent on street lighting, £4.34 is saved each year in reduced crime
- Better lighting can reduce crime by increasing night time use of public spaces
- Architects are more concerned with lighting their buildings than public spaces

**Comment:**

**Further information:**

Kate Painter, University of Cambridge  
Copy of news article held

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Pascoe T & Harrington-Lynn J, 1998

**Bexley Town Security Project - Executive Summary & Final Report**

Watford, Building Research Establishment

**Aims & objectives; research method:**

A project undertaken to provide improved understanding of crime in retail and other businesses in town centres and to provide a basis of risk assessment for use in such centres. The work involved a physical survey of the five main town centres in the London Borough of Bexley together with a questionnaire to all commercial premises and a review of crime statistics.

**Key findings:**

- Risk of non-domestic burglary and vandalism can be reduced through the presence of residential accommodation above retail premises, through external CCTV and intruder alarms
- Risk of non-domestic burglary and vandalism is increased if premises are situated in an open town centre (not in a shopping centre), have uncontrolled access to the rear, or if their yard is secluded or open to vehicular traffic
- The rate of crimes against retail and commercial properties is influenced by aspects of the layout and planning of town centres, with much of the theory behind Crime Prevention Through Design applicable
- Internal layouts of individual shops has an impact on incidents of shoplifting

**Comment:**

A very detailed study with extensive quantitative and qualitative data drawn across the five town-centres.

**Further information:**

Building Research Establishment, Garston, Watford, [enquiries@bre.co.uk](mailto:enquiries@bre.co.uk)  
Copy of report held

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Pease K, 1999

**Lighting and Crime**

London, The Home Office

**Aims & objectives; research method:**

Review of research on lighting and crime

**Key findings:**

- Precisely targeted increases in street lighting generally have crime reduction effects
- Street lighting improvements can reduce daytime crime as well as night time crime, inviting speculation that lighting increased community pride, sense of ownership and surveillance
- The effects of lighting are more pronounced in chronically victimised areas

**Comment:**

Findings accepted by the Home Office

**Further information:**

Ken Pease  
Copy of news article held

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Poyner B & Webb B, 1991

**Crime Free Housing**

Oxford, Butterworth Architecture

**Aims & objectives; research method:**

Aims to test the thesis that the most reliable method to prevent crime is by better design. Evidence is based on detailed analysis of a 10% crime sample in Northampton during 1982 and an analysis of all the crimes reported in five wards in Harrow in 1982.

**Key findings:**

- The book presents evidence that adopting certain design characteristics in low-rise housing can lead to very low rates of crime

Design requirements are:

- moderate locking security, facing windows, high fences at the sides and rear
- front access to a secure yard, access for servicing and deliveries, space at the front, on-curtilage hardstanding for cars, garages (if provided) at the side of the house close to the entrance
- limited road access (avoiding through traffic routes), avoid separated through pedestrian routes, surveillance over access roads
- green open spaces next to rather than within housing areas

**Comment:**

Some of the specifications contradict other design against crime specifications, for example support for cul-de-sacs. The recommendation to place open spaces outside residential areas may reduce crime in the residential areas but is likely to increase crime in the open areas so created.

**Further information:**

Barry Poyner, Poyner Research, [barry.poyner@cableol.co.uk](mailto:barry.poyner@cableol.co.uk)  
Extract of book held

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Ramsey M, 1991

**The Effect of Better Street Lighting on Crime and Fear: A Review, Crime Prevention Unit Paper No. 29**

London, Home Office

**Aims & objectives; research method:**

Examines the impact of improvements to street lighting on both crime and the public's sense of fear. The review draws together the most recent research findings

**Key findings:**

- Lighting improvements are in general more likely to have a positive impact on the public's fear of crime than on incidence of crime itself
- Exceptionally in localised blackspots where lighting is particularly inadequate crime and incivility may be reduced
- Offenders are not necessarily much influenced by lighting conditions

**Comment:**

A broad range of research is reviewed in this report including evidence from the US

**Further information:**

Action Against Crime and Disorder Unit, Home Office,  
<http://www.crimereduction.gov.uk/securedesign3>  
Copy of Review held

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Schneider, S., 1996

**The Theory and Practice of Crime Prevention Through Environmental Design: A Literature Review**

Ottawa: Canadian Mortgage and Housing Corporation

**Aims & objectives; research methods:**

To critically examine CPTED theory and applied projects with particular emphasis on identifying any gaps. The work used primary and secondary qualitative research methods including soliciting opinions of CPTED theorists, researchers & practitioners via questionnaires

**Key findings:**

- there is no clear understanding of the effects of environmental design on crime. Studies have shown that social and demographic variables are more important in predicting crime rates than physical characteristics.
- CPTED is more successful in stable, socially-cohesive environments

**Comment:**

**Further information:**

Copy of document not held

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Shaftoe H, 2001

**Crime Prevention through Environmental Design**

Bristol, UWE

**Aims & objectives; research method:**

To critically investigate whether symbolic barriers are effective in reducing crime or fear of crime in areas of residential housing. A literature review, experimental field test and interviews with design and planning professionals, residents and offenders will be undertaken

**Key findings:**

Research in progress, due to be completed summer 2001

**Comment:**

**Further information:**

Henry Shaftoe, School of Housing and Urban Studies, [henry.shaftoe@uwe.ac.uk](mailto:henry.shaftoe@uwe.ac.uk)  
Copy of abstract held

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Shaftoe H & Osborn S, 1995

**Crime Prevention and Security in Great Britain**

Safe Neighbourhoods Unit

**Aims & objectives; research method:**

To understand the breadth of crime prevention and security work in British neighbourhoods by looking at a broad range of case studies.

**Key findings:**

- A scheme in Swansea to introduce block managers resulted in 80% of the residents perceiving a fall in vandalism, 73%, less graffiti and 96% that the general conditions on their estate had improved
- In Enfield, physical improvements to the Alma Road Estate along with management and social initiatives has reduced burglary from 45 to 1 incident a year over five year and criminal damage from 18 to 3 incidents a year
- In Edinburgh, a comprehensive redesign programme of this 1970s housing estate reduced housebreaking by 65% and vandalism incidents by 59%. The scheme cost £33,000 per unit in 1989 and involved fundamental changes to the estate layout as well as the individual units
- Lighting improvements to the Easton and Ashley areas in Bristol including more lighting units and better quality light led to a reduction of crime by 16% in the key areas of street robberies, theft from cars, burglaries and vandalism in the 12 months following the introduction of the new lighting and a further 10% reduction the year after
- Physical changes to the Mozart Housing Estate in Westminster by removing the elevated walkways did not result in a reduction in crime. Analysis indicates that the removal of the walkways in fact exacerbated the labyrinthine layout of the estate
- Few of the designing out crime case studies (or other approaches) could be justified on a simple cost-benefit analysis equation. However, the unseen impact of schemes, particularly in a reduction of fear of crime, was significant

**Comment:**

The research looks more at management and process issues related to crime prevention strategies rather than at design issues.

**Further information:**

Henry Shaftoe, School of Housing and Urban Studies, [henry.shaftoe@uwe.ac.uk](mailto:henry.shaftoe@uwe.ac.uk)  
Copy of report held

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Sherman L, Gottfredson D, MacKenzie D, Eck J, Reuter P & Bushway S, 2001

**Preventing Crime: What Works, What Doesn't, What's Promising**

USA, National Institute of Justice

**Aims & objectives; research method:**

Chapter 7 reviews the available evidence on the effectiveness of practices to block opportunities for crime at specific locations. The report reviews 78 separate reports including analysis of 99 separate interventions.

**Key findings:**

- 90% of the 99 evaluated interventions displayed evidence of crime reduction effects, strongly supporting the case that opportunity blocking at key places can prevent crime
- Frequently reductions in recorded crime were very large

**Comment:**

This is a very extensive analysis of available evidence, but interventions ranged from urban design interventions to property marking. The collective evidence makes a strong case for preventing crime through place-specific interventions.

**Further information:**

John Eck, Department of Criminology and Criminal Justice, University of Maryland,  
<http://www.ncjrs.org/works/chapter7>  
Copy of Chapter held

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Taylor, R. B. & Harrell, A. V., 1996

**Physical Environment and Crime**

Washington, DC: US Department of Justice, National Institute of Justice

**Aims & objectives; research methods:**

A brief discussion of factors affecting crime rates - neighbourhood land use, street layout & other physical features - and Newman's defensible space theories.

**Key findings:**

- The relevance of the physical environment appears contingent on a range of non-physical factors and the type of crime or crime-related outcomes in question.

**Comment:**

**Further information:**

Copy of document not held.



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Wekerle, G. R., 1996

**Safe Cities: Guidelines for Planning, Design and Management**

New York: Van Nostrand Reinhold

***Aims & objectives; research methods:***

A description of Toronto's Safe Cities Program and its methods for auditing unsafe places and for designing safe places.

***Key findings:***

The success of the programme is due to the 3 main areas of emphasis:

- local plan reviews for safety concerns,
- planning assistance for community groups
- training for staff, private-sector architects and developers, and officials from other cities. The community services department of the city government provides this service.

***Comment:***

***Further information:***

Copy of book not held.

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**additional references:**

Cozens P, Hillier D & Prescott G, 1999

**Crime and the Design of New-build Housing**

Town and Country Planning, Vol 68, No 7

Greenberg SW, Williams JR & Rohe WR, 1982

**Safety in Urban Neighbourhoods: A Comparison of Physical Characteristics and Informal Territorial Control in High and Low Crime Neighbourhoods**

Population & Environment, no 5, 1982, pp 141-165

Institute of Housing and RIBA, 1989

**Safety and Security in Housing Design – A Guide for Action**

London, RIBA Publications Ltd

Lawrence RJ, 1987

**Housing, Dwellings and Homes: Design Theory, research and practice**

New York, John Wiley and Sons

Osborn S & Bright J, 1989

**Crime Prevention and Community Safety: A Practical Guide for Local Authorities**

London, National Safe Neighbourhoods

Poyner B, 1983

**Design Against Crime: Beyond Defensible Space**

London, Butterworths

Read T & Oldfield D, 1995

**Local Crime Analysis**

London, Police Research Group (Home Office)

Safe Neighbourhoods Unit, 1989

**Lighting Up Brent: Survey into Lighting and Safety on Chalk Hill, Stonebridge and South Kilburn Estates**

London, Safe Neighbourhoods Unit

Shapland J, 1988

**Policing with the Public**

in "Communities and Crime Reduction"

London, Home Office Research and Planning Unit, HMSO, pp116-25

Wekerle G, 2000

**From Eyes on the Street to Safe Cities**

Places, Vol 13, no 1, Winter 2000, pp44-49

# 5. housing

## main references:

1. The Real Cost of Poor Homes
2. The Real Cost of Poor Homes: Footing the Bill
3. Multi Dimensional Perception of Residential Environment Quality and Neighbourhood Attachment
4. Older Peoples' Models of Quality of Life and its Enhancement
5. Site Layout Planning to Improve Solar Access
6. The Aesthetics of Family Housing: The Residents' Viewpoint
7. The Nottingham Energy, Health and Housing Study
8. The Nation's Biggest Landlord Just Found Style: GSA: Uncle Sam Speaks Up For High Design
9. Valuing the New Urbanism
10. Community Noise Exposure and Stress in Children
11. Better NOT Bigger: How to Take Control of Urban Growth and Improve Your Community
12. Home Owners on New Estates in the 1990s
13. A Good Investment? The Impact of Urban Renewal on an Inner City Housing Market
14. Building Lifetime Homes
15. Living Together, Community Life on Mixed Tenure Estates
16. Residential Design Feedback, Summary
17. Health and Housing
18. Accommodating Diversity: Housing in a Multicultural Society
19. Kerb Appeal
20. The Private Value of Public Open Space Within Subdivisions
21. Health and Housing
22. Performance Indicators in Design
23. Internalizing Neighbourhood Externalities: The Effect of Subdivision Size and Zoning on Residential Lot Prices
24. Quality of Urban Design, A study of the Involvement of Private Property Decision-Makers in Urban Design
25. Economics of Urban Villages
26. Two Trade-off Experiments to Evaluate the Quality of Residential Environments
27. Design, Economy and the Architectural Imagination

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Ambrose P, Barlow J, Bonsey A & Pullin M, 1996

### **The Real Cost of Poor Homes**

London, Royal Institution of Chartered Surveyors

#### ***Aims & objectives; research method:***

Through an extensive literature review the report aims to review existing work on housing quality and the relationships to health, education and crime, and to link the discussion to urban regeneration policy and investment in housing.

#### ***Key findings:***

- The research summarised in this report confirms beyond any doubt that bad housing conditions are a factor in producing a wide range of conditions that generate extra costs on health, law and order, and educational budgets.
- It is argued that these additional costs most likely exceed the additional expense that would have been incurred by investing initially in better quality housing. In particular, poorly designed housing contributes to a range of illnesses including mental conditions, fuel poverty, deaths in winter, increased accidents, patterns of victimisation, and to spatial concentrations of crime.
- It is estimated that more money - as much as £2 billion a year - is being spent on treating illnesses arising from poor housing conditions than is spent by local authorities on their own housing stock.
- It is suggested that the consumption of health services by inadequately-housed residents is about 50% higher than average.

**Comment:**

Much evidence is offered for the link between design and health, but less linking design to incidents of crime and to educational achievement.

**Further information:**

Peter Ambrose, Andrea Bonsey or Mary Pulin all of Sussex University; James Barlow of University of Westminster  
Copy of report held

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Barrow M & Bachan R, 1997

**The Real Cost of Poor Homes: Footing the Bill**

London, Royal Institution of Chartered Surveyors

**Aims & objectives; research method:**

To measure the real (and often hidden) costs of poorly designed housing in terms of increased financial costs (e.g. more policing) and the reduced welfare of residents and of other citizens. Information was derived from a survey of 107 households on two estates, interviews with local service providers and from other documentary evidence.

**Key findings:**

- The costs associated with poor housing are large and of a recurrent nature in areas of health, education, criminal activity and prevention, energy costs, and fire prevention.
- National annual estimates of the increased costs associated with the 7.6% of unfit homes nationally are £3 billion for health cost, £1.8 billion for crime cost and £120 million for the cost of fire services.
- There are also important 'decommissioning' costs when housing needs to be replaced, such as added security costs for the housing authority, and higher heating bill for remaining residents, as well as the cost of demolition and rebuilding. Typically many homes are being demolished 25% short of a reasonable life expectancy of 60 years.
- Problems with housing can dominate residents' lives to the extent that they are unable to deal with problems in other areas of their lives making them less self-reliant with an associated increase in the public sector support required.

**Comment:**

This is a first attempt to try and estimate the costs and should be seen as such, not as a definitive study. The estimates have a large degree of uncertainty but are nevertheless a valuable start. Some costs could not be given monetary values i.e. the fear of crime, but are no less real.

**Further information:**

Michael Barrow and Ray Bachan, School of Social Sciences, University of Sussex  
Copy of report held

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Bonaiuto M, Aiello A, Perugini M, Bonnes M & Ercolani AP, 1996

**Multi Dimensional Perception of Residential Environment Quality and Neighbourhood Attachment**

Journal of Environmental Psychology Vol 19, no 4, December 1999, pp331-351

**Aims & objectives; research methods:**

One of many articles in academic journals that investigates good design by implication. A survey of communities in Rome to assess their neighbourhood attachment, using questionnaires and selected interviews.

**Key findings:**

1. The conclusions were that the architectural design found in a neighbourhood contributed to a sense of attachment if the buildings had "aesthetic pleasantness, internal practicability and external connections".
2. Lower socio-economic groups showed greatest neighbourhood attachment while a greater population density per acre also contributed to a greater sense of community.

**Comment:**

**Further information:**

Copy of article not held

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Bowling A, Banister D, Sutton S & Evans O, 2001

**Older Peoples' Models of Quality of Life and its Enhancement**

London, University College London

**Aims & objectives; research method:**

Research to determine the range of concerns that determine quality of life for the elderly, from access to health services, to social relationships, to built environment quality. The work was based on a national face-to-face survey of 305 respondents aged 65+.

**Key findings:**

- The neighbourliness of their home environment, access to local facilities and the pleasantness of the surrounding environment were amongst a very wide range of factors identified by the groups as contributing to quality of life.
- Health, independence, money and family/social relationships were the most important contributory factors to quality of life.

**Comment:**

Little emphasis given to environmental factors in the methodology.

**Further information:**

Professor Ann Bowling, Department of Primary Care and Population Sciences, UCL  
Copy of report held

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Building Research Establishment, 1998  
**Site Layout Planning to Improve Solar Access**  
Watford, BRE

***Aims & objectives; research method:***

To examine the relationship between design layout and solar heating, daylighting, passive cooling and air quality.

***Key findings:***

- Improved site layout can be relatively easy to adopt and can save 5% or more in domestic energy consumption through passive means.
- Good layout design can also reduce local air pollution and provide better daylighting.

***Comment:***

The aim has been to produce integrated design advice on site layout and solar access.

***Further information:***

BRE  
Copy of brief abstract held

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Cooper Marcus C, 1982  
**The Aesthetics of Family Housing: The Residents' Viewpoint**  
Landscape Research, Vol.7, No.3, pp9-13

***Aims & objectives; research method:***

Drawing from her book 'Housing as if People Mattered' this article offers ten guidelines for the designers of family housing. The 236 guidelines in the book are derived in large part from an analysis of approaching 100 post-occupancy evaluation studies of resident reactions to multi-family housing design from across the English speaking world.

***Key findings:***

- The overall impression of the exterior of a house or group of dwellings significantly affects how residents feel about their homes, sometime even how they feel about their worthiness as people.
- Homes that significantly deviate from the norm - especially if subsidised - may cause residents to feel inferior. Most residents wish for housing that reflects a middle class norm.
- Residents value the attractiveness of their homes and environment. This is determined by a good site layout and attractive landscape, varied and interesting views from the windows of homes, provision of private open space, some degree of aesthetic complexity, some degree of uniqueness of scheme sub-units.

***Comment:***

Very thorough analysis arguing for more consideration of what residents want as opposed to designers' elitist aesthetic preferences.

***Further information:***

Clare Cooper Marcus, College of Environmental Design, University of California  
Copy of article held

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Critchley R, Howard R & Oreszczyn T, 2000

## **The Nottingham Energy, Health and Housing Study**

Nottingham, First Report

### ***Aims & objectives; research method:***

Through a series of case studies, this project aimed to demonstrate the sort of modifications suitable for existing social housing to improve the health of asthmatics. It involved monitoring the occupant's use of their home, their health, the internal environmental conditions, the cost and energy use in houses before and after the introduction of improvements

### ***Key findings:***

- The residents' health improved by an average of 12% on a self-completion questionnaire with an associated reduction in medication and symptoms. Of particular significance was a reduction in the relative humidity with an associated reduction in house mite prevalence. Key is designing to raise temperatures, whilst ensuring ventilation remains adequate.
- The authors conclude that using health funding to improve housing conditions can lead to health improvements in the general population.
- Medical surveys have indicated a substantial reduction in school absenteeism after refurbishment.

### ***Comment:***

The findings are tentative, being based on only seven case studies.

### ***Further information:***

Rob Howard, National Energy Action Nottingham, [nottingham@nea.org.uk](mailto:nottingham@nea.org.uk)

Copy of article held

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Dean AO, 2000

## **The Nation's Biggest Landlord Just Found Style: GSA: Uncle Sam Speaks Up For High Design**

Architectural Record, Vol 189, No 2, February 2000, pp 62-66, 68

### ***Aims & objectives; research methods:***

Interview with the new head of the Government Services Agency in the United States about his views on good design. Review of some of the current projects with comments.

### ***Key findings:***

1. "The profession [architecture] needs to make it clear that quality design is not distinct from design that works, ..."
2. "Peck [Robert A Peck, new head of GSA's [Government Services Agency]] dismisses the charges that good design costs too much. "We may be paying a little bit more for good design," he says, " but on a \$60 million project, the difference is maybe a tenth of a percent of the total [cost of the project] ..."

### ***Comment:***

### ***Further information:***

Copy of article held.

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Eppli, M & Tu C, 1999

## **Valuing the New Urbanism**

Washington D.C., Urban Land Institute

### ***Aims & objectives; research method:***

Reports on the price differential that homebuyers are willing to pay for housing in communities developed using the principles of the new urbanism compared with conventional housing units in surrounding developments. 5,833 sales transactions in four new urbanist developments and 5,169 in comparable conventional developments were analysed using a hedonic price model.

### ***Key findings:***

- Homeowners paid more to live in the same home in new urbanist communities compared to conventional developments surrounding new urbanist communities.
- A differential of \$20,000 separated houses in new urbanist and non-new urbanist communities, an 11% premium in house prices.
- The findings did not test whether developers made more money developing new urbanist communities as information on the costs of developing such communities was not available.

### ***Comment:***

Very rigorous analysis based on U.S. case studies.

### ***Further information:***

Mark Eppi and Charles Tu, George Washington University  
Copy of report held

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Evans G, Lercher P, Meis M, Ising H & Kofler W, 2001

## **Community Noise Exposure and Stress in Children**

Journal of the Acoustical Society of America, Vol109, No.3, pp1023-1027

### ***Aims & objectives; research method:***

The study examines the stress outcomes of typical, everyday community noise exposure among children. The work examined multi-methodological indices of stress among young children living under 50 dB or above 60 dB in small towns in Austria.

### ***Key findings:***

- Children living in relatively noisy neighbourhoods had raised blood pressure, heart rates and levels of stress hormones, effects that happen at noise levels far below those required to damage hearing.
- Increased background noise also seemed to reduce child motivation, especially amongst girls and to 'learned helplessness' syndrome.

### ***Comment:***

The study is a rigorous assessment of 115 nine and ten year olds with significant implications for higher density living.

### ***Further information:***

Gary Evans, Design and Environmental Analysis, Human Developments, Cornell University,  
Ithaca, New York 14853-4401  
Copy of article held

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Fodor E, 1999



## **Better NOT Bigger: How to Take Control of Urban Growth and Improve Your Community**

Gabriola Island, British Columbia, Canada: New Society Publishers

### ***Aims & objectives; research methods:***

Succinct economic, social and environmental arguments against urban sprawl. Examples of good practice in urban planning, mainly from North America, where urban sprawl is now considered a blight.

### ***Key findings:***

1. The value of good urban design is that it makes efficient use of infrastructure, preserves open space thereby increasing the quality of life, and leads to less air pollution by reducing the need to travel.
2. The costs of urban sprawl are discussed in detail.

### ***Further information:***

[www.newsociety.com](http://www.newsociety.com)

Excerpts from the book held

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Forrest R, Kennett T & Leather P, 1997

## **Home Owners on New Estates in the 1990s**

Bristol, The Policy Press

### ***Aims & objectives; research method:***

To provide an indication of the state of homeownership, household attitudes and behaviour in the 1990s. The work involved a social survey of over 600 households in two large new housing estates, and unstructured follow-up interviews with a sample of households to pursue in greater depth issues that emerged from the surveys.

### ***Key findings:***

- Undifferentiated housing estates exhibit more difficulties in selling and more negative equity in a poor market than more distinctive developments.
- Factors other than design motivate occupiers to buy into new-build estates, most often the negative associations of the places they are leaving, affordability and the strong desire and ability to climb on the housing ladder.

### ***Comment:***

Design issues were not a major component of the study.

### ***Further information:***

Ray Forrest, School for Policy Studies, University of Bristol

Copy of report held

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Groves R & Niner P, 1998

## **A Good Investment? The Impact of Urban Renewal on an Inner City Housing Market** Bristol, The Policy Press

### ***Aims & objectives; research method:***

The study aimed to explore the impact of home improvement schemes on local housing markets. The study looked at three types of areas with varying levels of intervention during the 1980s.

### ***Key findings:***

- Publicly-funded investment in renewal had not on the whole stimulated further investment by home owners, largely because of the affordability problems faced by residents.
- Renewal investment has had little direct impact on house price levels that have followed national trends.
- Investment has, however, sustained the local market and improved conditions for residents without price inflation. Houses are now habitable, saleable, and acceptable to mortgage lenders as security and exhibit low vacancy rates.

### ***Comment:***

Reported economic and social problems in the areas surveyed have tended to impact on demand and the authors conclude that action on these fronts is as important as physical interventions on housing demand and therefore price.

### ***Further information:***

Rick Groves or Pat Niner, University of Birmingham  
Copy of report held

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Joseph Rowntree Foundation Lifetime Homes Group, 1997

## **Building Lifetime Homes**

York, Joseph Rowntree Foundation

### ***Aims & objectives; research method:***

This review of Joseph Rowntree Foundation reports sets out standards for lifetime homes and attempts to place overall costs and benefits on the approach.

### ***Key findings:***

- Simple improvements to the design of every home would make them easier to live in for families with children as well as the elderly of disables while saving money for owners and taxpayers.
- Lifetime homes standards typically add between £100 and £300 to the cost of a typical three-bedroom home.
- Increased initial costs are offset by long-term savings on adaptations averaging £250 per property (£350 million annually, 60% from public funds), and in the meantime offer safer and more accessible homes.

### ***Comment:***

The report draws from four funded research projects.

### ***Further information:***

Joseph Rowntree Foundation Lifetime Homes Group - [www.jrf.org.uk](http://www.jrf.org.uk)  
Copy of report held

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Jupp B, 1999

### **Living Together, Community Life on Mixed Tenure Estates**

London, DEMOS

#### ***Aims & objectives; research method:***

To consider how the mixing of tenures in residential areas affects the social and cultural conditions experienced by residents. 1,000 residents were interviewed on ten mixed-tenure estates across England.

#### ***Key findings:***

- Most residents are not particularly worried or inspired by the mixed nature of their estates. About 10% of residents appreciate the benefits (such as a better environment and facilities) whilst most are agnostic.
- Street level mixing is preferable to different tenure zones; the street is a much stronger social unit than the estate.
- Schools are by far the most important non-street site for local contact. Other facilities rarely inspire social contact.

#### ***Comment:***

This is a robust piece of research that confirms that mixing tenures in traditional street structures can help build social networks and therefore offer social value.

#### ***Further information:***

Ben Jupp, DEMOS, [mail@demos.co.uk](mailto:mail@demos.co.uk)

Copy of report held

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Milton Keynes Development Corporation, n.d

### **Residential Design Feedback, Summary**

Milton Keynes, Milton Keynes Development Corporation

#### ***Aims & objectives; research method:***

The residential design feedback represents a post-occupancy study of residents in five estates in Milton Keynes. The results were prioritised in a series of guidelines to guide future development in the town.

#### ***Key findings:***

- Residents prioritised the internal functionality of their homes over external features in the following order - adequate internal space, heating, noise insulation, internal storage, on-plot parking, garaging, external storage, garden fences and semi-detached or detached houses over terraced houses.
- External public space is valued, but not at the expense of adequate on-plot private space.

#### ***Comment:***

This post-occupancy study reflects the preferences revealed in most, that for most purchasers the functionality of the home comes before its intrinsic design or the design of the surrounding environment, but all things being equal these factors become vitally important.

#### ***Further information:***

Copy of report held

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O'Sullivan P, Croxford B & Stika E, 2000

### **Health and Housing**

London, Bartlett School of Graduate Studies, UCL

#### ***Aims & objectives; research method:***

To investigate the significance of the links between housing and health through a study of recently refurbished housing blocks in which significant energy efficient improvements were carried out. The study used a questionnaire to 902 households in 39 recently improved residential buildings in the King's Cross area.

#### ***Key findings:***

- In general, the homes with fewest improvements reported the most poor-health symptoms.
- Occupants acknowledged that the energy efficiency measures introduced have led to an improvement in their housing conditions although did not report any improvement in their health.

#### ***Comment:***

A poor response rate - just 8.3% - undermines the conclusiveness of these results.

#### ***Further information:***

Partick O'Sullivan, Ben Croxford and Eleni Stika, Bartlett School of Graduate Studies, UCL  
Copy of report held

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Penoyre & Prasad Architects, 1993

### **Accommodating Diversity: Housing in a Multicultural Society**

London, National Housing Federation, North Housing Trust`

#### ***Aims & objectives; research method:***

This design guide aims to improve the lives of minority ethnic, religious and cultural groups by identifying how housing could be better designed to meet their particular needs. The guidance is based on interviews amongst a broad range of housing organisations with expertise in housing-specific cultural groups, supplemented by the experience of similarly expert architectural practices.

#### ***Key findings:***

- The guide goes a long way to demonstrating how sensible - if often modest - changes to the way housing is designed can make housing more appropriate to the needs of different cultural groups living in the UK, in so doing increasing quality of life.
- Accommodating greater diversity through housing design should not mean that peculiar hybrid forms of housing are necessarily usable only by certain groups, but to a better understanding of design principles applicable to new housing in general.
- There is no desire among most groups for housing that stands out from the norm, although a range of specific - often minor - design features can help to make housing more acceptable to different cultural norms.

#### ***Comment:***

This is a design guide rather than a report on research. Nevertheless the guide is based on primary research. It includes a useful bibliography.

#### ***Further information:***

Penoyre & Prasad Architects  
Copy of report held

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Popular Housing Forum, 1998

### **Kerb Appeal**

Winchester, The Popular Housing Forum

#### ***Aims & objectives; research method:***

This report was commissioned to discover the factors which affect current and evolving buyer and public attitudes to the appearance and site layout of new housing. The work included discussion groups and a survey of 819 interviews with the general public divided between 'potential new-build buyers' and 'others'.

#### ***Key findings:***

- New-build homes are generally regarded negatively, being associated with the bottom end of the market.
- Strong preferences exist for traditional housing with character i.e. houses with interesting design features but in keeping with their surroundings.
- The appearance of the house is more likely to be a factor in rejecting a house than in choosing it - beyond a minimum standard other factors become more important i.e. maintenance, practicality/suitability for a family etc.
- The appearance of the neighbourhood was more important than that of the house itself with a preference for safe, green, quiet, village-like environments.
- Parking, density and facilities were all important factors.

#### ***Comment:***

Research largely concerned with the aesthetics of housing rather than its urban design.

#### ***Further information:***

Popular Housing Forum c/o Robert Adam Architects

Copy of report held

Peiser R & Schwann G, 1993

### **The Private Value of Public Open Space Within Subdivisions**

Journal of Architectural and Planning Research

#### ***Aims & objectives; research method:***

This paper examines the economics of open space within subdivisions focusing on a Radburn-style subdivision in Dallas as a case study. The researchers investigated whether the provision of open space is worth its cost and whether it is valued as highly as private open space. Survey data of homeowner perception is gathered and compared with sales data.

#### ***Key findings:***

- Open space is valued highly by residents, both those living onto spaces and those not directly on spaces.
- Nevertheless homeowners are unwilling to pay more to front onto open space and as long as they have access to open spaces prefer to trade-off public open space for extra private space.
- The general attractiveness of houses contributes the most to their value.

#### ***Comment:***

The unusual nature of the open spaces surveyed (linear greenways running along the rear of houses) and the small sample makes these results tentative at best.

**Further information:**

Richard Peiser or Gregory Schwann Lusk Centre for Real Estate Development, School of Urban & Regional Planning, University of Southern California, Los Angeles  
Copy of article held

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Scottish Homes, Research & Innovation Services, 1994

**Health and Housing**

Edinburgh, Scottish Homes

**Aims & objectives; research method:**

Based on an extensive literature/research review, the paper summarises the main themes that are emerging that make the link between health and housing. Individual studies are not explored in detail but a comprehensive list of source documents is provided. Some figures are offered linking, for example, dampness, air quality or heating to child health.

**Key findings:**

- Although much of the literature examined is inconclusive and/or flawed, the weight of evidence points to a strong link between health and housing. The researchers claim the evidence is overwhelming.
- It may not be possible to separate out the impact on health of individual aspects of design in homes, nevertheless some overall assessment of the contribution that bad design makes to bad health should be possible.

**Comment:**

Short on detail, although a useful bibliography of evidence linking health and housing.

**Further information:**

Scottish Homes Research & Innovation Services, Edinburgh, 0131 313 0044  
Copy of report held.

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SPRU, University of Sussex, ongoing research

**Performance Indicators in Design**

London, DETR & Construction Industry Council

**Aims & objectives; research method:**

A series of Key Performance Indicators (KPIs) is being developed to measure the design quality of buildings. The aim is to develop a tool for designers to use to compare and contrast the quality of their designs so that designers can deliver better value to users and clients and the added value delivered by their services can be measured. The work involves a literature review, interviews, workshops and surveys of practice.

**Key findings:**

- The indicators are being piloted and details/findings cannot be released at this stage.

**Comment:**

The indicators will address the cultural/social aspects of aesthetics, appropriateness to community, the utility value and technical performance, economy and sustainability. If the tool delivers on all of this it will be very useful indeed.

**Further information:**

David Gann, SPRU, [gann@atelier.u-net.com](mailto:gann@atelier.u-net.com)

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Thorsnes P, 2000

**Internalizing Neighbourhood Externalities: The Effect of Subdivision Size and Zoning on Residential Lot Prices**

Journal of Urban Economics, Vol.38, pp397-418

***Aims & objectives; research method:***

The paper aims to trace the impact of overall development size on the price of individual housing lots. The research undertaken in the U.S. uses data sets of sale prices recorded in a range of new residential subdivisions (developments).

***Key findings:***

- At a median development size, an additional acre adds 3% to the sale price of building lots.
- This is because larger developments allow developers to internalize neighbourhood externalities and better control the characteristics of the new neighbourhood.
- Consumers appear willing to pay for the better amenities that larger developments can provide.
- Public sector regulation of these amenities offers considerable benefit.

***Comment:***

The article effectively makes the case that larger developments support better design by allowing these costs to be supported by the development. Purchasers are willing to pay the increased costs incurred.

***Further information:***

Paul Thorsnes, Department of Economics, Grand Valley State University - [thorsnep@gvsu.edu](mailto:thorsnep@gvsu.edu)  
Copy of article held

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University of Reading & DEGW

**Quality of Urban Design, A study of the Involvement of Private Property Decision-Makers in Urban Design**

London, Royal Institution of Chartered Surveyors

***Aims & objectives; research method:***

The project examined the involvement of developers (including housebuilders), investors and occupiers in urban design, their attitudes to urban design and the benefits derived from it. The findings are based on the results of five case studies, six expert panels and a literature review. Two of the case studies were housing related.

***Key findings:***

- Developers attach more importance to urban design than investors or occupiers, although housebuilders attach less importance than other developers.
- Residential developers aim for 'appropriate' rather than 'sustainable' quality inspired by occupiers tendency to look to location, price and value for money from the dwelling itself first before design.
- Developers, investors and occupiers consider urban design considerations insofar as they gain benefit from doing so, for example helping to secure planning permission, or creating a better marketable image.

- Investor and occupier priorities are key to the commercial decisions made by developers.
- Literature suggests that better urban design is a factor in increasing value in the second-hand housing market.
- Greater competition in the local market enables occupiers to choose on the basis of quality and to take a longer term view about their investment, in such circumstances the quality of urban design becomes important.

**Comment:**

Just two housing developments were looked at along with three commercial schemes. No claim is made that the results are definitive.

**Further information:**

Alan Rowley, Department of Land Management and Development, University of Reading  
Copy of report held

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Urban Villages Forum

**Economics of Urban Villages**

London, Urban Villages Forum

**Aims & objectives; research method:**

The report is a supplement to the parent report 'Urban Villages'; it seeks to address in greater depth the economic aspects of planning and implementing urban villages, and to present recommendations. The report investigates the costs and benefits which directly concern the development industry (landowners, developers, contractors and funders) and the costs and benefits which concern others in the community (residents, businesses & workforce within and outwith the village, the local authority and the travelling public). A financial appraisal, social financial appraisal and community impact appraisal are presented.

**Key findings:**

- Conventional development by volume housebuilders may command a better short-term return on their investment, as their product is better understood at present. In the longer term, urban village advantages should lead to higher property values.
- Urban village development can ensure greater equity among stakeholders, thereby furthering good community relations; it offers better scope for optimising the environmental, social and economic impacts which development produces.
- Enduring urban quality, underpinned by good design and effective management, creates economic value; social, economic and physical decline can undermine that value. Part of the economic case for urban villages is that, by overcoming pressure for early financial returns, they make possible a more durable and longer-term investment.

**Comment:**

A good discussion of the background, nature and financial elements of urban villages. The use of an imaginary case study as a vehicle for quantifying costs and benefits seems primarily intended to illustrate the process undertaken, rather than establish a definitive argument that the Urban Village concept adds £x value. The report identifies areas for further research.

**Further information:**

Contact: Tony Aldous (document editor), via The Urban Villages Forum, 8 Stratton Street, London W1X 5FD.  
Copy of document held.

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Whitbread M, 1978

### **Two Trade-off Experiments to Evaluate the Quality of Residential Environments**

Urban Studies, Vol.15, No.2, pp149-166

#### ***Aims & objectives; research method:***

Two experimental surveys were employed in order to identify the subjects' preferences amongst a group of attributes of their residential environments. Subjects were asked to trade-off different attributes of dwelling and environmental quality and to give some indication of their willingness to pay for the changes.

#### ***Key findings:***

- The quality of the dwelling was the principal determinant of subject's preferences. Environmental considerations were generally less important although proximity to industry and dereliction elicited a strong negative reaction, suggesting that removal of eyesores within residential contexts represents a valuable investment.
- The work suggested that generally house price change can be used as an indicator of overall quality change.

#### ***Comment:***

The range of variables examined was limited to dwelling quality, levels of traffic, prevalence of greenery, prevalence of on-street parking, proximity to industry and adverse views and area upkeep, with findings on some of these i.e. the presence of greenery remaining uncertain.

#### ***Further information:***

Copy of article held

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Worpole K, 2000

### **Design, Economy and the Architectural Imagination**

London, RIBA Future Studies

#### ***Aims & objectives; research method:***

A discussion of the contribution that architecture and design can make to towns and cities; key points are illustrated by brief case study insets.

#### ***Key findings:***

- The role of architecture and design is significant; the importance of new architectural landmarks and flagships to the renewed identities of Britain's cities is evident everywhere.
- Good design need not be more expensive (in capital or revenue terms).
- "A study of tenants on the Holly Street Estate in Hackney, refurbished by the architects Levitt Bernstein Associates in close consultation with tenants, found that 'the effects of improved housing also appear to be reducing the demands made on the local health service and leading to an increased level of confidence and involvement in neighbourhood affairs'. The survey found that attendances at local surgeries were decreasing, in the total of those surveyed from an estimated 538 visits when they lived in the previous property down to 376 visits while in the new property. The author of the study suggests that 'it would appear that the demands on the NHS have fallen by around a third in the past six months to a year'".

#### ***Comment:***

The document presents many anecdotal examples; it does not seek to be definitive. The brief summary evidence quoted from the tenants' study does not expand upon the detail of the analysis,

consequently it is difficult to identify whether causality is due to increased tenant satisfaction/quality of life issues, or specific health problems that have been addressed (ventilation, heating, natural environment).

**Further information:**

Contact: Ken Worpole, Senior associate of Demos and Comedia.

Copy of document held; see also Wadhams Associates, 1997, **Just What the Doctor Ordered**

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**additional references:**

Ambrose P, 1996

**I Mustn't Laugh Too Much. Housing and Health on the Limehouse Fields and Ocean Estates in Stepney**

Centre for Urban and Regional Research, University of Sussex

Benson, Hansen J, Schwartz A & Smersh G, 1998

**Pricing Residential Amenities: The Value of a View**

Journal of Real Estate Finance and Economics, Vol 16, no 1, pp55-73

Cooper-Marcus C & Sarkissian, 1986

**Housing as if People Mattered: Design Guidelines for Medium Density Family Housing**

Berkeley, University of California Press

Dietsch DK, 1995

**New Faces of Public Housing**

Architecture, Vol 84, no 10, October 1995, p 15

Hough DE & Kratz CG, 1983

**Can 'Good' Architecture Meet the Market Test?**

Journal of Urban Economics, Vol 14, pp40-54

Iervoline L, 1997

**Rediscovering Community Values**

Inland Architect, March-July 1997, pp 28-29

Kain JF & Quigley JM, 1970

**Measuring the Value of Housing Quality**

Journal of the American Statistical Association, Vol 65, pp532-546

Planning Advisory Service, September 1998

**The Principles of Smart Development**

Chicago: American Planning Association (APA)

Pyatok M, 2000

**New Urbanism and Inner City Neighbourhoods That Work**

Places, Vol 13, no 1, Winter 2000, pp 40-43

Susanka S, 1998

**Rethinking the House**

Architecture Minnesota, Vol 24, no 5, September/October 1998, pp 44-45

Tibbets J, 1998

**Open Space Conservation: Investing in Your Community's Economic Health**  
Cambridge, Mass: Lincoln Institute of Land Policy

Winter J, Coombes T & Farthing S, 1993

**Satisfaction with space around the home on large private sector estates**  
Town Planning Review, Vol 64, no 1, pp-

Wadhams Associates, 1997

**Just What the Doctor Ordered**

# 6 ■ social inclusion (& regeneration)

## main references:

1. Citylights
2. Building a Civic Framework
3. Challenging Images: Housing Estates, Stigma and Regeneration
4. The Heritage Dividend: Measuring the Results of English Heritage Regeneration
5. Joined-up Places? Social Cohesion and Neighbourhood Regeneration
6. Speech Delivered at the CABI Conference 'Building for the Future'
7. Cities in Our Future: Growth and Form, Environmental Health and Social Equity
8. Public Spaces, Public Life
9. Bryant Park, New York City
10. Streets as Living Space: Helping Public Places Play Their Proper Role
11. Stone Cleaning and its Effect on Property Market Selling Price
12. Public Life in Urban Places: Social and Architectural Characteristics Conducive to Public Life in European Cities
13. The Economic Benefits of Parks and Open Spaces
14. Communities in the Balance: The Reality of Social Exclusion on Housing Estates
15. Making Good Design Pay Off
16. Public Art in Private Places: Commercial Benefits and Public Policy
17. RAI Awards: Spencer Institute of TAFE, Kadina Campus & Community Library (SA)
18. Neighbourhoods for Learning
19. Stars Can Transform Cities, Says Bilbao
20. Urban Lights: Sustainable Urban Lighting for Town Centre Regeneration
21. Road Accidents and Children Living in Disadvantaged Areas
22. Judging Design Excellence
23. Design, Economy and the Architectural Imagination

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Bradley J, 1996

### **Citylights**

Metropolis Vol 15, No 8, April 1996, pp30-34

#### ***Aims & objectives; research methods***

The quality of urban nightlife is influenced by the kinds of lighting cities use. Examines what white versus yellow light does to a neighbourhood.

#### ***Key findings:***

White light increases the amount of night-time activity, but is more expensive.

#### ***Comment:***

This is one of many such studies that confirm the improved aesthetic effect of white light.

**Further information:**

Copy of article not held.

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Bressi TW, 1998

**Building a Civic Framework**

Places, Fall 1998, Vol 12, No 1, pp24-25

**Aims & objectives; research methods**

A brief article discussing the impact of the Radnor Gateway Enhancement Strategy, an arts project that encompasses landscape, signage and site planning.

**Key findings:**

- The project emerged in response to a new freeway planned; the first critical decision was to look for opportunities beyond simply beautifying the freeway corridor to express local history and reinforce the town's main highway.
- The improvements have given the township and local businesses impetus to make further changes, prompting a broader design review effort that would give the town more leverage over corporate franchises.
- Several corporate franchises have responded by agreeing to change signage, landscaping, canopies and architecture according to the town's guidelines.
- The improvements have also spurred a further landscaping and lighting plan; involving the community and local businesses. Eighty trees have been planted near the school, several hundred thousand dollars of corporate contributions have been received for landscaping, and churches have undertaken lighting projects.

**Comment:**

Interesting discussion of the catalyst effect that a quality investment in the public realm can have, although other possible 'levers'/drivers acting behind the scenes are not discussed.

**Further information:**

Copy of article held.

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Dean J & Hastings A, 2000

**Challenging Images: Housing Estates, Stigma and Regeneration**

UK, The Policy Press/Joseph Rowntree Foundation

**Aims & objectives; research methods**

The report examines three stigmatised estates undergoing regeneration programmes and explores how regeneration initiatives can address image problems.

**Key findings:**

- Despite substantive change on the three estates, a poor local image persists. An estate's reputation does not automatically improve as the estate improves.
- Residents perceive that they are disadvantaged as a result of stigma.
- Regeneration initiatives do not address impact upon an estate's image.
- There are usually several 'fractured images'.
- A poor image can lessen other benefits of regeneration programmes; image management and change on the ground are required.

**Comment:**

The quality of the physical environment is an important contributor to an area's image, although it is difficult to separate out and quantify the impact.

**Further information:**

Contact authors via JRF

Copy of report available from the Joseph Rowntree Foundation ([www.jrf.org.uk](http://www.jrf.org.uk)). See also

**Challenging images: housing estates, stigma and regeneration**, Findings, October 2000 (copy held).

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English Heritage, Town Centres Limited & London School of Economics, 1999

**The Heritage Dividend: Measuring the Results of English Heritage Regeneration**

London, English Heritage

**Aims & objectives; research methods**

The Heritage Dividend identifies the social and economic benefits of investment in the built heritage, specifically through English Heritage's Conservation Area Partnership Scheme. 31 case studies undertaken.

**Key findings:**

- The indicators that were quantified were: Match funding from private sector and other public sources, Sq.m of improved commercial floorspace, New jobs, Safeguarded jobs, and Improved homes
- Indicators relating to the quality of design work were not addressed
- One of the key lessons  
"Conservation-led projects build on the quality inherent in traditional buildings and ensure that new works pay the same attention to design, detail and materials. This ensures that these projects have a sustained impact, look attractive and have lower long-term revenue costs."
- The report concludes that one of the benefits of a conservation-led approach is good quality design and workmanship, at the same time as concluding that these projects have social and economic benefits.

**Comment:**

Quantifying the impact of design not specifically addressed, however the anecdotal case studies identify some outcomes of design/visual image.

**Further information:**

Excerpt of document held; contact Helen Hayes, Director, Town Centres Limited 020 7253 2223 or [helen.hayes@towncentres.ltd.uk](mailto:helen.hayes@towncentres.ltd.uk)

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Forrest R & Kearns A, 1999

**Joined-up Places? Social Cohesion and Neighbourhood Regeneration**

York, Joseph Rowntree Foundation

**Aims & objectives; research methods**

Four research projects in Teesside, London, Liverpool and Nottingham have studied the physical and social qualities of disadvantaged neighbourhoods and the interaction between them. Factors considered: what affects social cohesion within neighbourhoods and how it might be strengthened; what do the residents feel about the neighbourhood and the impact on the area of regeneration initiatives. The findings of the four studies are summarised in the above report and 'Foundations'.

**Key findings:**

- The neighbourhoods studied do not lack social cohesion. Tensions exist between different groups of residents, e.g. newcomers and established residents. Regeneration initiatives sometimes reinforce existing divisions.
- The physical environment is important for community morale and social interaction. Most of the areas studied were physically isolated and in areas of industrial decline. The closure/deterioration of 'landmark' local buildings lead to a loss of pride in the area's heritage, feelings of powerlessness and a lack of confidence. Social housing could play an important role in reducing physical decay.
- A lack of community activities and facilities hinders the process of building social bridges between groups in the neighbourhood; shops, cafes, youth clubs, sports and social facilities were generally linked with the potential for a better quality of life. The reinstatement of a public service presence in disadvantaged areas could also help to rebuild confidence.
- PR for neighbourhoods and links to the wider urban area are vital.

**Comment:**

The findings from the summarised reports represent a comprehensive framework for the renewal and regeneration of inclusive neighbourhoods; 'design' issues are important at a strategic level and at the detailed level of physical image. The reports do not seek to quantify findings; any social or economic outcome would be very difficult to measure, or attribute to any particular variable.

**Further information:**

Contact authors via JRF

Copy of 'Foundations' held: **Social cohesion and urban inclusion for disadvantaged neighbourhoods** Foundations, April 1999

The original reports forming the content are available from the Joseph Rowntree Foundation See also [www.jrf.org.uk](http://www.jrf.org.uk);

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Foster N, 2001

**Speech Delivered at the CABA Conference 'Building for the Future'**

London, 6 February 2001

**Key findings:**

- "There is a very direct link between quality of design and quality of life. ... Quality is an attitude of mind."
- Considering the costs of a building over a 25-year period, only 41% of that is the capital cost. If staff costs are considered as well, they account for 86% of the building's costs while the physical envelope accounts for as little as 5.5%.
- Investment in good design is worthwhile as it triggers savings in other areas such as running costs while contributing to an increase in productivity and quality of life generally.

**Comment:**

**Further information:**

Synopsis of speech held, along with copies of two slides illustrating life cycle costing of typical commercial buildings.

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Geddes R, 1997

**Cities in Our Future: Growth and Form, Environmental Health and Social Equity**

Washington, DC: Island Press

***Aims & objectives; research methods:***

Examines the growth of Los Angeles, Toronto, New York, Cascadia (Portland, Seattle, Vancouver) and Mexico City as 5 case studies to illustrate the successful practices and potential problems associated with urban growth.

***Key findings:***

- One strong theme throughout is the need for "good, thoughtful, reflective design" to nurture environmental quality, equity and ecological cities.
- One common problem is that long term planning is seen to be an important prerequisite for the well designed, successful cities but that the short term political horizon is often an obstacle to be overcome by planning and community organisations.

***Comment:***

***Further information:***

Copy of book not held.

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Gehl J & Gemzoe L, 1998

**Public Spaces, Public Life**

Copenhagen: The Royal Danish Academy

***Aims & objectives; research methods:***

The research has been taking place in Copenhagen since 1965 and is an excellent example of an urban longitudinal study, which documents the use of streets and plazas both before and after design interventions. Research has also been carried out in Stockholm (1990), Oslo (1987), Perth West Australia (1993) and Melbourne (1993-4). The studies have been conducted in three parts: assessing what spaces are available, seeing how these spaces are used, and reviewing what could be done to improve the conditions for public life.

***Key findings:***

- Wherever public spaces of good quality were provided, a substantial increase in public life has taken place. The increase has been especially pronounced in regard to optional activities, or those activities people undertake by choice, which may be the best indicator of the attractiveness and comfort of public space.
- The findings also challenge the notion that cold-weather cities like Copenhagen cannot develop pedestrian life, and suggest that even auto-dominated cities like those in the US can carefully cultivate public social life.
- So successful has been the public realm designs for Copenhagen that, as one statistic shows, the level of public life on a summer's day in Copenhagen equals that in Rome.

***Comment:***

A very comprehensive study over many years

***Further information:***

Copy of book not held, see also Gehl J, 1998 **Public Places, Public Life** Places, Vol 12, No 1, Fall 1998 pp26-31 (copy held)

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Hardy Holzman Pfeiffer Associates, 1998

**Bryant Park, New York City**

Places, Vol 12, No 1, Fall 1998, pp10-15

***Aims & objectives; research methods:***

Long term regeneration of the park beside the New York Public Library:  
\$18 m project on the 5 acre park with the aim of making it "accessible and inviting" to the local and tourist communities. The research examines the process of regeneration including how the plan was developed, how funding was raised, and the social effects on the city.

***Key findings:***

- The regeneration resulted in an increased use of the park, and a perceived increase in the quality of life in the area.
- Design emphasis was placed on the use of white night lighting, architectural detailing of the street furniture, and the provision of fixed and moveable seating.
- A recent user survey showed that female users of the park increased from approximately one third to almost one half, while crime has dropped substantially.
- This regeneration project is now a model for other urban public regeneration schemes. It also illustrates quite clearly the value of good design and of the benefits of attention to detail and user needs.

***Comment:***

This study which examines the process issues underpinning good design, reflects the comments made by Foster in his CABE speech (6/2/2001): "Before you can begin to design the physical infrastructure and buildings, you first have to design an infrastructure for making decisions. The quality of design exists in direct proportion to the quality of decision-making."

***Further information:***

Copy of article held.

Hass-Klau C, Crampton G, Dowland C & Nold I, 1999

**Streets as Living Space: Helping Public Places Play Their Proper Role**

London, Environmental and Transport Planning / Landor Publishing Ltd

***Aims & objectives; research method:***

The report includes a review of theory and practical literature, and uses case studies of European and British town centres to investigate people's behaviour in town centre streets and to formulate key lessons in achieving vital and liveable streets. Research methods used in the case studies include observation, interviews/questionnaires and physical mapping.

***Key findings:***

- On nearly all the indicators of social life studied, the Continental towns did better than the British towns; by far the highest percentage of dislike of town centres was recorded in the British towns.

Practical ingredients in achieving liveable streets are identified:

- to have space for watching, sitting, doing things (car-free space)
- plenty of chairs, benches and informal possibilities to sit and relax and to watch something (other people, water, even cars)

- to be able to participate in an activity which is already taking place (sitting, standing around, eating together where other people are already eating)
- looking at something, for instance shop displays, statues, fountains, markets
- sunshine and protection from wind

**Comment:**

Useful review of literature on urban street life, and comprehensive and detailed case studies reflecting behaviour and physical environments. Observed behaviour and questionnaire responses are attributed to physical elements in each case, although the evaluation and recommendations are of a qualitative nature, consequently it is difficult to draw any quantified conclusions.

**Further information:**

Contact: Carmen Hass-Klau, Graham Crompton, Clare Dowland or Inge Nold at Environmental and Transport Planning, 9 South Road, Brighton BN1 6SB.  
Copy of document held.

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Laing R & Urquhart D, 1997

**Stone Cleaning and its Effect on Property Market Selling Price**

Journal of Property Research

**Aims & objectives; research method:**

To elicit from the knowledge of the professionals working in the property valuation field, the effect that they perceived stone cleaning had on market value. An initial survey of Scottish surveyors was followed by face to face interviews with key respondents.

**Key findings:**

- Immediate gains in property market selling prices of 3% are apparent after stone cleaning
- Improvement in property marketability is also apparent.
- owner occupiers were more interested in the aesthetics of buildings than investors

**Comment:**

No reflection on the cost of stone cleaning is given in the article.

**Further information:**

Richard Laing, School of Construction, Property and Surveying, the Robert Gordon University, Aberdeen  
Copy of article held

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Lennard SHC, 1984

**Public Life in Urban Places: Social and Architectural Characteristics Conducive to Public Life in European Cities**

New York: Gondolier

**Aims & objectives; research methods:**

The "ideal-typical" description of the character of social life in public spaces presented here is based on extensive participant-observation in public places in 20+ Western European cities. The focus is to learn under what conditions good public spaces can be a "positive and creative influence" for their users. Chapters highlight different aspects of public space - the ethics of public

space, theatrical qualities, the importance of markets, and festivals, celebrations and street entertainment.

**Key findings:**

Public spaces are seen to promote democratic and ethical conduct, attitudes and relations within a community, and they do so in 5 ways:

- They minimise the inequities of access and of opportunity for use that prevail for most private indoor spaces
- They promote a wide range of encounters and relationships, of short or long duration, planned and unplanned, mostly without specific goals other than to be sociable. These transactions are rarely exploitative; users of public spaces are connected to each other through positive feedback processes
- In public spaces, users encounter others different from themselves in many respects. Their co-presence may generate a rethinking and reevaluation of premises on which favourable or prejudiced reactions are based.
- Public spaces also tend to diminish exclusion of, and inattention to the physically or mentally disabled
- All persons are enriched in their view of others through the recognition of the wide range of behaviours, emotions, and relationships each is capable of.

**Comment:**

This is a reasoned plea for adequate, well-designed and animated public spaces in North American cities.

**Further information:**

Book is out of print, copy not held

Lerner S & Poole W, 1999

**The Economic Benefits of Parks and Open Spaces**

San Francisco: The Trust for Public Land

**Aims & objectives; research methods:**

To highlight the benefits of open space conservation using supporting evidence from academic studies, economic analysis, and first-hand experience of communities across the United States. Open space conservation is not an expense or a waste of land but is an investment that produces important economic benefits.

**Key findings:**

4. Contrary to popular belief, buying and/or preserving open land for public use actually increases municipal tax revenues by increasing land values in the neighbourhood
5. The open space also increases the public's perception of the quality of life and nurtures the economic health of the community by making the area a desirable place to live and work.
6. Firms tend to locate and invest in those areas that are well designed and maintained, with ample open space provision. Labour locates in these same areas.
7. Other benefits include the open space contribution to water management and purification, air quality improvements especially when the spaces are lushly planted, and flood management.

**Comment:**

**Further information:**

Contact authors via TPL, [www.tpl.org](http://www.tpl.org)

Copy of document held

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Page D, 2000

**Communities in the Balance: The Reality of Social Exclusion on Housing Estates**  
UK, YPS/Joseph Rowntree Foundation

***Aims & objectives; research methods***

The study investigated the reality of social exclusion on housing estates in three diverse settings, with different social and economic conditions common in post-industrial Britain.

***Key findings:***

- Anti-social behaviour of young people is a major issue
- Those that are vulnerable to social exclusion are in the minority, although their presence defines the estate culture, and hence reputation
- Housing investment, the quality and availability of public services and lettings policies are the critical issues that can tip the balance

***Comment:***

The study primarily addresses socio-economic issues; however the state of the physical environment, and what messages it gives and the signals that visible investment can send can play a major contribution.

***Further information:***

Contact authors via JRF

Copy of report available from the Joseph Rowntree Foundation ([www.jrf.org.uk](http://www.jrf.org.uk)). See also **The reality of social exclusion on housing estates**, Findings, November 2000 (copy held).

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Pearson CA, 2000

**Making Good Design Pay Off**

4th Annual Business Week/ Architectural Record Awards, Architectural Record, Vol 188, No 10, October 2000, pp84-99

***Aims & objectives; research methods:***

Annual design awards focusing on the benefits of good design, with the 10 winning schemes. The awards illustrate the growing awareness of the value of good design in both architecture and the public realm.

***Key findings:***

- The redesign of a subway between a transit node and a department store resulted in a 12.4% increase in visitors to the store.
- In the new design of a manufacturing facility, the layout encouraged greater interaction among design and production teams, and as a result, both quality assurance and adherence to schedules improved.
- In the new design for an arts & crafts studio in Des Moines, Iowa, the company enjoyed a 20% increase in output and a reduction in the time required for handling and transporting products. The savings went to enhance employee benefits, and recruitment and retention programs.
- With the completion of the Rose Centre for Earth and Space at the American Museum of Natural History in New York, the museum reports a 58% increase in visitors, a 200% increase in group reservations, and a 200% increase in membership applications. As a result of the

new extension, an example of good, contemporary architecture, the 131-year-old museum is seen as one of the most dynamic in the city.

- A new 15 storey building in Japan with "lushly planted terraces" reported a 20% reduction in heating and cooling costs over their budgeted predictions. The building, fronting a major urban open space, was designed to reflect the greenery of the park. The steps on the terraces also act as fire exits so that the owners could designate more floor space to lettable area. The owners also believe that they saved \$780 million by winning the 60 year land-lease contract with a lower bid of \$7 million a year compared to a competitor who offered \$20 million a year. The value of good design in this regard saved the client a significant amount of money in ongoing costs.

**Comment:**

The claims made are not substantiated, but reflect general support for the idea that good design is an investment that produces benefits over time.

**Further information:**

Copy of article held.

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Platts S, Olsen A: interview & information, 07.03.2001

**Peckham Library: Impact of the New Building**

Stephen Platts, Development and Regeneration Manager, LB Southwark (interview 07.03.2001)

Adrian Olsen, Arts, Libraries and Museums Service Manager, LB Southwark

**Aims & objectives; research methods:**

The London Borough of Southwark sees design as the key to regeneration; the development recently undertaken aims to reduce the stigma attached to Peckham.

**Key findings:**

Stephen Platts:

- The new library, and the publicity surrounding it, has raised the profile of Peckham.
- There has been a substantial increase in market and property development: 5 years ago there was no market for residential owner-occupiers; there are now 2 quite large residential developments underway, Maple Square (Laing Homes) and Colston Square (Cophorne Homes).
- House prices have gone up by an average of 43% in Peckham over the last 3 years (the highest in England and Wales); and the proportion of company directors moving in to the area has jumped 19.3% since 1998 (the second highest increase in England and Wales). Experian statistics from Daily Mail (19.02.2001).
- A site on the High Street in Peckham has recently sold to a national retailer; perhaps 3-4 years ago this would not be 'saleable'.
- Now that market activity and interest (and hence competition) is increasing, the local authority is now able to insist on quality design; it gives the LA a strong hand to negotiate with.
- New Peckham Wharf: commercial site next to the library; development brief prepared for mixed use scheme, 2 leisure-focused schemes will undergo public consultation in library. Prior to the Peckham library development and fledgling 'renaissance' occurring in Peckham, the site would probably only have been viable for housing.

Adrian Olsen:

- The basic library services have remained the same, IT provision has increased significantly, a lot of the stock (three-quarters of the books etc) is new. The new library functions as a wider

community facility; and is used by significant numbers of young people after school (the busiest period).

- The figures for visits, loans, membership and reservations comparing the last full year of the two closed libraries and the estimate for the first full year of new Peckham (based on the first six months) show a significant increase. Visits up from 171,000 to 450,000 (annual) and loans up from 80,000 to 340,000 (annual).
- Some evidence that people from other libraries are now using Peckham library (eg the catchment area for Peckham library has now extended to Dulwich); there is evidence that there is a slight decrease in attendance figures at other libraries in the Borough. Previously Dulwich was the busiest library (no. of visits and issues) by a considerable margin; now, Peckham has more visits than Dulwich. People are visiting from further afield (Camden, Hackney etc) but there is no sure way of tracking it statistically.
- Marketing: high profile launch locally, officially opened by Chris Smith. Opportunity to launch it as a new library standard; and to celebrate 150 years of public libraries. The library receives visits from all over the world, from people in the fields of regeneration, architecture and libraries. Recent visitors from Croatia. The library has put Peckham on the map internationally.
- The cost of design: a benchmarking exercise was undertaken comparing the development costs against other libraries; Peckham was towards the upper end of the cost bracket, but within the range. The library cost approximately £5m; visiting architects are generally amazed at the high quality and value for money.
- The value that has been achieved is not just a cost per sq. m, but is acknowledged as wider: number of visits, 'image', regeneration and commercial.

**Further information:**

Stephen Platts ([Stephen.Platts@SOUTHWARK.GOV.UK](mailto:Stephen.Platts@SOUTHWARK.GOV.UK)) or Adrian Olsen ([Adrian.Olsen@SOUTHWARK.GOV.UK](mailto:Adrian.Olsen@SOUTHWARK.GOV.UK)); LB Southwark tel: 020 7525 5000

Copy of article held: Poulter S, **Profitable Peckham**, Daily Mail (19.02.2001); copy of library statistics and background notes held; copy of New Peckham Wharf Development Brief held.

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Roberts M, Marsh C & Salter M, 1993

**Public Art in Private Places: Commercial Benefits and Public Policy**

London, University of Westminster Press

**Aims & objectives; research methods**

To ascertain the extent to which the provision of public art could bring financial and other benefits to occupiers and investors in property. Research methods used were: face-to-face surveys of selected property companies, a postal survey of local authorities exploring public art policies and a random sample questionnaire to major companies exploring attitudes to public art. The focus of the study was the commercial office market in the period 1987-1993.

**Key findings:**

- Better quality accommodation is a key motive for corporate relocation.
- The majority of the sample of investment institutions thought that the image of a development was more important than five years ago.
- Over three-quarters of occupiers responding to the survey felt that their building enhances their company's image and status.
- 62% of those occupiers recognised that the contribution which public art made to their building's image was significant.

**Comment:**

The research concentrates primarily on assessing attitudes within the sample; it does not seek to quantify the commercial contribution of art/design.

**Further information:**

Marion Roberts, University of Westminster ([M.E.Roberts@westminster.ac.uk](mailto:M.E.Roberts@westminster.ac.uk)) 020 7911 5000  
Excerpt of report held; see also Roberts M, Marsh C, 1995, **For Art's Sake: public art, planning policies and the benefits for commercial property**, Planning Practice and Research, Vol. 10, No.2, 1995 pp189-198 (copy held).

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The Royal Australian Institute of Architects, 1999

**RAIA Awards: Spencer Institute of TAFE, Kadina Campus & Community Library (SA)**

Greenway International Pty Ltd

**Aims & objectives; research methods**

Short article discussing the merits of an award-winning architectural project. The development comprises a new TAFE Campus in Kadina for the Spencer Institute of TAFE that includes a joint use community library. The new facility replaces an existing campus comprising a series of transportable buildings in poor condition.

**Key findings:**

- Design elements include: consolidation of an educational campus (with adjoining buildings), a central landscaped courtyard, civic presence through siting, the use of materials to highlight special elements and reinforce historical links.
- There was initially some reservation about the relocation of the library, however, library usage has increased approximately 30%.
- Enrolments in TAFE courses have increased dramatically, and the Spencer Institute of TAFE was awarded the 'National Training Provider of the Year' for 1999.

**Comment:**

Presents evidence of the increasing popularity of the campus and library, although it is difficult to evaluate the level of causality, as there are probably other factors involved.

**Further information:**

Copy of article posted on web-site; see also <http://awards.raia.com.au/>

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Strickland R, 2000

**Neighbourhoods for Learning**

Places, Vol 13, no 1, Winter 2000

**Aims & objectives; research methods:**

The focus is on the revitalisation of neighbourhoods via school regeneration schemes. A 'neighbourhood urban design analysis' sets the parameters of the urban renewal while vacant sites in the vicinity of the school are also drawn into the web of regeneration and connected into the network of learning facilities in a neighbourhood.

**Key findings:**

1. This represents the development of a process whereby good design, both urban and architectural, yields benefits in education and quality of life in the community.

2. An initial run of the project took place in Union City, New Jersey.
3. The response was so positive that the city is now exploring how to extend the process to make Union a "city for learning".

**Comment:**

**Further information:**

Copy of article held.

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Stungo N, 1999

**Stars can transform cities, says Bilbao**

Building Design, 01/10/1999, p2

**Aims & objectives; research method:**

Article discussing the regeneration impact of the Guggenheim Museum in Bilbao.

**Key findings:**

- The Guggenheim museum has boosted the Basque Country's GDP by approximately 0.5%.
- A well-known architect undertaking a commission generates phenomenal publicity
- In the Guggenheim's first year, it attracted more than a million visitors, double the expected figure.
- The building is reported to have cost £4000 per sq m, although Martinez suggests that it represents value for money overall.

**Comment:**

**Further information:**

Contact: Alfonso Martinez Cearra, director of Bilbao regeneration company Metropoli-30, (tel) 00 34 94 415 86 85

Copy of article (Reuters Business Briefing) held

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University College London, Lighting Design Partnership & Philips Lighting, ongoing research

**Urban Lights: Sustainable Urban Lighting for Town Centre Regeneration**

3-year project funded by Technology Foresight

**Aims & objectives; research methods:**

A before-and-after study utilising a control group to assess, quantitatively, the social, economic and environmental impact of town centre lighting. The research method includes two case studies involving a major lighting intervention in two town centres in need of regeneration, with monitoring before and after, and monitoring of a control group of streets with no intervention.

The project will produce two exemplar lighting schemes and design guidance for the creation of pedestrian-friendly streets.

**Key findings:**

- Preliminary findings (cited within unreferenced article): Rotherham Case Study, initial analysis of the site showed that 45% of users felt very unsafe in the area after dark. Around 70% cited better lighting as a desired improvement to the site.

**Comment**



**Further information:**

Copy of article held (no reference); copy of project description held.  
Peter Raynham ([p.raynham@ucl.ac.uk](mailto:p.raynham@ucl.ac.uk)) at The Bartlett, University College London

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White D, Raeside R & Barker D, n.d.

**Road Accidents and Children Living in Disadvantaged Areas**

Development Department Research Programme Research Findings No. 81  
Edinburgh, Scottish Executive Central Research Unit

**Aims & objectives; research methods**

A detailed literature review commissioned by the Scottish Executive to explore the relationship between child pedestrian accidents and social exclusion.

**Key findings:**

- Higher rates of child pedestrian accidents in disadvantaged areas are due more to household characteristics than to area characteristics.
- Restricted access to play space and proximity of housing to busy roads, compounded by a lack of supervision in younger children appear to exacerbate road accident rates in disadvantaged areas.

**Comment:**

The findings of the review are primarily concerned with socio-economic factors, rather than environmental factors.

**Further information:**

David White at Napier University.  
Copy of report held; see also [www.scotland.gov.uk](http://www.scotland.gov.uk)

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Wise M, 2001

**Judging Design Excellence**

Architectural Record, Vol 90, no 1, January 2001, pp65-77

**Aims & objectives; research methods:**

Review of the United States' GSA Design Excellence Programme that started in 1995 in an effort to elevate federal architectural standards. Illustrated with 9 examples of completed courthouses executed from start to finish under the programme.

**Key findings:**

1. The public appears to have more respect for the judicial system, in an environment that projects an image of dignity.

**Comment:**

**Further information:**

Copy of article held.

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Worpole K, 2000

**Design, Economy and the Architectural Imagination**

London, RIBA Future Studies

***Aims & objectives; research method:***

A discussion of the contribution that architecture and design can make to towns and cities; key points are illustrated by brief case study insets.

***Key findings:***

- The role of architecture and design is significant; the importance of new architectural landmarks and flagships to the renewed identities of Britain's cities is evident everywhere.
- Good design need not be more expensive (in capital or revenue terms).
- "The Tate Gallery at St Ives, opened on 23 June 1993, has had an enormous impact upon the local economy. Within 2 years of opening, people who's primary reason for visiting St Ives was to visit the Tate Gallery were contributing £16million to the local economy." (from 1994/5 visitors survey)

***Comment:***

The document presents many anecdotal examples; it does not seek to be definitive.

***Further information:***

Contact: Ken Worpole, Senior associate of Demos and Comedia.

Copy of document held.

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**additional references:**

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**Cost Studies of Buildings**

Longman

Axton J & Orchard C, 1995

**Gasworks to Gallery: The Story of Tate St Ives**

St Ives

Barclays Site Savers, 2000?

**People and Regeneration: Measuring the Impact**

(Briefing Document – partnership between Groundwork, The New Economics Foundation and Barclays Bank); framework and monitoring mechanism to measure the wider social impact of regen projects on local communities – reports with results published spring 2000

Bohigas O, 1999

**Ten Points for an Urban Methodology**

The Architectural Review, September 1999

Cockshaw A, 1996

**Quality in the Urban Environment**

Built Environment, Vol 22, No 4, 1996, pp 278-282

Dale JES, 1995

**Third Party Value** (SAVE proceedings)

Delgado G, 1997

**GSA Design Excellence Program: Its Origins & Intentions**

Architecture California, Vol 19, no 1, Summer 1997, pp 6-10

Quality initiative in US federally commissioned architecture

DETR, 1998

**Rethinking Construction**

London, HMSO

website: [construction.detr.gov.uk/cis/rethink/index.htm](http://construction.detr.gov.uk/cis/rethink/index.htm).

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London, HMSO

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**Seeking Quality Assurance in Urban Design: Consumer Culture Meets Social Practice**

Built Environment, Vol 22, no 4, 1996, pp 315-322

Focke A, 1987

**Sustaining a Vital Downtown Community : A Study of the Market Foundation**

Seattle: The Market Foundation

Girardet H, 1999

**Creating Sustainable Cities** (Schumacher Briefing No. 2)

Green Books

Guerrier Y, Alexander N, Chase J & O'Brien M (eds), 1995

**Values and the Environment: A Social Science Perspective**

Chichester: J Wiley & Sons

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**Designs and their Consequences**

Yale University Press

Lawson B & Pilling S, 1996

**The Cost and Value of Design**

Architectural Research Quarterly, Vol 1, Summer 1996

Lennard SHC, 1995

**Livable Cities Observed: A Source Book of Images and Ideas for City Officials, Community Leaders**

Carmel, California: Gondolier Press.

Myerscough J, 1988

**The Economic Importance of the Arts**

London, Policy Studies Institute

Schneekloth LH, 1987

**Advances in Practice in Human Environment Relations**

in Zube EH, & Moore GT (eds), 1991

**Advances in Environment, Behaviour and Designs**

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Tuan Yi-f, 1990

**Topophilia: A Study of Environmental Perceptions, Attitudes and Values**

New York: Columbia University Press

Wigginton M (Ed) & Royal Society of Arts, 1993

**Better Buildings Mean Better Business**

(proceedings of a symposium held on 18 January 1993, organised by the RSA)  
London, RSA

