

Ch.22

22.0 A CASE STUDY ON THE DESIGN OF THE SCOTTISH CRIME CAMPUS

Gordon Murray

5 Key words: flexible space; semiology; symbolism; patterns; culture.

22.1 Introduction

The Scottish Crime Campus is a Scottish Government funded facility providing 23,600 sq. m (254,000 sq. ft) net of high quality office and support accommodation for up to 1200 people; total development value £82M (US\$118M).



Figure 1

The complex is comprised of four block structures each of which is four storeys in height arranged around a central atrium with a diagonal cross route providing controlled access. The brief for this project called for a facility to bring together key law enforcement agencies within

one building to promote collaboration and innovation across multi agency services. For the first time, law enforcement agencies are working to both devolved and UK legislation and operating under the same roof. All agencies share the atrium space. It is the social core of the building, the place where employees meet, interact and circulate. The intention of this interaction is to encourage the dissemination of ideas and help create a sense of community. It is a significant component in a wider exploration of architectural quality on government buildings working to parameters set out in the Government's Architecture Policy. This chapter will outline how present research was consistently maintained through the design of the project and through all elements of the construction phase.

22.1 Client and Stakeholders

A Project Board made up mostly of civil servants, following the Scottish Public Finance Manual/ Office of Government Commerce model was established. The Project Board were ultimately responsible for ensuring the building was delivered on time and within budget etc. and helped to ensure that design outcomes were locked in. A Programme Board made up of senior civil servants but also senior representatives from all the occupying agencies was also established to ensure the agencies were closely involved in the detailed design and progress on site. The primary aim of the programme board was to oversee the delivery of a benefits realisation and change programme to enhance collaboration between various anti-crime agencies. To accomplish all of this it also assisted in co-ordination of the user input to the design. This board morphed into a management board which oversaw occupation and continues to manage the building on behalf of all users.

A client advisor was in place from the very start of the Crime Campus project alongside a dedicated procurement specialist allocated to the project. The client advisor played a crucial

role in keeping design, development (providing market & investment views) at the heart of the construction procurement, technical design and construction stages of the process. Given the complexity of the project and the high quality expectations, special consideration was given to the selection of the contractor with emphasis on their design capability was a critical factor and this was emphasized in the contractor and supplier selection process. The four way split of contracts and the use of different types of contract (ICE, JCT, Design & Build) at different stages also ensured design expertise among contractors was optimized because of the early focus on maintaining design quality.

22.3 Objectives

Stakeholder visits to successful projects like the BBC/Pacific Quay in 2008, to the Gartcosh site and to building precedents and comparable institutions in the UK and Europe also helped to ensure that ‘stakeholders were on board’, as well as build relationships between stakeholders. Client education, focus on design outcomes and coordination between stakeholders were all important factors in ensuring that intended outcomes were achieved. ‘Process maps’ developed by BMJ as a part of their briefing role by engaging with the users were used very effectively by the composite design team to confirm adjacencies and the rhythm of the building. The Programme Board and occupying agencies referred to the ‘Process Map’ to illustrate and explore different organisational relationships, potential spatial organisations, functions between the different groups and just how the building would operate day to day. The campus aims were to:

- Improve the efficiency and effectiveness of the multiple government departments involved.
- Foster proactive cooperation and collaboration between these agencies.
- Provide world leading expert forensic scientific support to local and national partners

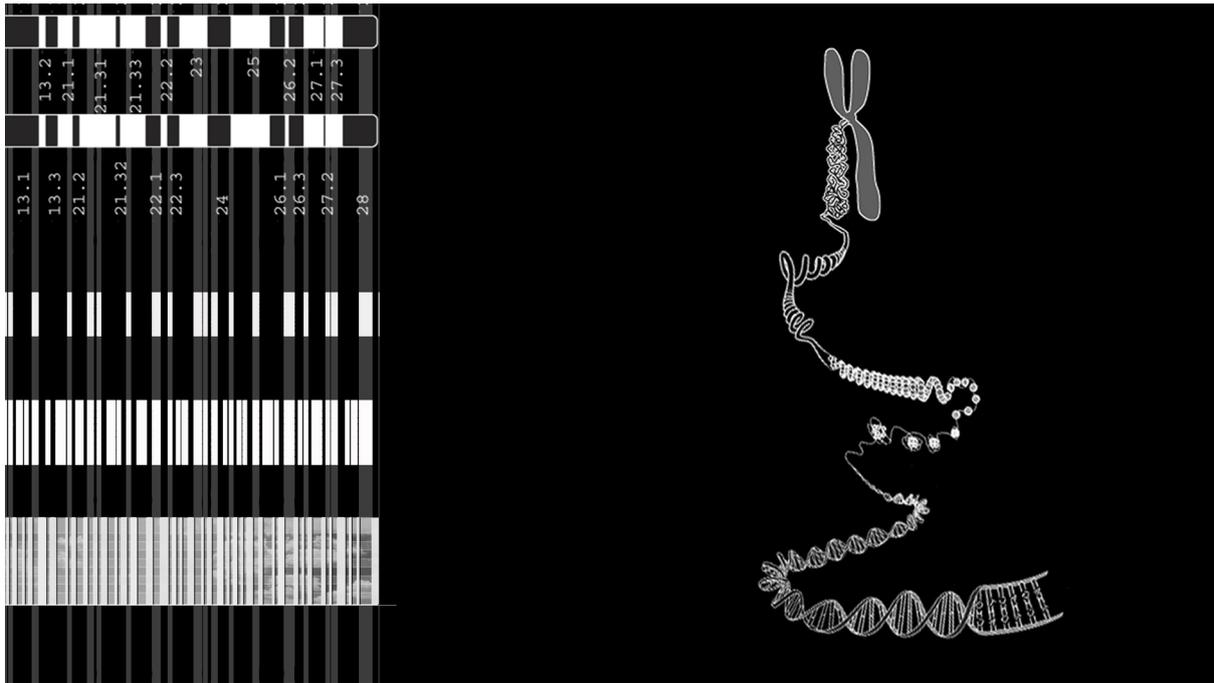


Figure 2

The function of the building defines its architecture; the design creates a practical yet iconic building that will encourage disparate groups to work together collaboratively and creatively. Adopting a geometry informed by the immediate context, programme and chromosome form, the design of the building references genetic structures and imagery associated with identity; it emphasises uniqueness and, at the same time, common bonds.

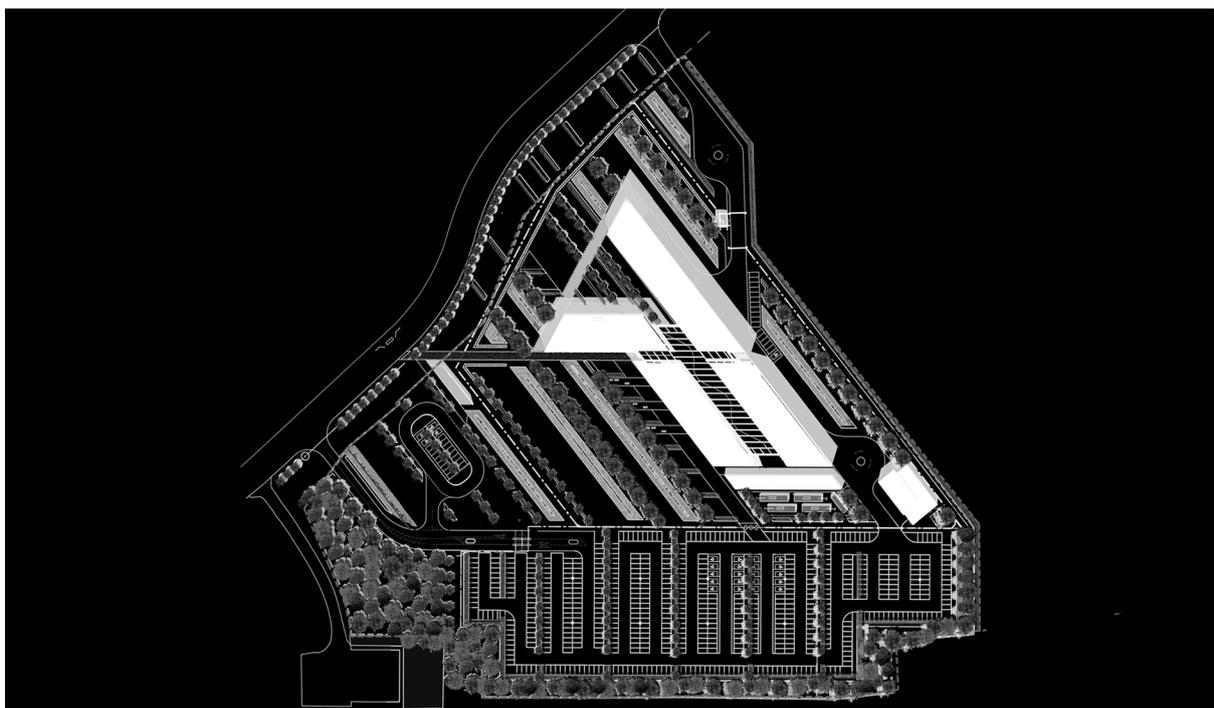


Figure 3

The original design competition project brief in 2007 emphasized the following building and design outcomes, in particular the need to:

- Bring together various detection agencies under one roof to develop ideas of collaboration, exchange, participation to accelerate information dissemination and co-operation;
- Deliver a sustainable building with useable, functional space for each of the agencies to maximise the potential of the building;
- Deliver a resilient building to ensure continuity of power/services supply and sophisticated IT infrastructure to the agencies;
- Deliver a building that met the unique set of design conditions imposed by the multiple occupants and address the varying and potentially conflicting requirements for collaboration and segregation;
- Deliver a high environmental performance and a range of relevant community benefits.

22.4 Context

The brief and accommodation schedule for the building was extremely complex in terms of adjacencies, the hierarchy of levels of security and non-contamination of evidence. Cross-contamination of evidence was to be avoided by locating the forensics in a separate leg of the building. This created a complex network of relationships. Collectively it was a principal objective of the client to simplify the strands of this network by encouraging collaboration through exchange - the agora or marketplace (of information) - was defined as the atrium space.



Figure 4

22.5 Multipurpose Spaces and Building systems

22.5.1 Campus Atrium

All elements of the offices that can be, are open to this atrium, further reinforcing the shared nature of the building and the contact across the space. Building wings are also physically connected to each other with the bridge elements through this space. The atrium can be used for large gatherings, multiple breakout and informal meeting areas as well as allowing the canteen to spill into the space if desired. It therefore becomes the social hub of the building. Architectural elements like bridges and visible informal meeting areas were also made explicit to enhance the chance meeting and visual connectivity. The floor is stepped up over accommodation on the lower floors creating a greater degree of privacy and quietness through the shared space. While the main purpose of the atrium was for the social interaction and flexibility of building occupants, it is also key to the ventilation strategy in the building. Warm air rises to the top through a natural stack effect. Heat is then mechanically removed through a heat exchanger

and recirculated back into the office spaces. This allows clean air to be preheated for the office spaces and dirty air to vent naturally through the atrium space. It is aligned to offer the best open views of the Campsie Hills to the North.



Figure 5

22.5.2 Building Form

Many of the functions carried out within the building are concerned with identity and identification. The façade and building concept take some of the visual references associated with the process of identification and abstracts them into the building itself, as well as the working environment, a clearly recognisable identity. Vertical orientation of the facade breaks up the horizontality of the massing, providing rhythm and variety, and is inspired by various visual references, including DNA sequences, barcode banding and fingerprint dermal ridges as formal devices. These visual references generated a theme repeated throughout the landscape design, facades and finishes within the atrium and the building. Three significant ideas generate the form of the building. The discrete functions in each wing of the building are set against

one another as blocks in the personification of the chromosome form. The distinct role of each wing is in contrast to the collective shared space of the atrium. The building is also rooted in the specific geology of the site in North Lanarkshire. This geological form rises from the earth into the atrium as the base of the building - a series of stepped plinths, in turn enclosing support accommodation.



Figure 6

A limited palette of standardised bands of deep solid masonry are repeated in sequences around the façade in arrangements which reference the male and female chromosome sequences. These waves are denser at closed elements of the facade and provide contrast at large glazing areas. Deep window reveals generate a columnar or pillastered effect on the facades, providing considerably more shading than a flat façade. The patterned form both minimises solar gain and provides relief to the otherwise regular and long facades. This verticality and the deeply modelled facades also strongly ground the building with a gravitas suited to its functions.

Numerous visits to the site and to comparable institutions in the UK and Europe provided a basic tool kit and reference points for the development of a design strategy for the building. Extensive discussions were held with the various client bodies to unlock the solution, itself a synthesis of the objectives of six disparate organisations. Context, precedent and metaphor were combined with these analyses to develop a physical manifestation of the essence of the development in a semiology which would be capable of being read at various levels and provide building users with a way to understand the nature of the building.

Design Approach

Rootedness, Security, Stability, Confidence, Intelligence, were all essential characteristics of the brief which required to be embodied in the design solution. The dynamic nature of the plan evolved from the geometry of the site boundaries, such that the principal entrance would be on a diagonal route, parallel to the railway, as is the secondary entrance to the east and is intended that this would allow connection through to future expansion wings. These geometries generate a language and dynamism entirely appropriate to the nature of the agencies operating inside the campus facility. These form the starting point for the building shape which, along with the systematic analysis of the buildings programme or brief, as evolving in multi-faceted aspects of performance, informs the fundamentals of a specific approach.



Figure 7

It was important that a strong design ethos be established for this building. As previously described, DNA and chromosome biology were selected as important new technical tools of detection with their corollary in determining the rigor of the process of determining guilt and innocence: The basic principles in human rights and rule of law. The primary circulation is at the centre of the building at the point where the two chromatids would touch. Connecting bridge elements through the atrium were also initially inspired whilst considering diagrams of DNA chain connections. These concepts were the starting point for iterative processes whereby design options were tested in terms of accessibility, legibility, internal ambiance, environmental performance and structural expression which ultimately permitted a solution with some depth and purpose. The early concept studies, of chromosome shapes and other genetic forms remain detectable in the overall design. These technologies were selected for their subtle but explicit exposition of the detection process as themes to influence the design of the structural support devices and shading, solar control and ventilation systems to support a sustainable approach within an envelope design. Concurrently, a variety of programmatic solutions and spatial permutations developed alongside the detailed three dimensional design, whose complexities were tested through model-making, animations and other forms of visualisation. The essence was to translate the abstraction of the idea into a concrete form, options of which were tested to optimise the environmental performance of the façades and surfaces. The design of the facades and surfaces were required to embed the ethos of the design solution for the 'Institution' as a highly contextual approach in terms of site, accommodation, objectives and character of the institutions as one organisation.

The design approach permeates and synthesizes all aspects of design from spatial organisation to detailed fabrication. Facade engineering, as seen through the repetitive use of a small number of components or subsets of components, has encouraged manipulation of the facades through

the use of pattern making.

Thus both light and shadow provide difference opportunities for modulating the facades and thus the internal environment of the building. The facade was developed to perform a multitude of functions - a multivalent approach – a series of proportional progressions to exemplify content and meaning; a method for bringing in daylight and capturing of views outside; a profile to enhance solar shading and environmental performance; a distribution network for services across the building vertically and/or horizontally; a decorative response at a detailed level which would encompass and portray the building's purposes.

In his essay, Symbolic and Literal Aspects of Technology (Architectural Design 11/62) Alan Colquhoun defines the essence of the argument and the basis of our approach:

“The science of building, the rationalisation of construction and assembly, however vital in themselves, remain in the world of literal action. It is only when the architect seizing this world, organises it according to the logic of symbolic forms that architecture results.”

The principle of a concrete or steel frame sheathed in some form of curtain wall is often such a meagre translation of the ideals of the Modern Movement as the application of an apparently logical and functional system that the essential features of good architecture are being overlooked. It is still possible to achieve the effect of mass, which is not a necessarily a product of programme and its structural interpretation. “Massiveness” in such construction can be exaggerated to embody enclosure, protection and civic authority reminiscent of a walled town. We have sought to exemplify this approach.



Figure 8

Colquhoun poses a further problem:

“if buildings are to retain their quality of uniqueness as symbols, how can they also be the end products of an industrial system whose purpose is to find general solutions. We have a confusion between technology as a means to construction and technology as the content of the building form itself”.

22.6 Culture and communication

The distinction is false, he suggests, as it ignores the fact that architecture belongs to a world of symbolic forms in which every aspect of building is presented metaphorically not literally. Semiotics, includes analogy and metaphor, in a series of symbolic signifiers as a means of determining visual communication. Semiotics are seen as having anthropological dimensions. In Philosophy, Semiotics and the work of fiction, Umberto Eco suggesting all cultural phenomena can be studied as communication. These signs have psychological and biological

roots. This pattern language can be simplistic or complex visual mathematics to enrich the meaning or understanding of the complexities of the building codified in a manner that both aids understanding and enriches experience.

Design outcomes were clearly identified and articulated in the business case from 2006/7. This early clear reference to intended organisational objectives (outcomes) such as the focus on collaboration between various anti-crime agencies, functionality and sustainability ensured that there was clarity and consistency in approach. This helped inform the Procurement Strategy. The author was also appointed Client Design Champion for the project to ensure design outcomes were locked in and regularly occurring design workshops were convened with the composite design team. The emerging design was seen to meet the intended outcomes within the agreed budgets and could be flexed to take account of the vagaries of annual budgeting at a time of budget cuts. Scottish Government also built in flexibility to accommodate scope changes through the adoption of the four contract strategy. Whilst a POE Research exercise is under way and the building is featured as a case study in the forthcoming Scottish Government Review on Design-Led Construction Procurement (One of five case studies, the others being a project in health, housing, learning and infrastructure) several aspects of the original objectives are now bearing fruit.

As planned, incidental meetings, viewed as being important, allow informal conversations to happen which might not otherwise. The building encourages people's paths to cross to facilitate this. Being located adjacent to one another means meetings happen more regularly, happen faster and can involve people who might not otherwise be involved. Equally just being co-located is not enough and management / ways of working need to change to ensure more effective collaboration happens in some cases.

Most agencies have changed the way they work as a result of moving into the building. Some emergent findings are:

- Moving into open plan was a concern for some staff and agencies have worked with their employees to minimise negative perceptions.
- More space for some agencies has allowed them to work in different ways and the space has facilitated the inclusion of higher tech equipment and allowed people to form new multi-agency teams who can sit together in a space.
- Offering spaces to mitigate the loss of private offices such as the inclusion of quiet rooms has been important.
- Most agencies are at or near capacity in terms of numbers and some may have to consider how the Scottish Crime Campus can support flexible working e.g. desk sharing in the future.
- Informal working e.g. use of the atrium, is not something that all building users are comfortable with and some are still working towards knowing how to use this space effectively.

22.7 Conclusion

The concept developed for the research project was to find an architectural form and pattern language which would provide a semiological basis for the essence of the building's operational techniques and also give outstanding environmental performance. This was achieved in the choices of both external and internal enclosing surfaces and the forms generated from them. The outcome of the research into these shapes and materials led to the design decisions for four blocks in a formal arrangement around a common gathering space – itself a series of horizontal and vertical planes. The organisation of the internal facades enclosing this space reflected the semiology contained in the external facades which enclose the buildings as well as on the roof

surface of the Atrium.

The questions we set out to answer in this research programme have been successful visually, programmatically and constructionally. Defining a new semiology for buildings which reflect the ethos behind the brief, which satisfy the technological requirements of the brief in terms of built environmental performance and offered constructional advantages in terms of cost, programme savings, higher consistency in constructional quality by emphasising factory fabrication techniques.

22.8 Acknowledgments

From the bid stage design quality, design research and control were the responsibility of the author. For specific fiscal reasons the Government procured the project in three stages. The first was designed by GMA|Ryder and implemented by Sir Robert McAlpine as a standard works contract. The second was designed by GMA|Ryder who were then novated to Graham Construction as Construction Architect under a Design and Build contract with bmj as lead consultant – client representative. On the third, the fit-out was a Management Contract with Balfour Beatty Construction Ltd; bmj were Architects and lead Consultant and the author was Client Design Advisor.

The other main consultants were Arup Civil, Structural and Transport Engineer; Wallace Whittle, Environmental Engineers; Ian White Landscape Architects and Thomas and Adamson Cost Consultants with Sweett Group as Project Managers; Jeremy Smart Associates was Client Liaison between the Government bodies and design and construction teams.

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