Technical Research Paper 01

Nature and Aesthetics in the Sustainable City

city of Melbourne

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Disclaimer

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An Australian Government Initiative

AusIndustry

6 star rating

green star Office Design v1

This rating represents World Leadership

CH_2

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Preface

Council House 2 (CH_2) is a visionary new building that is changing forever the way Australia – indeed the world – approaches ecologically sustainable design.

With its Six Star Design Rating granted by the Green Building Council of Australia, CH_2 is one of the cleanest and greenest buildings on earth.

This paper, one in a series of 10 technical papers, investigates the design and systems of CH_2 prior to occupancy and availability of operational performance data. The papers have been written by independent authors from Australian universities, as part of the CH_2 Study and Outreach Program – a coordinated effort to consolidate the various opportunities for study, research, documentation and promotion generated by CH_2.

The aim of the CH_2 Study and Outreach Program is to raise awareness of sustainable design and technology throughout the commercial property sector and related industries.

While the pre-occupancy research papers are a valuable resource, they do have some limitations. For instance, these studies have been written before operational experience. This means the authors' views are based on existing knowledge, which can be difficult to apply when significant innovation exists.

Many of the innovations in CH_2 have been subject to limited, if any, rigorous or directly relevant research in the academic field, which is reflected in the lack of literature cited for systems such as the shower towers and phase change materials used in the cooling system.

Another major limitation is the exclusion, by academics generally, of industry experience of new technologies. The extensive knowledge gained by industry is often not well documented and can be difficult to access through traditional academic channels.

One example, where industry expertise exists, is the use of phase change materials for reducing peak cooling loads and energy use in commercial and institutional settings, such as offices, hospitals, prisons and factories.

In addition, to enable the authors to complete their task, they have based their study on CH_2 project reports prior to the design being finalised. This means some of the descriptions of systems and findings in the papers are to some extent out dated. In particular, findings related to the wind turbines and the heating, cooling and ventilation systems have changed somewhat as a result of final design decisions.

To reduce the impact of these limitations for readers, the Council has provided additional comment as footnotes in some papers.

It is important to inform readers the target audience for these papers is professionals and academics involved in the research, design, engineering, construction and delivery of high performance buildings. This helps to explain the technical detail, length and complexity of the studies.

Although these papers may be of interest to a range of audiences it's important that readers, who possess a limited knowledge of the subjects covered, obtain further information to ensure they understand the context, relevance and limitations of what they are reading.

For more information or to make comment and provide feedback, readers are invited to contact the Council. The details are available at the end of this document.

We hope you enjoy reading these technical studies and find they are a useful resource for progressing your own organisation's adoption of sustainable building principles and encouraging the development of a more sustainable built environment.

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Foreword

In 2000 the City of Melbourne made the decision to embark on a revolutionary new project called Council House 2 (CH_2). The decision was due to a pressing need for office space for its administration and the desire to breathe life into an under-used section of the city.

The project gave the Council the opportunity to exercise its environmental credentials by creating a building that was at once innovative, technologically advanced, environmentally sustainable and financially responsible.

This approach allowed the Council to insulate itself against exposure to rising energy and water prices, the diminishing availability of resources and the uncertain long-term availability, while providing a healthy workplace attracting the best workforce in a labour-constrained market.

CH_2 has been designed to reflect the planet's ecology, which is an immensely complex system of interrelated components.

From the revolutionary cooling storage system in the basement to vertical gardens and wind turbines on the roof, the building has sustainable technologies integrated throughout its 10 storeys.

Although the majority of the technologies and principles adopted in the building are not new, never before in Australia have they been used in an office building in such a comprehensive and interrelated fashion.

This includes innovations such as: using thermal mass for improving comfort; phase change material to reduce peak energy demands and energy use; generating electricity onsite from natural gas; and using waste heat for cooling and heating.

Through CH_2, the Council plans to trigger a lifestyle and workstyle revolution. The building will be used as a living, breathing example, demonstrating the potential for sustainable design principles and technologies to transform the way industries approach the design, construction and philosophy of our built environment.

As with many revolutions, there are sceptics. The Council's response has been to patiently press ahead with the construction of CH_2 while actively and energetically encouraging lively debate.

Some of the papers in this pre-occupancy study and outreach series make compelling points in favour of the case for sustainable development. Others reflect a more subtle or sometimes overt scepticism that may be encountered throughout the community.

The City of Melbourne welcomes all of this debate but in the long term intends to demonstrate the effective performance of CH_2 and prove the doubters wrong. Collectively, the studies demonstrate the enormous value to be gained by researching the case for sustainable development and the scope for much more study and documentation in this field in the future.

The City of Melbourne wants CH_2 to be copied, improved on and enthusiastically taken up throughout Melbourne and far beyond.

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Technical Research Paper 01

Nature and Aesthetics in the Sustainable City

Dr. Darko Radovic, The University of Melbourne and **Graham Crist**, RMIT University

This paper is written in two parts, both of which examine in different ways the social or cultural role of green buildings. Each part considers how people understand and interact with the built environment, often in ways that are difficult to measure. A building such as CH_2 has a major role to play in the way we think about our built environment because it is a landmark urban building, and an innovator in its field.

The first part of this paper examines CH_2 as a designed object, from the point of view of its aesthetics, and in doing so attempts to free aesthetics from narrow definitions related to art, beauty or ornament. To the extent that a building can be treated as an object separate from its context, an architectural structure has visual elements that contain meaning for a viewer. These elements can be described as an architectural language, and in a building such as CH_2, help communicate a range of ideas about sustainability.

The second part of this paper analyses CH_2 through the discourse of urbanism. It recognises that we understand a building primarily through the context of the city, and as part of a broader urban experience. The design of CH_2 is examined in terms of its urban impact. The 'green building', in particular, must be examined in terms of its broader urban goals and effects, which are ultimately to lead towards the creation of a sustainable city.

Part A: The Green Aesthetic Object

Graham Crist

Introduction

Is it possible to speak meaningfully of aesthetics and sustainability together in architecture? It should be, provided these definitions are not narrowed. This section examines the architectural design of CH_2 in terms of its aesthetics, where the term is used in a broad sense, relating to form, style and ornament. The analysis is not intended to pursue aesthetics for its own sake (that is, treating the building like an art object) but rather understanding the function or effect of aesthetics in relation to CH_2's role as an exemplary green building. The building will be viewed as a designed object and its design function will be examined in terms of its role as a landmark building, remembering that its context is that of the city, and the urban quality of central business district in an international city, specifically that of Melbourne, Australia.

This paper suggests that as an exemplar and innovative work in its field, part of the explicit aspiration of the City of Melbourne's CH_2 project is to encourage change and act as a prototype and role model for other projects. The success of the building's aesthetic is critical in that role. Further, the greatest immediate impact of CH_2 might be its broader conceptual influence and re-orientation of building practices, rather than its technical performance. Again, the aesthetic plays a critical role in this effect.

A number of practical difficulties are present in relation to conducting this study. For instance, at the time of writing, the building is in very early stages of construction and does not exist as a built object. Therefore, its effect cannot be fully tested and we can only speculate as to the ultimate reception and influence of the building. Even if construction of CH_2 were complete, we must remember that we are discussing ideas and effects which are difficult to quantify even through longitudinal studies. In addition, this discussion is in the context of attempts in other scientific disciplines to project and measure the performance of the design.

At the same time it is vital that ideas about the symbolic importance or impact of CH_2 not be confused with real performance, or substituted as marketing spin. The aesthetic effects of a project such as CH_2 must not stand in for lack of concrete environmental benefits. For these reasons and others, aesthetics are sometimes viewed as irrelevant or trivial in the context of green building. From some angles, aesthetic concerns are seen as contrary to the practical, economic, or even ethical aspirations of such a project. However, it is clear from the design and the commitment of all parties that the CH_2 project does not suffer from these prejudices, but rather exhibits a high level of integration of aesthetic and technical concerns.

The Aspirations for CH_2

The design proposal is for a 10 storey building with offices, ground floor retail space and underground parking. Its street façade on Little Collins Street faces south, where the ground slopes down toward Swanston Street to the west. On the street corner is a small pavilion-style café set back from an open, paved area. To the east, on Little Collins Street, is the current Council House (CH_1) and a well known bar adjacent, faces directly onto the site.

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In many ways this is a typical urban site and yet CH_2 is intended as an object with wider reverberations. The stated intention of the City of Melbourne for CH_2 is clear and well articulated. Put simply, it is to create a demonstration building that broadly influences design and building practices.

CH_2 is a visionary new building with the potential to change forever the way Australia-indeed the world approaches ecologically sustainable design....As it does so it will strive for a new standard in how buildings can deliver financial, social and environmental rewards. . . . CH_2's wider value is as an example for others to copy.

(City of Melbourne website, 2005)

To meet these aspirations the building needs to be innovative and performer of the highest standard. Such an agenda recognises the caution within the building industry towards experimentation. One of the major roles of the project is to demonstrate the integration and application of a mix of technologies and design principles in order to communicate their viability and stimulate adoption. Such an agenda also recognises the perceptions of green buildings broadly within industry, and seeks to address these. Therefore, the design needs to perform technically in order to deliver its intended comfort and environmental outcomes. Likewise it needs to demonstrate not only the financial viability, but the financial benefits of a green approach to architecture. Importantly, CH_2 also needs to demonstrate that green buildings can integrate aesthetic and urban considerations, while being culturally progressive as well as technically innovative.

While these are ambitious objectives, they are essential if CH_2 is to act as an exemplar for future projects.

The Effect of Green Buildings

It is generally assumed that the primary aim of green architectural strategies is to reduce the environmental impacts of buildings through the reduced consumption of energy and non-renewable resources, thereby contributing to the global effort to solve environmental problems. To provide context to the exercise of understanding the importance of the aesthetic aspects of CH_2, we should acknowledge the small impact that one exceptional green building, in isolation, can have on reducing global environmental problems. This is not to downplay the potential environmental performance of CH_2. Rather, it is simply to argue that the impact of such a building should not be measured in terms of its own environmental impact but rather through its ability to initiate change on a broad scale.

Likewise, for every green building, the environmental impact is never eliminated – at best it is halved. In addition, every individual aspect of green building is confronted with the reality that its impact on reducing environmental impact is very small in its broader context, such as the total impact generated by a city.

The best outcome, given this context, would be for the building to become a prototype for other buildings, the impetus for raising benchmarks and improving regulation, and become the cause of a significant shift in a cultural and design sensibility through the building industry and community. Until green buildings are a norm rather than an exception, environmental effects will always be limited. With this in mind, consideration of the aesthetic value of CH_2 becomes critical. It can be reasonably assumed that the sustainable design elements of CH_2 will never be taken up broadly if they impact adversely on the quality and attractiveness of the architecture and the urban landscape. At a minimum, this attractiveness could be seen as part of the ability to sell or lease the building. Secondly, the expression of environmental initiatives as part of the aesthetic assists in foregrounding those initiatives and assists to promote an understanding of how they operate. Thirdly, the aesthetic of the building signals a set of values – a representation of how people see the world. The dominant aesthetic of commercial buildings might be seen to reflect technological and financial goals. Proposing an aesthetic that is integral to the green approach could facilitate greater enthusiasm for its outcomes. If the most significant impact of a prototype building is its reverberations throughout the building industry and broader community, then the project's image and aesthetic values are central to its success.

Aesthetics Versus Green Architecture

In the discourses of both architectural design and of sustainability, there is a tradition of viewing issues of form in opposition to technical issues. This opposition may be constructed as the decorative versus the practical, the artistic versus the technical. The separation is most acute where technical innovations are foregrounded, as is frequently the case in a green building. Where this concern for technical over the aesthetic arisesit is often a reaction to experience and practice, where aesthetic issues have succeeded in place of or replaced proper attention to the technical requirements, or indeed where a technocratic approach has prohibited or dominated aesthetic design responses. This division is further enforced via educational structures and professional teams; in particular the division between designers and the consulting team of engineers. Similar and legitimate concerns are raised over the tendency for marketing and promotion to act as a substitute for proper attention to the tangible performance of green projects or building practices. Such is the extent of this problem that the term 'greenwash' has been coined to describe this tendency. For example, Corpwatch in the United States gives out bimonthly Greenwash awards to corporations that "put more money, time and energy into slick PR campaigns aimed at promoting their eco-friendly images, than they do to actually protecting the environment." (www.corpwatch.org)

The above issues provide a strong warning signal to any project like CH_2, and one that the project team has responded to accordingly. The project team includes a well structured, publicly accountable bureaucracy, and a carefully selected team of specialist engineers from several disciplines.

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Secondly, the City of Melbourne has undertaken an extensive promotional campaign during the early stages of the process.

The integrated design approach adopted for the project may be regarded as a mechanism to overcome gaps between disciplines, and between aspirations or publicity claims, and actual outcomes. The rigorous empirical measurement of the outcomes is equally important in demonstrating that publicity is backed by measurable performance. Studies such as this one, and particularly those with hard data analysing the expected performance of the design, are evidence of a commitment to that process. Follow-up studies, and long term measurement are critical to completing the process.

The Integrated Design Process

The design process carried out on the CH_2 project, referred to as a 'charrette' is an important factor in addressing the type of problems described above. The 'charrette' has two key features: first, it is intensive and second, that the whole project team is present during this formative design period. A traditional design process might be summarised as involving the work of the architect preceding the engineer's, and the team attempting to resolve conflicts between the design and technical problems. These resolutions are carried out as a series of iterations at meetings and correspondences between offices. In contrast, the charrette involves the entire project team acting as a design team, and working around a single table in a room until the primary issues are resolved. The presence of the whole team is the most important aspect, in terms of integrating disciplines and ensuring expected outcomes are shared. The charrette process allows architects to receive technical advice at the moment of design propositions and technical innovations, created by engineers, can be tested against their aesthetic implication at the moment of their inception. Compositional ideas were able to be backed up by technical rationale, while equally seen as a driver for environmental performance. This integrated design process acknowledges that green building demands a dismantling of the separations between disciplines. While this is a feature in varying degrees of all good design, it becomes most urgent when innovation is required, and where that innovation involves co-opting technical and aesthetic innovations.

The Function of the Aesthetic: Signs and Images

It is useful to clarify what is meant by the term 'aesthetic', and how it is used in this analysis. Its use here follows a sensibility which might be called pragmatist, and elaborated by thinkers such as John Dewey. It will also follow an architectural approach influenced by semiotics and popularised by writers such as Venturi and Scott Brown. The first set of ideas, elaborated in texts such as `Art as Experience', seeks to integrate aesthetic issues with the broad range of experiences in life. The second approach looks at how artworks, popular objects and buildings operate as signs and carriers of messages.

As such, we are concerned with the function of the aesthetics of CH_2, how we experience this, and how the building conveys messages.

Simply, we must view aesthetics not as something separate, ornamental or superfluous to a building's function. Neither is it exclusive because everything has an aesthetic; and it is not possible to separate that which does, and that which does not. Such a view considers beauty, composition and proportion but also foregrounds cultural relevance and the value of its messages.

To understand architecture in terms of signs (semiotically) is simply to view architectural form as a language that contains messages. That is, what does a building tell us? The viewer is able to read a language through a series of codes. In a Gothic cathedral, for example, the coding is extremely complex, giving very detailed information. In the contemporary world, we might be talking about much more straightforward readings. The simplest of these might be 'I am an important building.' Or `I am different from other buildings'. CH_2 may be analysed in these terms, through a series of messages that are communicated via its composition, and metaphors within that composition. These messages tell the viewer, through their experience of it, what the building is about, what ideas are embodied within it, and how these ideas might be useful to the city or other buildings more broadly.

Compositional Moves in CH_2

The composition of the facades of CH_2 is the result, in many ways, of the building's desired interior qualities and environmental performance. The design responses to solar heat loads, ambient sunlight and glare should be well understood from the other technical studies in this series. The outcomes of this process have driven the overall composition of the building and are necessary, but not sufficient, in explaining the form as designed. These design responses cannot simply be reduced to an outcome of maximum efficiency, since the overall design integrates these requirements into a larger compositional scheme.

The north and south facades can be read as a diagram of environmental interactions[1]. The thermal chimneys externally taper to maximise the efficiency of their effect as they run down the façade. At the same time a reverse taper occurs with the glazing, which widens as it moves down the façade, thus catering to the decreased available daylight in the lower levels of the building. On the north facade this glazing is coupled with balconies and gardens; on the south façade five 'shower towers' are coupled with the thermal chimneys at the lower level.

The effect of these elements is anything but technocratic. Rather, these main facades appear to be composed of expressive vertical elements that have the appearance of stretched pyramids, or abstractions of natural mounds.

1 City of Melbourne note: The design team also identifies here the process of biomimicry of the tree. If a tree is considered in a forest setting it will normally have leaves at the top of the tree that are smaller than those at the bottom. This is partly because light levels fall off with height, which the tapering widths of the CH_2 windows mimic.

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On the north facade, the tops of the towers are expressed strongly as a serrated parapet profile, and their turbines are likewise strongly expressed and visible. The environmental features of the building are not concealed in any way yet neither are they expressed as pieces of formless technology. These environmental features are legible in the experience of the building, and part of a formally composed facade. On the east and west facades this is perhaps even more overt, where the primary element is a form of screening. On the east, this is perforated metal. On the west, it is louvered. In each case these elements provide a permeable skin to the ends of the building. In the east, these panels are composed with waving, irregular breaks, creating both a graphic and organic effect. On the west, the louvers are recycled timber, providing an effect that is both warm and natural. The screen treatment also wraps around to the south, creating a highly diverse treatment to the façade facing the street.

Metaphors and Nature

The design intent and a designed object such as CH_2 operate at the level of metaphor or simile, and it is important to understand how these might be read.

"I funnily enough spent a lot of time studying termite nests and the reason for that is that they're very much cleverer than we are at manipulating the natural environment. These great mounds that they build in nature, aren't like the castles we build to show off, they're actually lungs. The purpose of them is to extend the organism. The organism is the whole termitery . . . and the termites are in fact like blood moving around in it. So they build these mounds and they breathe. They actually allow transference of air, and/or gases through a membrane, which is porous and you can study it from the point of view of diffusion of gases. There's quite a lot of science that we've done that would apply to a termitery."

(interview with Mick Pearce, Principal Design Architect, City of Melbourne, CH_2 Design Team, 2004)

The termite's nest is cited above as an ideal model for a green building. It is seen as highly efficient since it is highly attuned to the physiology of its inhabitants and the environmental processes surrounding it. Mick Pearce discusses the way the termite nest processes air and controls temperature with extreme subtlety. Images of termite nests appear in design reports, but more importantly a sectional diagram of the nest illustrates how it operates. The use of this metaphor is one of process, a process of biomimicry, rather than a visual metaphor. There is no suggestion that CH_2 should look like a termite nest but rather that it operate like one. The termite nest, therefore, is one ecological system on which some ideas for the design of CH_2 are mimicked.

A similar, process-oriented metaphor applied to CH_2 is its comparison to the human skin. The skin's physiology operates conceptually at two levels. Firstly, skin is a key indicator and determinant of human comfort. Whereas a more mechanistic design model might focus simply on adjusting air temperature and lowering humidity, the metaphor of the human skin (which modifies body comfort via a complex interaction of temperature, humidity and radiant heat) illustrates a more integrated, physiological design approach. Secondly, the concept of human skin also becomes a metaphor for the building's own enclosure or skin. Rather than being a tight membrane that seals a mechanically controlled environment, skin acts as a complex filter, interacting with the outside environment to most efficiently regulate its enclosure. Again, the analogy is one intended to stimulate thinking processes, not of a direct visual image.

Other metaphors are more directly visual, both allusive and literal. The tapering towers discussed earlier allude to natural landscapes such as a tall forest or a series of stone pinnacles or mounds. The inflection of the colours on the north and south, reinforce natural irregularity, just as mosses are attracted to the shady side of a rock. This is a visual abstraction that creates a metaphor. In other cases, the image is more direct and literal. The shower towers, for example, will become a feature of the Little Collins Street façade on the lower levels. The falling of the water will be directly visible. While this process is a metaphor for the evaporative cooling of our own skin, it will also literally cool the building while achieving an important public communication role as an image that makes the process visually clear. Likewise the weathering of the façade, and the choice of external materials (particularly timber) to weather visibly, is a metaphor for the changing of natural elements, but it is also literally that process in action.

'So instead of being an enormous glazed façade that, as I said before, wards off nature, is pristine. It's actually made of something that weathers . . . that nature paints if you like. Like old timber. So it can go grey, slowly and age. I'm against this kind of eternal youth syndrome many buildings have. I like to see them age and so it also moves with the sun. So there's a responsive façade. That's the big message'

(interview with Mick Pearce, 2004)

While many of the allusions discussed above are to the natural world, in essence biomimicry, CH_2 remains equally influenced by its urban environment. It is clear the overall design needed to be responsive to both its natural environment and cultural context. Its role in urbanism is the primary subject of the accompanying part of this paper, though as an object, CH_2's aesthetic may be read in relation to the 19th century urban grain of Melbourne. The proportion and scale of the fenestration, for example, shows affinity with the Art Deco commercial buildings of Swanston Street, and indeed with the Victoria Hotel directly opposite.

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'..the building must retain a local flavour, … It must affect the local culture and not the past necessarily, but the culture, the current culture and therefore it was very important for me to get the local architects to own it and to make the building read as a building that looks like a Melbourne building, so that was important.'

(interview with Mick Pearce, 2004)

It is also important not to forget a most basic and straight forward reading of this building. This is a building with tall turrets with turbines on top. It has water spraying down it and plants growing over it. This is a theatrical and whimsical place; a magic castle that counters the 'dryness' of most modern buildings.

Experiencing and Reading Signs

'More like the Gothic cathedral which has embellishments that say things, architecturally embodied art is what we were after.'

(interview with Mick Pearce, 2004)

The discussion of metaphors and analogies is in some cases generative; that is they are used to generate design decisions or processes, and they are not necessarily read or experienced. To return the focus to signs which are read and experienced, the various allusions combine to provide some messages that are straightforward and potentially powerful. These are treated as if the building is able to speak its messages through its architectural language. And these signals speak directly to the agenda of a landmark influence.

CH_2, through its aesthetic, is saying, I am a different building. I am not repetitive. I am diverse. The underlying message is that there are other ways to make city buildings, and there is something special happening here. At the same time CH_2 is also stating that it is an urban building that is part of the city. It is not a rejection of the city in favour of the natural environment, as often characterises architectural works of the ecological movement. However, CH_2 is also saying, I am part of nature. I am like an organism, breathing and moving and changing. Other signs tell us more specific things about that organism such as: this is how I am cooled; this is where I extract air; I need more light nearer to the ground.

Most importantly, the messages contained in CH_2 tell us all these things at once. The architectural language of CH_2 has multiple readings that can lend a work its richness and complexity.

The aesthetic is both naturalistic and urban, both modern and part of the continuum of the city, both efficient, and whimsical. The overarching message is that these dualities can be reconciled and synthesized, and that city and nature need not be opposites.

In this way the design embodies aspirations for broad influence, strategically locating itself between various positions that might otherwise marginalise it. The building's aesthetic is unusual but not too unusual – an object that is both unique and repeatable. It speaks of greenness in the organic sense, but this is tempered by a response to the urban context. The degree of fantasy in the aesthetic can always be underpinned by serious technical concerns. In this way, CH_2 can be seen as prototype that accounts for the diverse influences acting on an urban building.

The Role of Role Models

Through the media, innovative architecture increasingly influences ways of thinking far beyond its own disciplinary and geographic borders. The Guggenheim Museum in Bilbao is such a celebrated case it is commonly described as the Bilboa effect. A single building was the trigger for transforming the culture and economy of a city. Previously a lesser known industrial town of Spain, Bilbao is now an international destination, and of international architectural influence. Such effects rely heavily on curated images and the aesthetic impacts of these images, and are heavily mediated, and strongly detached from their context in the process. The effect of CH_2 (which is, of course, a more modest undertaking than Bilbao) beyond green building circles, will be reliant on its imagery and its perception as an innovator. These are effects which are not yet measurable. However, it is reasonable to expect that CH_2 will be regarded as a role model among a series of internationally significant green buildings, and will influence the design and practice of future green buildings. It is also reasonable to expect that CH_2 will contribute to Melbourne being viewed as a site for innovation and a hive for the growth of a more sustainable city.

Role model buildings also provide markers of cultural values. Aesthetically, they create a visual image of those values. These may be political, artistic, technological or even religious values. Such buildings sit separately from their urban context insofar as their effect is carried around with people cerebrally, and is mediated through images. It is reasonable to expect that CH_2 may become a landmark representing a shift in focus towards environmental values and sustainability in architectural design. This effect may be asserted in a local context but remains to be tested.

Conclusions – Measuring Success

In many ways it is difficult to measure the aesthetic success of CH_2 when it remains incomplete. If CH_2 is to be assessed against its stated objectives, primarily that of exerting broader influence on building practices and providing a technical and cultural role model, then a long term study must be carried out to determine whether CH_2 will trigger significant change, or become an iconic role model. However, some conclusions can be drawn regarding the project to date, and the designed object currently being constructed. Three question are asked:

- Are the objectives of the project reasonable and useful?
- Has the methodology adopted been appropriate to achieve the objectives?
- What kind of aesthetic does CH_2 have, and is this aesthetic adopted appropriate or successful?

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There are precedents of exemplar buildings exerting influence on the broader body of building practice, as demonstrations of technique, methods and design approach. Green buildings in particular act as benchmarks above current minimum or typical standards of performance. For this reason it is critical that such buildings demonstrate the compatibility of environmental techniques and architectural aesthetics. It seems an appropriate and reasonable goal to set for a building such as CH_2 and in many respects may be considered a responsibility on the part of a local authority to support development of a leading demonstration commercial building. If successful in the long term, CH_2 will prove extremely beneficial to the design culture of Melbourne and growth of a sustainable city.

The methodology to achieve compatibility of environmental techniques and architectural aesthetics hinges on the integration of various parts of the design process. The charrette process, and the careful study and monitoring of this process as it unfolds, seems appropriate and necessary in the context of the project's aims. The integration of technical aesthetic (and budgetary issues) is critical to the success of the project and the charrette process seems ideally suited to deliver this. What should also not be underestimated, is the value of an intense charrette style process in addressing one of the key contemporary constraints on design-time.

A key feature of the design methodology in terms of studies and analysis is the openness of the process. As well as obligations to government constituents, the visibility of the process allows for maximum communication, a kind of feedback loop, and a growing interest in the emerging aesthetic of the building.

The aesthetic of CH_2, quite unlike a utopian modernist project, is a hybrid of a number of concerns: technical, urban and expressive. We can infer from the drawings and construction to date a building that is both a pedagogical set-piece in sustainable architecture, a reinterpretation of early 20th century Melbourne buildings which in turn adapted to a 19th century street pattern, and a celebration of expressive allusions to nature and to buildings of fantasy. The scale of the gesture, and its hybrid nature, seems entirely appropriate and should be further examined when the building is complete, and once it is weathered.

Part B: The Manners of Sustainable Architecture – on the Behaviour of CH_2 in Urban Fabric of Melbourne

Dr Darko Radovic

The Preamble

When the Melbourne City Council elected to build its new office, Council House Two (CH_2), as an exemplary ecologically sustainable building, it opened up a number of questions about the building's integration in, and contribution to, the urban and cultural fabric of Melbourne.

These questions include: How does an exemplary green building express the ideology of sustainable development? How does that ideology, now embodied in a concrete piece of architecture, relate to its physical, environmental and social contexts? Does the CH_2 project confirm or confront urbanity of Melbourne? To what extent is CH_2 meant to change the predominant urban culture of Melbourne, its physical and environmental reality? What are the likely key contributions of the CH_2 to the urbanity of central Melbourne?

When speaking about sustainable design we usually expect discussions about application of principles of *ecological* sustainability in urban or architectural design. Rigorous application of those principles is of critical importance for the future, not only of the built environment, but also of the planet in general. It is important to remember, though, that when addressing ecological sustainability one should never forget cultural sustainability. Cultural sensibilities are the other side of a dialectical couple that produces the dynamic that is sustainable development. Ideas always were and remain culturally specific. In our times of rapid globalisation we have to be aware that ideas belong to clearly defined cultural environments, that in the linguistic jargon, they have recognisable *ideo-lects* and *socio-lects* (Worton, 1998). Some ideas and technologies can be global, but not all of them are. Some give excellent results in particular situations and places, and not elsewhere. That is why in disciplines involved in the production of space we need to establish and nurture a sharp awareness that, if we want to have good and lasting results, a *coupling of ecological/cultural sustainability should never be broken.*

As the CH_2 building is currently under construction, it is only possible to address the above questions on the basis of project documentation and through exploration of the ideas and intentions embodied in the design and other decision-making processes. For the purpose of this investigation, we mapped and analysed (a) *the actual* impact of CH_2 as a volume on the immediate surrounding, and (b) *the expected* expressive and communicative potentials of CH_2. In addition to the site analysis and an analysis of the project itself, we interviewed a number of stakeholders to provide us with an understanding of the expected influence of CH_2 on the urban space and culture of Melbourne.

The Green Council House: the New City of Melbourne Office Building

The CH_2 is being marketed as revolutionary, not only in a functional and environmental sense, but also as formal expression of environmental sensitivity (Low et al., 2005) and as an example of appropriate urban integration.

The architecture of CH_2 follows bioclimatic principles. The 10-storey building is designed to utilise solar energy and natural light and air during the day, cool air during the night, and harness some wind energy and rainwater.

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The façades reflect those efforts and show their orientational difference and belonging. The main feature of the northern façade is 10 air extraction ducts. The air movement will be assisted by roof mounted wind turbines, which, together with the ducts, are meant to send a strong visual message about the otherness and the 'green' character of the building. That message is further reinforced by vertical gardens, whose striking presence on the façade will remind the passer-by that the building is different from its neighbours, and then what the key difference is about.

The southern façade is influenced by its sun-less orientation. The five 'shower towers' will enable water to cascade down to the street-level. The recycled timber louvers, operated by solar-generated power, will make a clear statement on the western façade.

The effort to make the building 'tell the story' is further supported by the City of Melbourne's art program. Artists were invited to express their understanding of, and the commitment to, the idea of ecological sustainability.

The technical and other specifications of CH_2 are publicly available through the City of Melbourne website, thus extending the educative reach of CH_2 into the virtual spaces of the Internet. Those aspects of the building that contribute to its communicative power *in situ* include:

- the materials, which were assessed on a number of sustainability-related criteria, which include ease of maintenance and durability;
- natural air movement and use of thermal mass;
- the ratio between the walls and windows on the façades;
- shading powered by integrated photovoltaic solar panels; and
- impact on immediate and broader context.

CH_2 – l'espace conçu

At the time of writing this essay, CH_2 was still under construction, and it is impossible to judge its future impact on Melbourne – both as an 'image' and as actual urban and architectural feature. A full investigation will need time and a research approach that follows what Henri Lefebvre called *dialectique de triplicite,* or – "threefold dialectic within spatialisation" (Shields, 1999). This threefold dialectic includes:

(1) *Spatial practice* with all its contradictions in everyday life, space perceived *(perçu)* in the commonsensical mode – or better still, ignored one minute and over-fetishised the next;

(2) *Representation of space* (which might equally be thought of as discourses *on* space); the discursive regimes of analysis, spatial and planning professions and expert knowledge that conceive of space *(l'espace conçu)* (ibid.); and

(3) *Spaces of representation* (which might best be thought of as the discourse of space), the third term or 'other' in Lefebvre's three-part dialectic. This is space as it might be, fully lived space *(l'espace vécu)*, which bursts forth as 'moments' of presence. It is derived from both historical sediments within the everyday environment and from utopian elements that shock the viewer into a new conception of the spatialisation of social life (ibid.)

When integrated, these three levels can help us get closer to understanding the complexity of the urban. For the time being, we can judge only some aspects of the 'conceptualised space' *(l'espace conçu)* of CH_2, which can provide us with:

a. valuable insights into expectations from the insertion of a sustainable building into busy urban core;

b. foundation of the hypothesis for the research about the perception of, and future life in and around, the new piece of urban space; and

c. necessary material for future comparisons with further developments in, and life of urban Melbourne.

In this examination we will present ideas and beliefs about CH_2 as *l'espace conçu* that have been identified by the three groups most interested in the project: (I) designers involved in conception of CH_2; (II) their client and (III) future users (Table 1).

In our interviews we used two sets of questionnaires. The first set asked questions such as:

- How does an exemplary green building express ideology of sustainable development?
- How does that ideology relate to its physical, environmental and social contexts?

The second set of questions included the following:

- Does the CH_2 project confirm or confront urbanity of Melbourne?
- To what extent is CH_2 meant to change the predominant urban culture of Melbourne, its physical and environmental reality?
- What are the key likely contributions of the CH_2 to urbanity of central Melbourne?

Developer	Designer	User
Symbolic value of the project is higher than financial value of the building itself. Strong desire to influence social trends with regard to sustainability. Determined political and financial support for the project.	Latest technological and design methods used to achieve client's objectives. Thanks to the political support it was possible to make advances which go beyond current market trends. Inclusion of long-term returns in calculation of economic viability.	Not very clear about the concept of sustainable buildings. CH_2 has a strong educational role. More interested in comfortable and private office environment than in social and aesthetic values of the project.

Table 1 Summary of key positions about CH_2 as expressed in the interviews.

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The Appearance and Presence

From those discussions and publications available to the research team, it is obvious that the City of Melbourne, the design team and future users want to contribute to change of culture, to transformation of central Melbourne towards environmental responsibility and accountability.

In order to stress the importance of *the cultural,* we will briefly dwell on the *appearance* and *presence* of CH_2 building in the urban fabric of Melbourne. The building's *visual appearance, physicality and functionality* play significant roles in two broad, revolutionary changes that are currently occurring in Melbourne.

One is urbanisation and the *discovery of new urbanity* which is much closer to the Mediterranean, than to the traditional British or (in Australia) American variation. The trend of 'Mediterranisation' or 'Europeanisation' of Central Melbourne is now almost two decades old. It grew from broader cultural trends in Australian east-coast capital cities over the last several decades, which can be associated with discovery of their own climates and their own cultural selves, as part of a slow but steady liberation from the colonial mindset (Radovic, 2004). The contribution of the diverse immigrant cultures, from sources different to the original ones, is immense.

The other trend reflected in CH_2 is the local *discovery of sustainability* itself. Often hijacked by primitive market forces and a narrow 'developers mentality', the sustainability agenda in Melbourne has an increasing number of strong, genuine proponents. The City of Melbourne is keen to be (and be seen as) one of them.

We do not know if the decision-makers were aware of all cultural connotations of the CH_2 approach. Our focus here remains primarily at urban integration of the new office building, and its likely relationship with the established and evolving urbanity of the Victorian capital city.

The idea of sustainable development and the concept of *urbanity* have significant philosophical links (Radovic, 1994). In their essence, both concepts are about behaviour and responsibility towards the surrounding. If good manners, which are central to the original meaning of the term *urbanity* (Ramage, 1973), are extended beyond interpersonal relations towards the whole of the city, then we can speak about decidedly *urbane environments*. If the same attitude is extended towards the whole of our environment, then we can speak about a truly *sustainable environment*. The affinity of two concepts, thus, becomes obvious, and harmony between their spatial and formal expressions a logical aim.

Long ago, European Medieval City Statutes codified the basic rules of urbane architecture (Radovic, 1994), such as a right to light, sun and privacy, literally extending urbanity from the sphere of individual and interpersonal (Elias, 1994), to the public arena.

Green buildings are, comparably, expected to 'behave' in a highly civilised, urbane way.

CH_2 – The Volume and its Shadow

At the time of writing of this essay (June 2005), the presence of a half-finished volume of CH_2 within the real 'text' of Melbourne, does not communicate clearly the green philosophy behind its architectural design. In its relationship to the immediate neighborhood, CH_2 is similar to other developments in the CBD.

The building is positioned in one of Melbourne's narrow streets. Its 10-story height introduces proportions of the much-criticised *rue corridor* and overshadows the opposite side of the Little Collins Street. On the critical day of winter solstice (Figure 1) the shadow – precludes solar access to neighbouring sites. This shadow closes the possibility of future development which could claim bioclimatic quality comparable to that of the CH_2 itself.

The explanation for how this happened is simple. In that part of the Melbourne's CBD a uniform, 40 meter height limit applies to all development. The CH_2 project had to follow those rules of urban development in central Melbourne.

It would have been very interesting to see how the CH_2 design team could address the issue of solar rights of neighbouring buildings. But, that issue was not part of their design brief, and in our research we can not hypothesise on such scenarios. We have dealt only with what was presented to the research team as a conceived space of CH_2, with what is *likely* to be *perceived,* and with the fragments of constructed reality.

This solar overshadowing, therefore, exposes the problems of broader planning and urban design practices in Melbourne and Victoria. The full resolution of which, remains beyond any individual architectural project. The shortfall, despite all the efforts of an extraordinarily sensitive and careful approach to architecture, should generate discussions about public interest and urban design regulation in central urban areas. If Melbourne wants to continue its dramatic success of quality of life and become a world-leader in sustainable design that desire has to be expressed at all scales of production of space, including urban planning.

Civility, a concept of great similarity and significant overlaps with that of urbanity, (Sennett, 1978) "is the activity which protects people form each other and yet allows them to enjoy each other's company." The CH_2, as a good 'citizen' and contributor to the urban debate, reminds us that the planning and urban regulation practices in the City of Melbourne now have to take new, complex issues on board.

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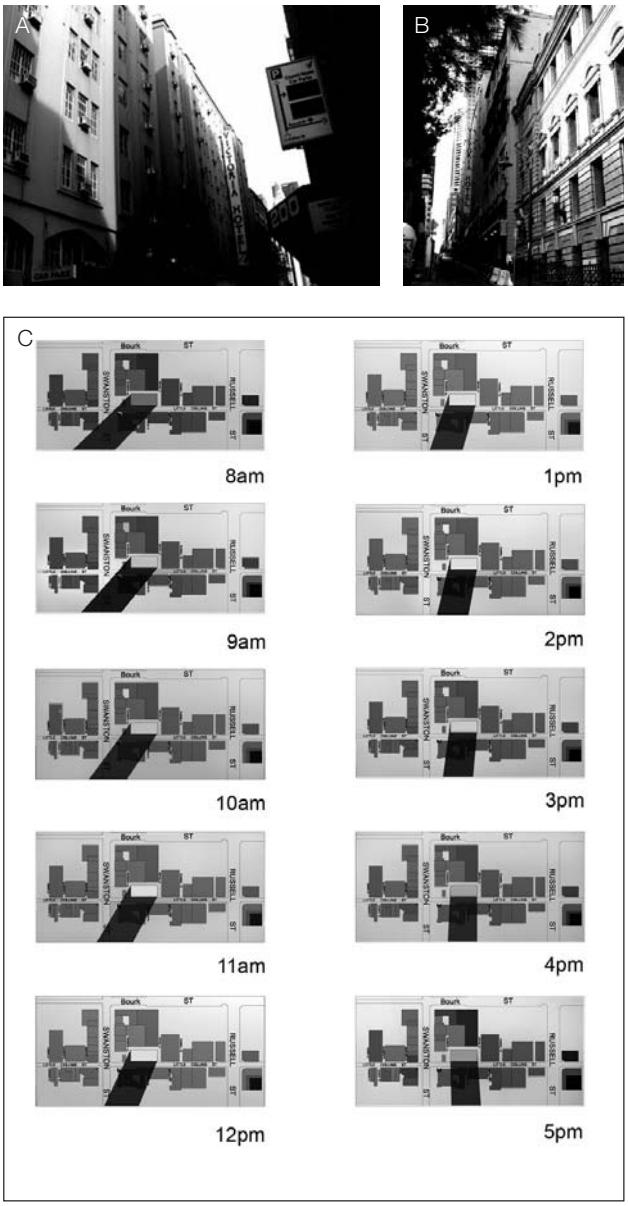

Figure 1 a rue corridor effect and overshadowing of the Little Collins Street and shadow diagram (winter solstice, 21.6.).

CH_2 – Functional and Typological Integration of the Ground Floor

A sharpened sense of urbanity is an essential component that influences occupants behaviour *within* the interior of 'green buildings'. Passive buildings demand active users, which mean that one has to take care about balancing her or his own needs and requirements with the needs and requirements of the co-users of shared internal spaces and their environmental condition (Low et al., 2005).

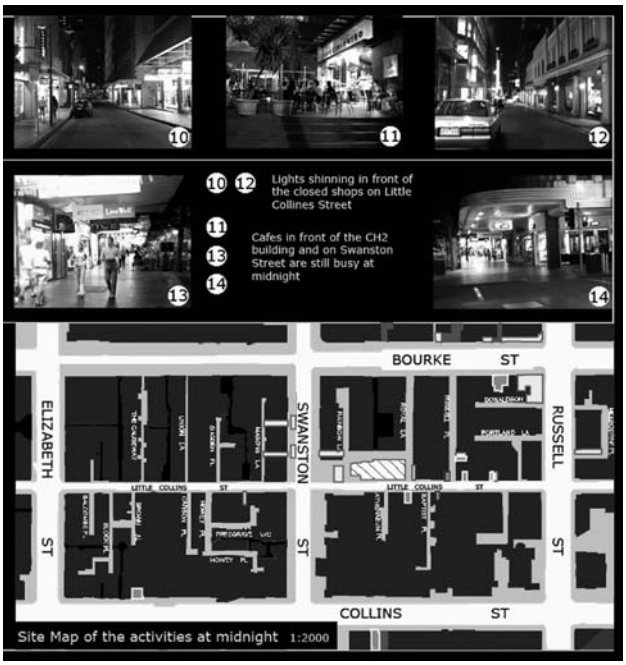

Figure 2 Urban integration – midnight; base material for rhythmanalysis.

An important feature of CH_2 is the way it attempts to extend the behavioural qualities, suited to the internal space of its occupants, into the outdoor space. In the CH_2 approach, the desire to extend the sense of mutual responsibility into the exterior, and to acknowledge the importance of public space of the city, is obvious. The combination of the thematically defined art program, the blurring of the inside-outside relationship, the drawing of passers-by in and inconspicuously telling them about the environmental and experiential advantages of a green building, contributes to the symbolic capital of the project and, eventually, to the symbolic capital of Melbourne at large. The ground floor of the CH_2 was designed to confirm and reinterpret the high-quality typology of Melbourne's lanes and to take part in its success, and is very likely to seamlessly blend into the street culture of central Melbourne.

CH_2 – l'architecture parlante

When it comes to the 'look' of ecologically sustainable architecture, there are two basic schools of thought.
One argues that there is no particular 'green aesthetic'.
It says we have just forgotten to build 'normal' buildings and that sustainability only normalises the appearance of built environment (Vale, 2000). Within that approach one can find a number of threads, which range from calls for neo-vernacular to the other extreme, where 'business as usual' practice is simply repackaged under the banner of sustainability (which, so conveniently, defies simple definition).

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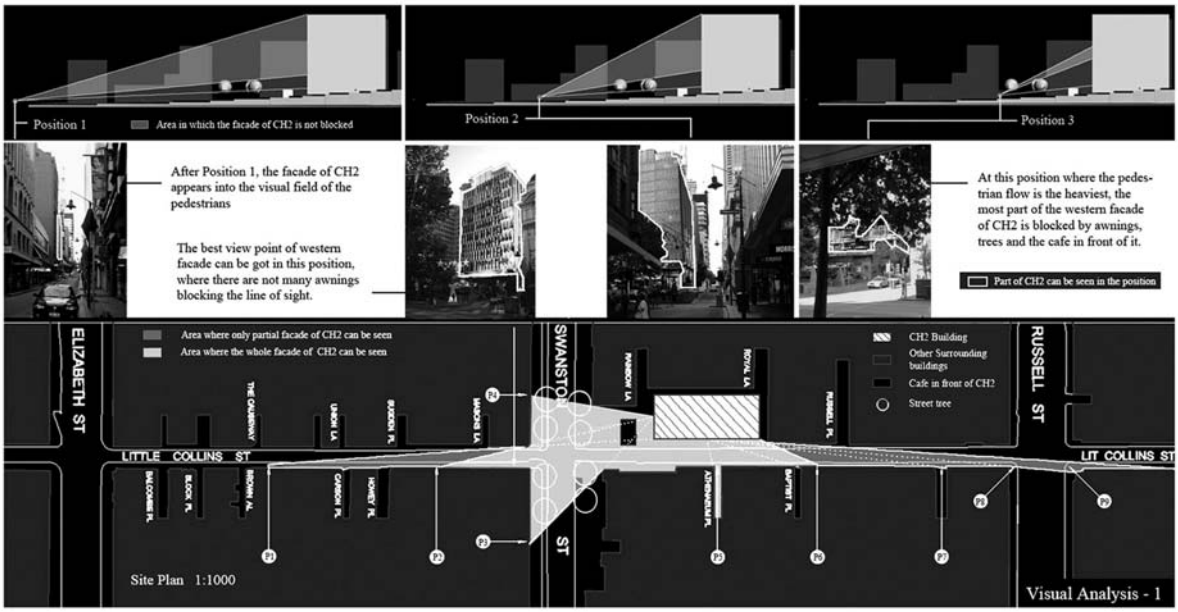
The other school of thought strongly argues that fundamental philosophical difference from the 'business as usual' approach *must* inform design, construction and use of such buildings. As a consequence, sustainable design also has to have a strong formal expression and impact. Again, within this interpretation we can find various trends, which range from organic approaches to various neo-regionalisms (eg. Yeang,1994).

With CH_2, the City of Melbourne has aligned itself with the second approach. It wants CH_2 to become a representative piece of *l'architecture parlante,* decidedly different from another recent sustainable building built in Melbourne.
In 1998 the Australian Conservation Foundation initiated and supported development of an exemplary 'green' building – 60 Leicester Street (60L), which is located not far from the CH_2 site. The project was distinctive because of its emphasis on behavioural aspects of use. Preparation of the brief included discussion about the expressive potential of architecture (Low et al.,2005), which revolved around questions such as: What does the client stand for? Is the client inclined towards low-technology, 'vernacular' solutions, or does it prefer to be seen as a forerunner in the quest for high-tech responses? Should green architecture look different or recognisable? And is improved environmental performance separate from architectural expression? (Radovic,1999).

The final brief for Spowers Architects from Melbourne was to transform a three-storey, inner-urban office building constructed in 1876 into "a 21st century four-storey integrated office using existing, recycled and new sustainable materials". An inner urban location was selected, and a distinctly 'green' architectural brief focused on a broad spectrum of sustainability considerations, rather than simply on engineering, functionality and/or a *'pure aesthetic'* (ibid.). The pragmatism of measurable and commercially repeatable solutions won the day (www.60lgreenbuilding.com). As a recycled building with a single visible frontage facing Leicester Street, 60L tells us little about its environmental quality. It inherited both its physical appearance and presence in the street from its original use.

CH_2 grew from entirely different circumstances. For a new building and an image-conscious client, the discussion of the role of green architecture, both as appearance and as physical presence in urban fabric, ended in favour of brave, even striking formal solutions. Once CH_2 is completed the discussion will continue within the wider community including CBD dwellers, workers and visitors. In this way CH_2 will contribute to a greater awareness about environmentally responsible office architecture.

Figure 3 Visual analysis 1 – view corridors and possible visual impact of CH_2 on neighbouring spaces.



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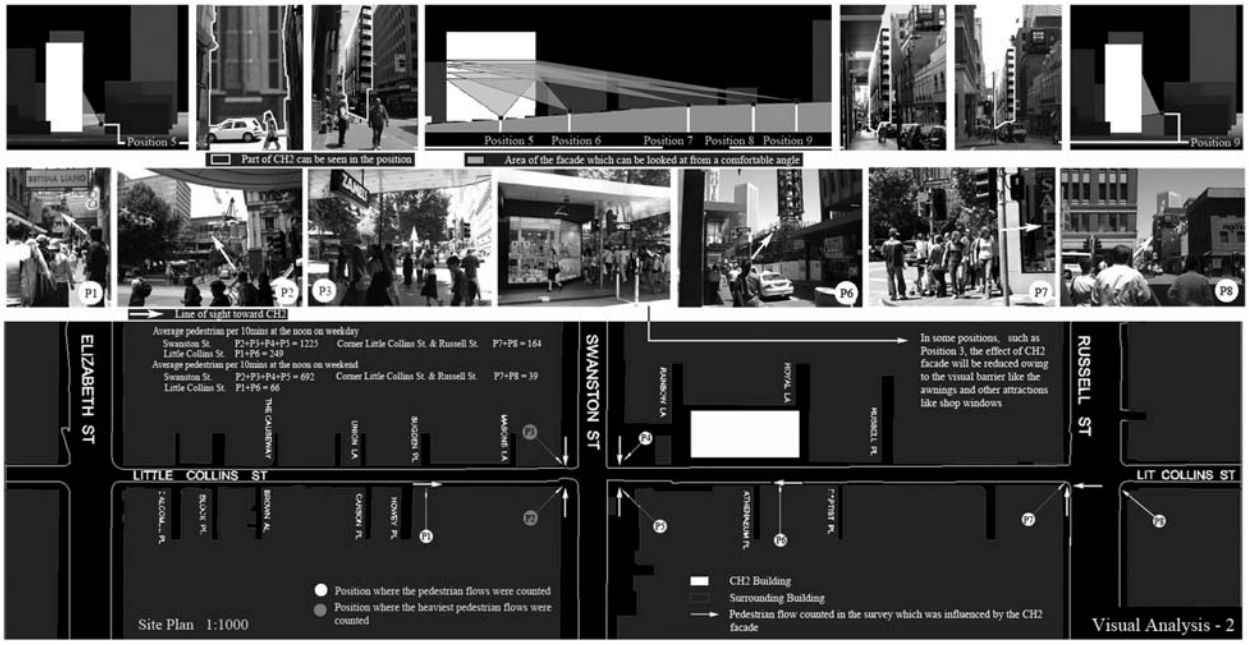

Figure 4 Visual analysis 2 – visual exposure and integration of CH_2.

Towards a Conclusion

At this stage our analysis reflects the *knowledge* about, rather than the experience of CH_2. As a part of the necessary tripartite account of CH_2, as reflection on *l'espace conçu* only, it forms basis for future comparisons with the actual, perceived and lived experiences, when they start to accumulate and enrich CH_2.

Much of Lefebvre's *La Production de l'espace* is about the non-discursive and discursive aspects of space. Lefebvre asks: "Do the spaces formed by practice-social activity have meaning? What sort of semiotic analysis should be applied? Can the space occupied by a social group ... be treated as a message? How could we 'read' it? Ought we to look upon architectural or urbanistic works as a type of mass medium? And, May a social space viably be conceived of as a language or discourse?" (Lefebvre, 1991)

These are, of course, rhetorical questions. "Each of us is constantly – every day – faced with a social text. We move through it, we read it. … At the same time we are part of a social text. Not only do we read, we are also read, deciphered, made plain (or not)" (Lefebvre, 2003).

In that sense, CH_2 is our text. It contributes to the complex array of ideas and influences that make up central Melbourne. Already, as a project and as a construction site, CH_2 adds to the complexity of its (con)texts of both lower and higher order, which range from architectural detailing and local behavioural patterns, to the broadest cultural aspects of contemporary Australia.

The 'text' of CH_2 offers material for multiple readings. From the shadow on the façade of the Victoria Hotel we read the social condition and social contract codified in the planning documents of central Melbourne in the early 2000s. It tells us that not all levels of production of space are ready for a significant change and the shift towards sustainability. Urban texts are highly interactive, and it is to be hoped that the inclusion of CH_2 in central Melbourne will raise questions that can change current, inadequate urban design tools.

The main 'reading material' in this phase of our research was compiled through a series of field surveys, which included: monitoring of stationary activity, pedestrian counts, and day and night activity surveys. Our 'reading' techniques included textual analysis, visual analysis (Figures 3 and 4), analysis of original DesignInc. plans and artist views, perspectives, analysis of permeability and accessibility, functional analysis photographic analysis, and some elements of rhythm analysis (Figure 2). Those readings established basis for comparisons between the conceived and simulated performance of CH_2 with future, actual conditions on the ground and through its usage and inevitable transformations.

Monitoring of the effects of CH_2 should pay equal attention to qualitative and quantitative aspects of its performance, to its internal functioning as well as the consequences of its presence in urban fabric of Melbourne.

Our research project lacks the encounter with the *lived* quality of CH_2. Only with the dimension of time will the full profile of CH_2 emerge. Its full appraisal will only be possible in the years to come, when all details about its emergence, all ideas behind the project, and reality of its presence and use start to merge with qualitative accounts of CH_2 as, by then, a genuine *l'espace vécu.*

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1 Robert Venturi, Complexity and Contradiction in Architecture, New York, c. 1963

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