A Reflective Approach to the Attitudes of Hong Kong Design Firms towards Environmentally-Friendly Design Using Fry's Organizational Identity and Image

by

NG Pui-Yee, Purrie

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Original Chief Supervisor:	Prof. Clive Dilnot
after his relocation in U.S.	
Chief Supervisor :	Prof. John Frazer (for administrative purposes)
Co-Supervisor :	Prof. Ezio Manzini

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PREFACE

'What has been will be again, what has been done will be done again;
there is nothing new under the sun.
Is there anything of which one can say, "Look! This is something new"?
It was here already, long ago;
it was here before our time.
There is no remembrance of men of old,
and even those who are yet to come will not be remembered by those who follow.'

(Ecclesiastes 1: 9-11)

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Submitted by NG Pui-Yee, Purrie

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Abstract:

Various theories of environmentally-friendly design and sustainability have been developed in the past few decades. However, controversies have arisen because of the great differences in their ideologies and implications. Among the radical theorists, Fry has aimed at establishing a new design foundation by joining ecological and economic imperatives together as 'industrial culture'. *"Without reflective thinking, there is no improvement against unsustainability."* His core concept has centred upon 'Caring'. It can be expressed through design as it represents the 'materialized ethic', which needs active communication through organizational identity and image.

The problem statement of the thesis is to verify and explain whether Fry's thinking can be applied to the Hong Kong situation. In order to put the thesis into focus, Hong Kong design firms are used as a case study. Furthermore, among different design services, hotel design has been chosen because of the conspicuous consumption patterns of hotel industry.

To this date, little research has been conducted within the Hong Kong design profession. The exploration of the extent to which Fry's thinking can be adapted to a more effective and wider-ranging implementation in Hong Kong is significant to this study. Two approaches are used in the thesis. Firstly, it starts out with the exploratory

and explanatory approach of how to apply Fry's thinking into local practice. Secondly, it continues with the descriptive approach of getting data from the current conditions and probing new directions for improvement in the present and the future. These questions are answered using both secondary sources (through literature review) and primary sources (using questionnaires, interviews and existing comparative case studies). The triangulation of data (using the double paradigm of quantitative and qualitative analysis) is used in the thesis for internal validity and reliability.

This study attempts to bridge the environmentally-friendly design gap, in both theoretical and practical aspects, by using several key research problems:
(1) How can Fry's thinking be verified, expanded and developed, and how can it be localized to the Hong Kong context? (2) How can organizational identity and image improve the effectiveness of environmentally-friendly design? (3) What experiences and involvement (in terms of values, management and images) do Hong Kong design firms have in environmentally-friendly design? (4) What new directions are appropriate for environmentally-friendly hotel design in Hong Kong? After analysis and interpretation of survey findings, a new theory of an integrated design identity and image will emerge as a possible means to improve and transform current Hong Kong hotel design. The research findings indicate that:

1. Evidence is found that supports the incorporation of Fry's thinking to the current Hong Kong situation. Environmentally-friendly design in Hong Kong is seen to be what Fry calls the 'initial' stage, then proceeds to the 'transitional' stage towards 'Sustainments' (see Fig. 6.4).
2. Key results and causal relationships are found (see Fig. 6.2 and 6.3):
   2.1 Effective communication is the key to the transformation of organisational identity into image. A series of inter-relationships are drawn: the stronger the identity values, the more identity

measures will be implemented; the stronger the identity values and measures implemented, the more impactful will be the organizational image. The more actively the organization image communicates to the society, the more effective will be the environmentally-friendly design.

2.2 Degrees of acceptance and change to environmentally-friendly design will take time; effectiveness and successful results will be influential but have a cumulative effect over time.

3. Most of the design firms involved in the research study agreed that environmentally-friendly design was important, and they expressed dissatisfaction with existing hotel design practices. However, findings indicated that most of them had low involvement so far. The internal validity and reliability of the study is shown in the fact that the interviewees from the focus group and design firms expressed their difficulties in promoting and practising environmentally-friendly design in the existing Hong Kong situation. This leaves much room for improvement. Thus, much lip-service is given in Hong Kong to environmentally-friendly design, but the practice lags far behind. (see details in Ch. 4 and 5).

4. Most of the design firms agreed that both systematic and dynamic changes was required to promote environmentally-friendly design in the present and future situation in Hong Kong. The research findings support the thesis that the three key research elements- values, organizational identity and images- are expressed through corporate and product identity to improve the effectiveness of environmentally-friendly design in Hong Kong. New directions, proposed strategies and methods in design and hotel design are suggested. (see details in Ch. 6 - Discussion and Implications).

CHAPTER 1

1. Introduction

1.1 Background Information

Hong Kong, which literally means 'Fragrant Harbour', is famous as a top-class metropolitan centre, and is considered the economic threshold of Southeast China. Ironically it is criticized as a third-class city in terms of environmental standards. Regarding environmental consciousness, Hong Kong is still lagging behind other Southeast Asian countries like Japan and Singapore as well as North America and European countries. Environmental issues did not officially become a government concern until 1989, when the White Paper 'A Time To Act' was issued. The Governor's Speech of October 1999 acknowledged the worsening condition of the Hong Kong environment, and made sustainable policies a major issue. Environmental issues are finally starting to draw public awareness but such consciousness is growing slowly. Changing public attitude is complicated by the dense population and by the short-term mentality and profit-oriented outlook of Hong Kong society.

In the last decade, numerous arguments have been raised about how to improve the environmental problems. Most of them, however, merely addressed only to symptoms rather than the key causes. Basically there are two needs for changes. Regarding the global needs, the United Nations Environmental Planning Report in 2000[1] stated that in order to meet the needs of an increase in population of 3 billion people in the next 50 years, a tenfold reduction in resource consumption among the industrialized countries is an essential long-term target, if adequate resources are to be released for the needs of developing countries in the future. Worldwide and local

[1]This information is derived from the Global Perspective, http://www.grid.unep.ch/geo2000/ove/002.htm

green groups have supported this view: excessive consumptive lifestyles fostered by advertising and commerce in the industrialized nations is a major factor that needs to be addressed.

In view of local needs, Wong (1997) in *Professional Practice for Architects in Hong Kong* [2] urged that environmental awareness was increasing and the need for keeping the sustainability of the environment was becoming more and more acknowledged. It was essential for the profession to maintain sustainability through design and management to pass on to future generations. In the past decade, environmental concern turned out to be a series of negative incentives to the already materialized society like Hong Kong as lots of Hong Kong people saw that ecological and economic imperatives were complicating elements which would conflict with their interests and profits.

As a matter of fact, there were many pitfalls present in the implementation of environmental concern:

- Most of the current environmental theories tend to foster short-term solutions which just meet the immediate requirements, rather than fostering theoretical and practical views towards effective and long-term goals.
- Since most of the models are mainly derived from the experience of western developed countries, it is inevitable that gaps appear when applying these theories to an intensively materialized city like Hong Kong.
- Even though there are gradual increases in sensitivity towards environmental issues, most environmental control is effected on a command-and-control basis rather than a customer-driven basis.

[2] Wong.(1997).*Professional Practice for Architects in HK.* HK: Pace Publishing Ltd., p.25.

- In the main, most of the present measures are either piecemeal or are legislated by government, which do not give a strong enough motive to empower change from the present business-oriented mode to a more viable sustainable mode.
- Apart from these, most of the environmental measures and practices in Hong Kong are narrowly defined and confined within their own scopes. They are restricted within conventional design activities and management which are either too theoretical without taking the practical situation into consideration, or too pragmatic as ad hoc measures without deep, profound values within their conceptual framework.

Ever since the time of the Industrial Revolution, overuse and exploitation of resources have spawned a great wave of consumption, and consequently a mistreatment of nature. Fry[3] is one of the contemporary design practitioner, who is actively promoting and applying environmentally-friendly design in Australia starting from 1990's, he has strongly emphasized and modified his thinking into different countries according to their local context. In the midst of environmental problems, Fry states that design is one of powerful practices which can play an essential role in sustaining the environment through concepts, production and communication. Following this line, this thesis will investigate whether and to what extent Fry's thinking will apply to the environmentally-friendly design in Hong Kong effectively.

1.2 Scope of Study and Definition of Terms

As environmental study has become an ad hoc study in these few decades, lots

[3] Fry was the founder of the EcoDesign Foundation in Sydney in 1990s. Currently he is the Director of this organization who emphasizes on academic study and practices. He was the visiting lecturer of School of Design at the Hong Kong Polytechnic University for several years in 1990s. His thinking has laid the foundation of my MA dissertation and this thesis is in fact, the continuation of the study.

of new terms are still evolving and conveying different implications, including the contemporary Fry's thinking, which was written in his literature, website and mission statements of his organization – EcoDesign Foundation. Thus it is important to explain the terms clearly beforehand.

Fry's Thinking

His thinking is twofold, on first hand, his core value is originated from the German contemporary philosopher, Martin Heidegger's concept on 'Dwelling, Thinking and Building'. On the other hand, he is a design practitioner who has devised new terms for developing his thinking. Two terms have been used to express his thinking: 'Ecodesign' and 'Sustainments'.

Ecodesign

The re-design of design (design is taken here as the act of designing as well as the broad term stands for those designed as an object, image, system or process).

Sustainments

'Sustainments' mean sustaining the environment. His thinking puts emphasis on continual changes of lifestyles and working habits.

Sustainability

This term was first used in the early 1980's, but was popularized by the Brundtland Report[4] in 1987. When applied to design, sustainability includes not only ethical and social responsibility, but also the notion of time and timescale.

Sustainable Tourism

Sustainable Tourism aims at *"meeting the needs of present tourists and host regions while protecting and enhancing opportunities for the future. It is envisaged as leading to the management of all resources in such a way that economic, social*

[4] The report adopted a global perspective on the consumption of energy and resources, and emphasized the imbalance between rich and poor parts of the world. It also argued that sustainable development required that those who are more affluent adopt lifestyles within the planet's ecological means. World Commission on Environment and Development. (1987). *Our Common Future*. Oxford: OUP.

and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological processes, biological diversity and life support systems" (World Tourism Organization)[5]. The term 'Sustainable Tourism' began with the 1989 World Tourism Organization Hague Declaration, where for the first time principles were established which would achieve a sustainable tourism. The objective was to obtain a balance between economic and ecological considerations.

Environmentally-Friendly Design

A general term which refers to any design taking the impact on the environment into account. Specifically, it includes 4-R, namely, reuse, replace, reduce and recycle. It is extensively used in the thesis because it is a common term promoted by the government to the public in Hong Kong.

Environmentally-Friendly Hotels

Concern for environmentally-friendly hotels was first begun in Hong Kong since 1994, with a joint-environmental initiative developed by a symposium of hotel groups, which was originated from the International Hotel Environmental Initiative (IHEI)[6].

Organizational Identity

'Identity' is the collective, shared understandings of the organization's distinctive, central and enduring characteristics (Albert & Whetten, 1995). It often exists in official company documents through words, such as mission statements, codes of ethics, and newsletters.

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[5] In 1992 the Earth Summit produced the Agenda 21 document, which identified the travel and tourist industry as one of the key industries playing a role in the sustainability of the environment. See Carlene Van Toen. (1998) Seminar Paper of *"Agenda 21 for the Travel & Tourism Industry: Towards Environmentally Sustainable Development: An Overview of Key Issues Related to Sustainable Tourism Development"*. Many arguments about the oft-quoted definition from the Brundtland Commission Report issued in 1987, which declared sustainable tourism to be *"Development which meets the needs of the present without compromising the ability of future generations to meet their own needs"*. HK: pp.1-2.

[6] K.D. John (1994). *Asian Hotel And Catering Times*. HK: pp.44-47.

External Identity (Image)

Image means the representation of objects and events. Baudrillard (1988) explained that image could be differentiated into several phases. The term used in the thesis is the first phase of 'image' which is the 'reflection of the reality' and commonly seen as a means of symbolic expression externally.

Corporate Identity

This term refers to the organization's 'central ideas' (Olins, 1989) and how people perceive it. It is commonly expressed in terms of 'visual identity' because of its use of visual forms through symbols, for example, the company logo. Corporate Identity includes much more than the mere logo. Since the hotel is a complex mixture of products and services, some elements will be derived from the brand identity of Aaker (1996) such as service, leadership, organization and product in order to turn the concepts into testable variables in the survey.

Product Identity

Here the concept of 'Product' is used in a broad sense, including the hotel buildings, systems and amenities. Testable variables will be generated in the survey basing on the design attributes of product management (Cook, 1997). Its significance lies on what Ellinger describes (Klocker 1980), the better the product informs, the stronger is its identity. Identity can be approached from the following three kinds of information:

a. Existence: being existent as a material object, the product expresses its presence and production.
b. Origin: the product informs about its designer, manufacturer, country and culture.
c. Quality: the product informs about its function, use and maintenance.

Effectiveness

It is used in a relative qualitative sense rather than an absolute quantitative indicator.

1.3 Statement of the Problems:

Environmental problems are a complex weave of many elements, including economic, management, political, technological and cultural issues. Much has been researched in the first four areas but little in the cultural part of design. Why is this? Cultural values, attitudes and behaviour are difficult to quantify. Such values are intrinsic elements embedded in different forms among different ethnic groups. Conflicts arise when putting theories into practice once there are differing interests. Most of all, difficulties were appeared when there are undefined and unclear definitions and ideologies towards these controversial problems.

Fry clearly comments that environmental problems are the reflection of design problems. Design is also the manifestation of cultural values upon our environment. Our mentality and thoughts affect what design is and what is being designed (Fry, 1994). Meanwhile, he claims that the design profession has failed in three ways.

- Firstly, it has failed to build an informed intellectual tradition of substance in the area of material and immaterial design, (seen most clearly as a glaring gap in the design/sustainability knowledge base), which makes integration of theory and practice within the design profession impossible.
- Secondly, design has been narrowly confined and has defined itself within the production of a commodity or a discipline rather than an active embodiment of intention, desires and direction. "*So without reflective thinking, there is no improvement against unsustainability*" (Fry, 1994).

- Thirdly, the key central core of Fry's thinking is consisted of a set of intrinsic value explaining the present ecological crisis is due to the loss of 'Caring' in design consciousness, i.e. the loss of social responsibility[7] (Fry, 1994).

Theoretical Aspects

Most of the environmental design ideas and models derive primarily from the western countries, which differ substantially from the context of Hong Kong in terms of population, geography, political, social, economic and cultural background. Because of these differences, these models cannot be directly applicable to the Hong Kong situation. However, changes of environmentally-friendly design are in fact changes of culture (from individual to organization, social, economic culture and so on) which require the development of a theoretically-informed and practically-realized knowledge for local needs with global missions.

As Fry's thinking is newly developed covering quite a broad spectrum, his thinking is still subjected to verify in local context. The thesis will focus upon his two main concepts – identity and image. In brief, identity – is the intangible underlying beliefs and missions of an organization while image – is the visual tangible symbols for manifesting the beliefs. The thesis aims at making an descriptive and explanatory study on the values, identity and image of the existing Hong Kong design firms in deriving factual and attitude-probing datum. After mapping the existing cultural gaps between the Hong Kong situation and Fry's thinking, a further discussion of outcomes and implication will be elaborated on localizing his thinking.

1.3.1 Research Questions

The outline of the appropriate methodology depended on the purposes of

[7] Fry. (1998). "The Placement, Displacement and Replacement of Design" in ***Form/Work1***, pp1-2 and (1994). *Remaking*. Sydney: Envirobook, p.108

the study and thus guided by the research questions. They were devised and revised after a thorough literature review pertaining to the inadequate research on problematic aspects of environmentally-friendly design. The following questions were formulated for guiding the inquiry of this study:

- How to build up a localized view of Fry's thinking through identity and image on Hong Kong design?
- What are the experiences of Hong Kong design firms on environmentally-friendly design?
- What is/are the values, organizational identity (identities) of Hong Kong design firms on environmentally-friendly design?
- What is/are the images of Hong Kong design firms on environmentally- friendly design in general?
- What are the new directions of Hong Kong environmentally-friendly hotel design in the present and in the future?

1.3.2 Contribution to Knowledge: Rationale for New Theoretical Constructs for Design

Fry's thinking is originated and commonly used in the cultural and environmental philosophy of design context. Although some environmental initiatives and policies have been implemented in Hong Kong, there is not much research conducted with regard to the cultural aspect so far. Take a view on environmentally-friendly design, most of these are piecemeal information which should be theoretically-informed and communicated actively in reality. As a result, the significance of this research lies on 'Whether' and 'How' Fry's thinking can be conceptually formulated and realized in the practical world, with an emphasis on the case study of Hong

Kong hotels. However, gaps exist between his thinking and Hong Kong situation due to 2 reasons, firstly, the major thrust of his thinking is based on the 'Dwelling, Thinking and Building' of Martin Heidegger, a German philosopher, which is relatively abstract and unfamiliar to Hong Kong people. Secondly, the intrinsic values of his thinking need to operate into testable variables which are more pragmatic and specific in nature. So, my contribution in this thesis is as follows:

- To conduct an initial study of verifying Fry's thinking into local context. Through the application of his concepts originated from cultural philosophy in environmental design, new sources of design and management terms were added formulating the questionnaire and interviews in the survey. In other words, it involves the translation of the abstract intrinsic values into measurable indicators empirically.
- To adopt an exploratory approach on Fry's thinking by building up a localized model. The framework of study is basically consisted of 2 levels, exploring the internal values of organizational identity, using contemporary management terms of total quality environmental management measures and visible identity (images) in terms of corporate and product identity.
- To propose a local perspective of to what extent and how Fry's thinking will have a place in environmentally-friendly profession, education and management in Hong Kong once result findings and further implications can be generated through the survey.
- In doing so, the thesis will address the development of Hong Kong

environmentally-friendly design at 2 levels:

(a) At general, theoretical level for value claims, it is a study of how normative knowledge transfer into symbolic knowledge in terms of Fry's design identity and image through design research, which can be built as a conceptual tool and a communication means. Values on further implications can be elaborated in 3 related design profession, design education and design management.

(b) At specific, applicable level for knowledge claims, it aims at providing new design directions which can be applied for both the present and the future of Hong Kong environmentally-friendly design.

1.4 Methodology

This section is basically divided into 2 parts, the first part aims at collecting descriptive data from Hong Kong design firms and their existing environmentally-friendly design practices. During the second part, attitude-probing questions are raised for their environmental shifting of values and degrees of changes. Since not much related research has been conducted in the Hong Kong design profession before, some on-going changes were modified in the process of data collection. After the feedback received from the first round, close-ended questions have been replaced with multiple-choice questions to give better-defined variables. Slight on-going refinements have been made for more clarity and details.

Joint-Methods Used

Basically two approaches were adopted in formulating the research questions, first, an exploratory approach - was used in translating and analyzing testable variables in verifying Fry's thinking into Hong Kong context. Secondly, the descriptive approach - that was 'what exists presently, including the current practices, spotting the gap in axiom, and difficulties encountered?' and 'What can be recommended and suggested for the new directions on the effectiveness of environmentally-friendly design in the present and future?' Both the problems and environmental shift could be identified from the secondary sources through literature review and primary sources from empirical studies. Regarding empirical research, the triangulation method of a double research paradigm was identified in this thesis using quantitative and qualitative method. Due to the little information available on this issue so far, more in-depth research needs to be explored on the key research questions. With the use of questionnaires and structured interviews, an in-depth exploration of the current attitudes and future possibility of environmental-shift were conducted.

1.5 Organization of the Thesis

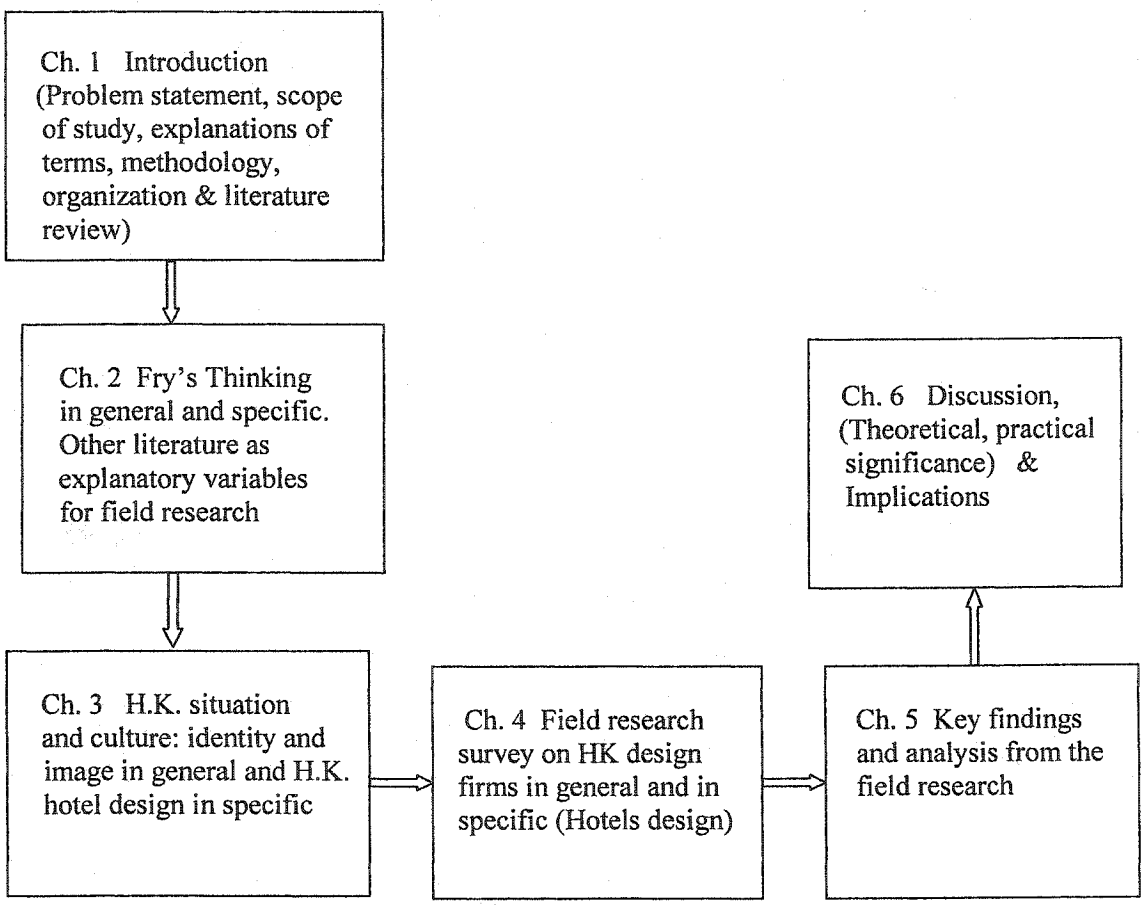

Fig. 1. Overview of Thesis Chapters

1.5.1 Objectives of Chapter 1

This chapter aims at providing basic background about the existing problems and the approach to explore the issue using explanatory research. Thus the chapter is basically divided into several parts, firstly, background information, scope of study and definition of terms, problem statements, contribution to knowledge, methodology, organization of the thesis and literature review.

1.5.2 Objectives of Chapter 2

This chapter gives an overview of Fry's thinking, including

background information, general and specific theories. One key issue of unsustainability is the excessive exploitation of natural resources far exceeds its sustainable capacity, thus there is an urgent need for changing wasteful lifestyles. Environmentally-friendly design movement, traditional design methodology and research will be reviewed to give an overall development and direction. Since there are gaps existing within his thinking when applying them to Hong Kong, initial assumptions will be made focusing on identity and image while responding to 'Think Global, Act Local'.

1.5.3 Objectives of Chapter 3

This chapter continues to explore and focus on the issues of unsustainability and sustainability in Hong Kong – an urban ecology. Although there is an increasing environmental concern from the design professionals, one of the key causes is the loss of environmental consciousness mainly driven by excessive consumption and disposable culture.

Then the roles and significance of sustainable tourism in Hong Kong will be briefed as background information. Focus is placed on Hong Kong hotels as they are the epitomized of conspicuous consumption, including building materials, systems and amenities. Through the literature review on research documents and articles, difficulties and barriers in environmental shift will be identified. All these will provide valuable guidelines for formulating the survey questions to the Hong Kong design firms.

1.5.4 Objectives of Chapter 4

In order to probe more in-depth understanding about the values, of HK design firms, questionnaires and structured interviews will be conducted with a sample size of 100 design firms. Questions have been grouped basically under 5 sections, Part A is Company Profile, Part B is Design Factors (existing practices, values, difficulties, solutions towards Design for Sustainability), Part C is Design Innovation (values, attitudes, sources, degrees of commitment, practices), Part D is Design Management (environmental leaders, strategies, products, materials and services); lastly part E is Demographic Data.

1.5.5 Objectives of Chapter 5

This chapter will analyze the datum from empirical surveys in drawing further theoretical implications. Research questions will be centred on whether Hong Kong hotel design will be improved in terms of identity and image. The theoretical section will substantiate the changes in local context, while design direction(s) will be formulated as alternative(s) towards environmentally-friendly hotel design in the present and future.

1.5.6 Objectives of Chapter 6

With the data analyzed, new findings will formulate a new agenda listing direction(s) of Hong Kong environmentally-friendly design with a localized model of identity and image addressing the strategic and product levels. Significant findings will contribute to implications at a cross-disciplinary approach including design professional, design education and management after reviewing future research and objectives.

1.6 Literature Review

There are several major sections in this chapter: environmentally-friendly design research and sustainability, Fry's thinking on design and sustainability; identity and image theories, Hong Kong culture, worldwide sustainable development, Hong Kong hotel design and culture, and lastly, survey, structured interviews and case study. Through the review of current literature, the research questions and suitable methodology will be formulated and constructed for the inquiry of the study.

1.6.1 Theoretical Section

In order to get an overview of the traditional design research, Literature review was made on Archer (1965,1979,1981), Broadbent, G. (1969, 1973, 1979), Rittel, H. (1973), Cross, N. (1980, 1984, 1990), Rowe, P.(1987), Bayazit, N. (1993), De Vries et al. eds. (1993), provided classifications of design research and different types of knowledge. Within its development, environmentally-friendly design has been one of the recently evolved research topics.

1.6.1.1 General Theories on Design Research and Sustainability

Review included Naess (1973), Burall & Elkington (1986), Button (1988), Goldsmith (1988), Mackenzie (1991), Marshall (1992), Dewberry and Goggin (1994), Hayward (1994), Manzini (1994), Sylvan & Bennett (1994), Wall (1994), Gare (1995), Hsin (1996), Pepper (1996), Van der Ryn (1996), Madge (1997) and Rees (1998) provided background information including definitions, mission statements, schools

of thoughts and practical projects. There were changes in environmentally-friendly design from normalized design in the 80s to new radicalism in the 90s. The central core of arguments were their differences among their ideologies and implications. Tremendous debates arose from the modes of sustainability such as 'Sustainable growth' versus 'Sustainable development',ideologies of 'Weak versus Strong Sustainability' (see Fig. 2.1-2.2). Among the radical theorists, Fry put forward the promotion of ecological sustainability through re-creation of 'industrial culture'. He aimed at building a new foundation of integrating economic and ecological imperatives rather than just reforming the existing design. Thus it was more than just 'adding in' environmental criteria to the design process but rather drawing these relationships together.

1.6.1.2 Fry's Thinking on Design and Sustainability

Through Fry (1993) "Sacred Design I: A Re-Creational Theory" and "Architecture of Care" in *Remaking,* as well as his journal (1998) "The Placement, Displacement and Replacement of Design", these gave an overview about existing pitfalls of the design profession and also his theoretical structures of design thinking. From his literature, he has used 2 different terms to illustrate his theory, the earlier one was known as 'Ecodesign' while the latter as 'Sustainments'. Fry's core thinking has been based on Heidegger's concepts of 'Dwelling, Thinking, Building',

which further elaborate the ideal state of building design in terms of values, attitudes and practices. In order to externalize his core values, a review was made on Fry's seminar paper - Environmental Management & Planning (2000) "A Tool of Changes". Through his concept of identity and image, these formulated the basic structure of the thesis.

1.6.1.3 Identity and Image Theories

Whetten ed. (1998) explained how to use identity and image concepts to make concrete measures in terms of organizational identity (internal values) and corporate identity (external identity). In order to research how hotels convey symbolic meanings, extensive reviews on how effective design images could be presented using sign system in Vihma's literature *Objects and Images* (1992), *Design–Pleasure or Responsibility* (1995) and *Products as Representations* (1995). Through Aaker's literature on *Building Strong Brands* (1996), an identity model was built to explain the importance of core and extended identity in terms of product, organization, person and symbol. Fry's model was modified and elaborated further based on Environmental Communication System of Minai (1984) when looking for the stages of ethical values between Fry's thinking and Hong Kong.

1.6.2 Case Study

A brief review included Lau (1996) has explained its ecological characteristics and the conflicts involved. Hong Kong which is intensively-

constructed with the artificial – high-rise buildings, has generated many environmental problems due to the excessive materials consumption. Such causes could be explained through social identity and image-creation under this materialistic society.

1.6.2.1 Hong Kong Culture in General: Identity and Image

Chan & Hills (1997) studied the environmental concern of Hong Kong people in the past and present. Furthermore, several literatures such as Bond ed. (1986, 1996) in *The Psychology of The Chinese People*, *The Handbook of Chinese Psychology*, Lau (1988, 1995, 2000) in *The Ethos of the Hong Kong Chinese* and *Social Development and Political Change in Hong Kong*, Weinshall ed. (1993) in *Societal Culture and Management*, Chua (2000) in *Consumption in Asia-Lifestyles and identities*, have researched upon the personal and social identities through images of Hong Kong culture.

Then Hills (1998) in *Planning For A "Sustainable" Hong Kong Conference Papers*, Mackie (1994) and John (1994) gave key analysis about the existing current practices, difficulties and areas to be improved, with accordance to the progress and implementation of sustainable development. A focus study was significant for filling the gaps and pitfalls in applying Fry's thinking into the Hong Kong situation.

1.6.2.2 Sustainable Tourism in Hong Kong

Coccossis & Nijkamp (1995) provided clear background information about the origin and historical changes of

sustainable development in the travel and tourism industry. Through the seminar paper by Van Toen (1998), an overview was made on both global and local environmental issues towards sustainability. One remarkable programme of action has listed 'Design for Sustainability' was weighed one of the 10 priority areas within the Agenda 21 initiatives. Moreover, the latest environmentally-friendly design policies and measures could referred to *The Journal of Sustainable Tourism* such as Sharpley (2000) pointed out that although gaps still existed between consumption behaviour and the ideology of sustainable development while putting sustainable tourism into practice, it was worthwhile to research more for improving the situation. Moreover, Robinson (1999) brought out the key message that it was essential to look for ways of handling the more intangible, and non-substitutable, cultural dimensions of sustainable tourism besides economic means, which supported the values of the thesis in cultural research. For the local environmental situation, Lopez (1998) in his seminar paper "Sustainable Tourism Programmes in Hong Kong and Abroad", gave a brief summary on the history of environmentally sensitive tourism which showed increasing concern towards environmental sustainability in Hong Kong.

1.6.2.3 Conventional and Environmentally-friendly Hotel Design in Hong Kong

As far as the environmentally-friendly design of

hotels is concerned, Iwanowski (1994) and Enz (1999) in *The Hospitality and Administration Quarterly* and *International Hotel Environmental Initiative Manual* provide practical measures of environmentally-friendly design and management from western countries. Besides, more local information could be obtained from the literature and websites, *Hong Kong Hotels Association Annual Reports*, *Hong Kong Tourist Association*, *Asian Hotel and Catering Times* plus local newspapers. These gave a general review of the environmental problems and the extent of sustainable development which has been and is currently being implemented in Hong Kong.

Furthermore, some local information on the emergence of Hong Kong hospitality services and tourism industry could be referred to my MA dissertation – "Environmentally-friendly design in the Hong Kong Hotel Industry: The Effectiveness of 'Green' Initiative in Hotel Design and Management" and *Hong Kong Architecture* by Pang. No matter what contexts the phenomenon are, including both local and global perspectives, it was common that the hotel industry was taking an active stance in mounting public concerns about the environment, which formulated part of the hotel business ecosystem. What was more, some current newspaper clippings, reports from *One Earth* of Friends of the Earth, hoteliers and consultant interviews from *Asian Hotel And Catering Times*, provided information about the present

hoteliers and consultant interviews from *Asian Hotel And Catering Times*, provided information about the present difficulties and pitfalls in promoting environmentally-friendly design in Hong Kong. The more recent project titled as "Keeping Hong Kong's Hotel Industry Competitive. Into the 21st Century – Environmental Management Systems for Hotels" (2000) which set and developed pragmatic objectives for improving environmental performance and saving money in Hong Kong hotels[8]. From the information derived, there were several areas of concern:

- Firstly, these provided sufficient background information about the key role of tourism as an economic sector in the current and future Hong Kong and other Asian countries.
- Secondly, these would provide a better understanding about the existing phenomenon of the huge wastage in materials and energy as well as luxury lifestyles based on conspicuous consumption.
- Thirdly, a recognition of more specific problems and pitfalls on limits of design practices, government regulations, shortage of availability of environmentally-friendly design products in this intensive consumption centre.

[8] This was a pilot project by the Hong Kong Hotels Association to develop a system for improving environmental management in the hotel industry for leading hotels to seek ISO 14001 certification. It was a collaborative effort between the Building Services Department of The Hong Kong Polytechnic University and the Hong Kong Hotels Association, endorsed by the United Nations Environment Programme and the International Hotel and Restaurant Association.

- Fourthly, some studies have been made of how environmental concern and initiatives are being promoted and why they are promoted. Moreover, some preliminary research and comments have been collected on the effectiveness of such promotion.

1.6.2.4 Hong Kong Hotel Culture: Identity and Image

Bocock (1993) in *Consumption*, Miller ed. (1995) in *Acknowledging Consumption*, portrayed the relationship between identity and image in terms of conspicuous consumption. Umiker-Sebeok ed. (1987) in *Marketing and Semiotics – New Directions in the Study of Signs for Sale*, and Berger (1984) in *Signs in Contemporary Culture* provided the framework of building up of design processes and product conceptualization using a semiotic approach.

1.6.2.5 Survey and Case Studies

In order to obtain empirical data about the attitudes of environmental shift in Hong Kong hotels, in-depth interviews are made accordingly:

(a) Questionnaires and Structured Interview

Review on general research methods were made on various sources, such as Patton (1990) on *Qualitative Evaluation And Research Methods,* Veal A. J. (1992) on *Research Methods For Leisure And Tourism,* de Vaus (1993) in *Surveys In Social Research*, Creswell (1994) in *Qualitative & Quantitative Approaches*, Fink (1995) *The Survey Handbook*, Minichiello

(1995) on *In-Depth Interviewing*, provided systematic research guidelines for the methodology, techniques and analysis on questionnaires and interviews. They provided systematic research guidelines for the methodology, techniques and analysis on questionnaires and interviews.

Regarding the specific literature research on Hong Kong design firms, general background information could be extracted from PolyU (1995) *Surveys on Status of the Hong Kong Design Profession.* Individual projects of design firms could be derived from their websites accordingly. Records of environmentally-friendly design on hotels could be referred from *Energy Conservation Within The Hotel Industry: Guidelines For Energy Efficiency* by Energy Efficiency Advisory Committee of Hong Kong (1990), *A Guide To Saving Energy For the Hotel Industry* by The International Hotel Association (1991), *Environmental areas in which local hotels are making an effort* by Friends of the Earth (1992), *Environmental Management for Hotels: The Industry Guide To Best Practice* by the International Hotels Environment Initiative (1993) and *Manual for Environmental Protection and Energy Conservation* (1996), and *A Guide to Energy & Water Conservation in Hotels: A Practical guide for management, employees & engineering staff* based on the auditing hotels in Hong Kong (1996), all these literature provided research information for formulating the survey.

(b) Case Studies

Despite a shortage of environmentally-friendly design research in Hong Kong, some local cases could be used as benchmarks for integrating identity and image for illustrating the effectiveness of environmentally-friendly design. As there were not many direct cases could be used for comparison, different cases were compiled together to illustrate the various key variables in the survey.

The first one was TaoHo Design Architects, a locally practised design firm. His achievement in environmentally-friendly design theory and projects could be used as a comparative case. Besides, with basis on his questionnaires returned and previous literature, several sources could be contributed to this case, such as magazines *One Earth* by Friends of the Earth (1993), "Diverse approach lead to more focused course" by Haden, (1998) in *Pace*.

The second and third cases were examples of Hotel Nikko and Headland Hotel operated by the Cathay Pacific Airlines Limited, which was a hotelier and airline company respectively. Detailed sources could be researched through Hotel Nikko newsletters, *Hotel Nikko Hongkong Environmental Audit Report in 1996, Cathay Pacific Airways Limited – Environmental Report 1998 & 1999.* These two cases provided variables of how to explore identity management measures for the survey.

CHAPTER 2

2. Fry's Thinking in the Framework of the General Discussion on Design and Sustainability

What are the relationships between 'Design' and 'Sustainability' and how they will affect one another? As a matter of fact, 'Design' is a term which implies various scopes of influences in our society. As Van der Ryn (1996) defines, 'Design' is generally recognized as the intentional shaping of matter, energy, and process to meet a perceived need or desire. It is a hinge that inevitably connects culture and nature through exchanges of materials, flows of energy and choices of land use. In a narrow term, it means any professional discipline which puts designed projects and plans into realization. And then a much more microscopic term is defined and focuses upon individual discipline and practices. In a broader sense, it encompasses extensive planning of human well-being for maintaining and facilitating livelihood, including urban planning, architecture and engineering.

Meanwhile, the underlying assumption of most definitions of sustainable development is the need for humanity to live equitably within the means of nature, which began with the Brundtland Commission. Despite the widespread acknowledgement of the ecological and social symptoms of the problem, interpretations of sustainable development and its implications are contradictory, even within the Brundtland Commission's report. One obvious reason for conflicting interpretations of the fundamental sustainability message is the extremely ambiguous meaning of 'sustainable development'. Their core arguments are centred upon the differences between their ideologies and implications.

2.1 Background Information

Sustainable growth	Sustainable development
▪ technocentrist	▪ ecocentrist
▪ essentially a technical concept	▪ a broader concept embracing ethical norms, e.g. inter/intragenerational justice, bioethics
▪ bound by formalistic rules of existing institutions	▪ requires new institutions to deliver changes in lifestyles
▪ social reform	▪ social revolution
▪ conservation: one of several goals within an overall materials policy including waste recycling/reduction	▪ conservation: the sole basis for defining a criterion on which to judge policy/alternative allocations of resources
▪ 3 basic elements of policy: resource recovery/ recycling, residuals management, waste reduction	▪ policy derived from theories of e.g., zero growth, steady state economy, bioeconomic equilibrium, co-evolutionary development
▪ requires a modified economics	▪ requires a new economics
▪ core is reforming social systems to ensure reproduction of conditions of production	▪ core is changing social systems to ensure popular control of livelihood or the conditions of production

Fig.2.1 Two Modes of Sustainability: Sustainable Growth and Sustainable Development

Source: Adapted from Turner (1988) and O'Riodran (1988)

Lele(1991) wrote that various interpretations of 'sustainable development' were caused not by poor understanding, but rather by ideological differences and reluctance of many to acknowledge the implications of the underlying message. Even the concept as defined by Brundtland had vagueness in its definition and implication. Many people identify more with the 'sustainable' part and call for ecological and social transformation, in specific terms, a world of environmental stability and social justice. Others identify more with 'development', and interpret

it to mean more sensitive growth, a reformed version of the status quo. As suggested above, some of the confusions around 'sustainable development' was rooted in a general failure to distinguish between true development and mere growth[9] (see Fig. 2.1).

Daly (1991), an economist, clarified the difference by defining 'growth' as an increase in size through material accretion while referring to 'development' as the realization meant getting better. Then, in his term, 'sustainable development' was progressive social betterment without growing beyond ecological carrying capacity. Indeed, he regarded 'sustainable growth' as a nonsensical self-contradiction. Developing sustainability may actually require a reduction in aggregate economic throughput in developed countries, while enabling the poor to consume more in the developing regions[10].

Besides, unclear strategies can be made due to ambiguous definitions of 'sustainable development' [11] as they could refer to the following:

(a) The necessary conditions to live sustainably (a goal or state of being);

(b) The sociopolitical means of achieving the goal (a planning process);

as particular strategies aim at solving present problems (piecemeal solutions), so failure to clarify how the issue is being used in a specific context can lead to fruitless misunderstanding. To some ears, the term "developing sustainability" is less ambiguous and is to be preferred over "sustainable development".

[9] Sustainable developments are discussed in Sharachchandra M. Lele (1991) "Sustainable Development: A Critical Review, " in *World Development* Vol. 19, No.6.

[10] Herman E. Daly, "Elements of Environmental Macroeconomics," in Robert Costanza, ed. (1991). *Ecological Economics: The Science and Management of Sustainability*. NY: Columbia University Press.

[11] The definitions of Sustainability are discussed in the footnote under 4 in Wackernagel & Rees. (1996). *Our Ecological Footprint*. Canada: New Society Publishers, pp. 58.

Weak and Strong Sustainability

Weak Sustainability	Strong Sustainability
▪ regards the society as sustainable provided that the aggregate stock of manufactured and natural assets is not decreasing. In other words, weak sustainability allows the substitution of equivalent human-made capital for depleted natural capital.	▪ recognizes the unaccounted ecological services and life-support functions performed by many forms of natural capital and the considerable risk associated with their irreversible loss.

Fig. 2.2 Two Ideologies: Weak and Strong Sustainability
Source: Pearce, Daly and Cobb (1989)

Another major argument lies on the ideologies between the degrees of sustainability (see Fig. 2.2). Many economists prefer the term 'Weak sustainability', according to the society and is sustainable provided that the aggregate stock of manufactured and natural assets is not decreasing. In other words, weak sustainability allows the substitution of equivalent human-made capital for depleted natural capital. For instance, the loss of the income-earning potential of a former forest is no problem if part of the proceeds of liquidation had been invested in factories of equivalent income-earning potential. Its weakness was clearly revealed in a study by Pearce and Atkinson (1989). It fails to recognize that much of the so-called rich countries, money savings came from the depletion of other countries' natural capital and the exploitation of global common-pool assets. In effect, high material standards are maintained by a massive but unaccounted ecological deficit with the rest of the world (including some of the countries labeled 'unsustainable')[12].

[12] Starting from the weak sustainability assumption that natural and human-made capital are substitutable, they ranked the sustainability of 18 representative countries. They proposed that "...an economy is sustainable if it saves more [in monetary terms] than the depreciation on its human and natural capital..." As a result, Japan, the Netherlands and Costa Rica head the list of sustainable countries, while the poorest

By contrast, 'strong sustainability' recognizes the unaccounted ecological services and life-support functions performed by many forms of natural capital, and the considerable risk associated with their irreversible loss. (In addition to wood fibre, forests provide flood and erosion control, heat distribution, climate regulation, and a variety of other non-market functions and values). Strong sustainability therefore requires that natural capital stocks be held constant independently of human-made capital. Some authors suggest that manufactured capital stocks must also be held constant for strong sustainability, so there is no capital depreciation of any kind. They agree so, but more emphasis will be focused on the greater importance of maintaining adequate life-supporting natural capital. In particular, if population and material expectations are rising, capital stocks should actually be enhanced – in other words, it is per capita stocks that must be increased [13]. In the midst of the different ideologies and their complexities, Fry is one of the contemporary designer, who attempts to bridge the gap between ideologies and 'industrial culture' and terms his thinking as 'Sustainments'.

2.1.1 Fry's Thinking in General: Nature and Methodology

Tracing back the development of sustainable design in

nations in Africa are identified as the most unsustainable. This comparison demonstrates the ecological irrelevance of "weak sustainability".

[13] The weak-strong distinction was brought forward by both David Pearce *et.al.* (1989) and Herman Daly and John Cobb. (1989). *For the Common Good.* Boston: Beacon Press, 1989. Documents refuting the sustainability crisis are listed in the footnote under 7 in Wackernagel & Rees. (1996). *Our Ecological Footprint.* Canada: New Society Publishers, pp. 58.

the past, Madge broadly divided the movement into 2 stages, Normalized Ecology Design and New Radicalism[14]. The former means modifying existing design practices and institutions on a small-scale while the latter advocated a radical rejection of the status quo and also a critique of the paradigm of modern industrial society (see Fig.2.3). In the 90s, environmentally-friendly design had closer ties with industry but varied in different countries. Fry set up the EcoDesign Foundation in Sydney in 1991, his mission was aimed at drawing the collaborative relationship between these ecological and economic imperatives.

As a result, the issues of sustainability are difficult to define due to its complicated inter-relationships between local and global linkages; it is also subjected to inter-generational and intra-generational issues which go beyond spatial and temporal dimensions, especially in the global village nowadays. The degrees of commitment towards ecological design depend very much on firstly, the understanding of these complicated issues among different ideologies in theories and conflicts of interests in practice; and secondly, the degree with which people would like to commit to their actions accordingly even though there is trade-off, both in the present and future dimensions.

[14] Madge, Pauline. (1997). "Ecological Design: A New Critique" in *Design Issues*. US: MIT, Vol.13, No. 2 Summer, p.44.

Stages	Normalized Design	Radical Design
	70's-90's.	90 onwards
Changes in concepts and practices	▪ Terms and missions developed ▪ Small-scale design projects, product-based designs, were started ▪ Lifestyles changes started to take place	▪ Gradual modifications on previous terms, missions and ideologies ▪ Large-scale projects, system-based design and methodology were taking place ▪ The adoption of more lifestyle changes ▪ Commercial and industrial practices were involved

Fig. 2.3 Development of sustainable design in America and Europe
Source: Adapted from der Ryn & Cowan (1992) and Madge (1997)

In the early 90's more and more associations were set up gradually with their ideologies and missions. 'Ecological' design was commonly used instead of 'Green' design as they perceived 'Green' to be an outdated term. Fry set up the EcoDesign Foundation in 1991 aiming at establishing "*dedicated to the promotion of ecological sustainability through industrial re-creation.*[15]" Thus it is more than the 'adding in' of environmental criteria to the design process but rather establishing a new foundation for Ecodesign that could integrate economic and ecological needs into a new union[16].

[15] Ecodesign Foundation. (1991). *NewsLines* 1, Sept. Sydney, p.4.
[16] Annie-Marie Willis. (1991). "Echoes of EcoDesign 1," in *EcoDesign Foundation Newsletter. Dec.* Sydney, p.2.

In the main, here the thesis does not attempt to argue on these terms further but rather to center upon the concept of sustainability using Fry's thinking, a contemporary environmental and cultural thinking, into the local situation under the context of conspicuous consumption. The extent of sustainability should start from the intrinsic values of people and areas of concern towards the environment.

2.1.2 Specific Point of Fry's Thinking

His thinking provides a set of concrete initiatives towards sustainability which are twofold, covering how to develop sustainability as concepts and also the realization of living practices. He points out that the scope of unsustainability are penetrating everywhere, from micro to macroscopic scale, ranging from individual, family, communities and to nations. Since unsustainability is widely practised among all human values and physical activities, i.e. Mind-Design-Culture-Technology-Economy, then all these realms have room to be tackled for sustainable changes. They are the vehicles for innovation, organizational change and learning (Fry, 2000). Based on his thinking, the thesis will verify his thinking into Hong Kong in terms of values, identities and images under design culture.

Ecodesign – It is a means not an end. "*Ecodesign, might*

mean designing against design, as much as a new designing, be it of systems, processes or objects[17]". As a design practice, it is oriented in 2 directions: towards the creation of an economy that can produce while reducing ecological damage; simultaneously, it strives for wealth-creation while diminishing the volume of resources used (Fry, 1994).

Fry has used two terms to illustrate his thinking respectively, these are ESD (Ecologically Sustainable Development) and DES (Developing ecological sustainment) respectively. The former one moves along 'ecologically sustainable development' from a quality to a quantity-based economy. Ecologically sustainable development (ESD)[18] was the common term adopted in the industrialized countries, which could be traced back to the 1987 World Commission on Environment and Development (the Bruntland Report).

Later Fry changed and devised his thinking of Design for Sustainability to 'Sustainments' as he argued that the existing sustainable initiatives were just 'sustaining the unsustainable[19]'. In his words, 'Sustainments' mean – environments or things, material or immaterial, with the ability to sustain. He replaced ESD with DES as he found

[17] Fry (1994). *Remakings: Ecology, Design, Philosophy.* Sydney: Envirobook, p.20.
[18] For a summary of ESD see *Ecologically Sustainable Development Working Groups, Final Report – Executive Summaries*. Canberra: Australian Government Publishing Service, 1991, p.37.
[19] In Fry's opinions, ESD is just a little more than a means of sustaining the unsustainable. The fundamental incompatibility between the aims of development and the requirements of sustainability were not being addressed either by the environmental movement or government. DES has revised and re-thought sustainability as a means rather than an end of it.

"ESD was just a concept of official discourse without content, an image without substance" while DES could play an influential role as a policy, practice and product. He found it had a clearer objective to a re-animation and transformation of ESD thinking. According to his thinking, 'Sustainments' are any on-going activity which promote long-term ecological stability, including modes of lifestyles and working behaviour. There are 2 basic approaches to be considered (see Fig. 2.4):

(a) Acts of elimination of sources of danger, in other words, minimization of natural resources.

(b) Acts of innovation to create new design identities, desires and practices.

This thesis intends to make an exploration along this line; the research was conducted by gathering both primary data (through questionnaires and interviews) and secondary data (through literature review and case studies).

Terms	Concepts	Key Meanings
Fry's 'Caring'	Key concept: 'Caring' is expressed through design as it is 'materialized ethics' *Aims:* ➢ Acts of elimination of sources of danger ➢ Acts of innovation to create 'Sustainments'	*General goals:* ➢ Ideological Quality ➢ On-going pragmatic responsibility *Approaches:* ➢ Not just targeting at resources minimization ➢ Habits of lifestyle changes

Fig. 2.4 **Tools of Change in Fry's Thinking**
Source: *Adapted from Fry (2000)*

In order to understand Fry's thinking more, it is essential to look at its assumptions[20].

(a) 'Sustainments' are concretisation of the ideal quality that is sustainability. The measure of sustainability should be in qualititative rather than quantitative terms. In other words, it should be measured in a relative sense rather than an absolute sense.

(b) 'Sustainments' are focused and situation-determined. In order to research more effectively, specific focus on a particular issue is significant for creating values and behaviours to ensure the sustainability of the designed objects in the environment.

(c) 'Sustainments' are sources of continual learning and experiment as they are provisional and its success is measured in a relative sense which require on-going adjustments.

Fry's thinking points out that the responsibility of 'Caring' is the origin of ecological unsustainability. Unsustainability arrives by design which is simply unfolded by the designed object/image/system/structure being-in-the-world. He states that unsustainability stems from the images and ideas of the desired in which mankind is immersed and subsequently, spheres of influence have been spread from micro to macro psychologically. With a

[20] Information was extracted from Http://www.edf.edu.au/Research/Articles/Papers/Sustain.htm , pp.10

focus upon to what extent, how values and images of Fry's thinking exerting effectiveness upon Hong Kong's design, this thesis will explore the relationship between the effectiveness of environmentally-friendly design with organizational identity and image. It will start out with Fry's theoretical approach, then seeking for conceptual variables for verification.

2.2 How to Operate Fry's Thinking

Fry's thinking can be used in the cultural areas of design practices. Firstly, his thinking can be applied to the design stage – adding and creating new values. Secondly, through design communication, education and promotion, these will provide new ideas for establishing product/service identity in terms of images. In order to substantiate his structure with details, cross-disciplinary studies using cultural theories as the structure for inquiries and are then expressed in management terms.

2.2.1 Assumptions about the Localization of Fry's Thinking in Hong Kong

With the increasing awareness of environmental problems and the growing recognition of the global nature of these problems, more and more surveys have been conducted on the cross-cultural levels of environmental attitudes and behaviour, namely the United Nations Environment Program i.e. UNEP in (1998), Levy-Leboyer et.al. (1996). Among the surveys and research of

environmental attitudes conducted in Hong Kong, most of them were related to the values and behaviour of the general public, such as the Hong Kong Youth Federation (1991), Ng (1991), Yeung (1993), Wong & Yan (1995). Although some environmentally-friendly design initiatives have started to develop in Hong Kong since last decade, little research has been undertaken so far for the design profession and design education. In view of the controversies about the definitions of sustainable development, Hills (1998) has highlighted several criteria for further research.

- Firstly, sustainable development has been oversold as a solution to the problems of disharmonious development. Subsequently, a widespread failure on the part of the designers such as planners, decision makers and international agencies to appreciate the complexities of the concept in different regions. Thus gaps would inevitably occur when the concept is applied to specific regions and cities. So both theoretical and practical details were necessary to substantiate the discrepancies in local context.
- Secondly, there has been a marked failure to move from thinking to practice in the pursuit of sustainable futures. In fact, this required more microscopic analysis upon different professions rather than just referring to a broad spectrum of macroscopic issues.

In applying cultural theories for bridging the gaps, Yencken (2000) suggests some criteria of linking the local with global values. Each country is likely to have a rich vein of local environmental knowledge of crucial significance for the solution of their environmental problems. They are essential in taking account of and building upon these knowledge and other traditions. There is no doubt that each country and culture will wish to turn to its own traditional attitudes to nature for support and legitimation. So, traditional attitudes to nature and the local practice must be supplemented by contemporary environmental analysis and solutions. Moreover, with Kroeber and Kluckhohn's (24:181) theories on culture[21], the researcher has synthesized the current assumptions as follows (see Fig. 2.5):

Western Thinking (Fry's Thinking)	Local Practices of Environmentalism
▪ General and extensive ▪ Explicit and Implicit Patterns: Values applicable to the present and the future	▪ Specific and focused ▪ Explicit Patterns: Expressions eg. Symbols ▪ Implicit Patterns: Traditional values used in a contemporary way

Fig.2.5 Fry's Thinking and Local Practices

Source: Adapted from Kroeber and Kluckhohn (1993)

[21] Kroeber and Kluckhohn (24:181) offered one of the most comprehensive and generally accepted definitions: Culture consists of patterns, explicit and implicit of and for behaviour acquired and transmitted by symbols, constituting the distinctive achievement of human groups, including their embodiment in artifacts; the essential core of culture consists of traditional (i.e. historically derived and selected) ideas and especially their attached values; culture systems may, on the other hand, be considered as products of action, the other as conditioning elements of future action.

Identity Values		
a. Identity	➢ Being a 'Dweller': able to dwell with care	➢ Dwelling (a) Being with others (b) Being with the world
	➢ Being a 'Thinker'	➢ Thinking: (a) Calculative thinking (b) Uncalculative thinking
	➢ Being a 'Builder'	➢ Building: Able to dwell with Eco-craft, ie. Able to understand and make the best use of (a) Materials (b) Immaterial concepts

Fig. 2.6 The Meaning of Identity in Fry's Thinking
Source: Adapted from Fry (1994)

2.2.2 Meaning of Identity and Image in Fry's thinking

As Fry seriously comments that the ecological crisis is due to the failures of designers, it is important for designers to design and re-design the environment. Similarly, Manzini (1992, 238) expects that designers can be the actors in the 'social imaginary'. In other words, they are able to be culturally equipped to gather, interpret and propose in a clearer and more innovative form (see Fig. 2.6).

In Fry's term, 'Identity' is defined as what the thing is or what the text inscribed. Its values and roles of identity are fundamentally based on the concept of Heidegger's theories on 'Dwelling, Thinking, Building[22]'.

[22] Heidegger's concept of dwelling is a set of philosophical dimensions which basically consists of 3 levels, the first level is the cosmic level - sky and earth, including all the activities of the ecological systems of the earth with the natural and man-made environment. The second level is the social level of human activities

Here, the researcher defined these as being a dweller, a thinker and a builder.

Being a dweller, is to fulfill the responsibility of preserving the environment. *"To dwell, is to be set at peace, means to remain at peace within the free, the preserve, the free sphere that safeguards each thing in its nature. To 'preserve' is to keep safe. Dwelling is not dwelling in but being with"* (Fry: 1994, 105). Here, it means that dwelling is a social activity which is in relation to one another. The concepts of dwelling are twofold, in material and qualitative terms. For the former, people dwell with physical entities. To dwell in the qualitative sense is a basic condition of humanity and social consciousness. Therefore dwelling demands concern from us, as well as belonging to our places. Whenever 2 entities are brought together, there should be a meaningful relationship between man and the given environment.

Being a thinker, it is important to relate thinking with dwelling. Genuine thinking is not *"calculative"* as calculative thinking implies dominance, manipulation, and unity. The alternative to calculative thinking (*rechnendes Denken*) is Heidegger's meditative thinking

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including the creation, modification and destruction of the ecological systems. The third level is the divine level upon human consciousness towards the creator God centring on the idea of stewardship. Fry, T. (1994). *Remaking: Ecology, Design, Philosophy.* Sydney: Envirobook, pp. 106-107.

(*besinnliches Denken*). Meditative thinking is characterized by serenity – the receptive reverence of things as they are in themselves[23].

Being a builder, is able to dwell. It originated from the Old English and High German word for building, *bauen*. This signifies: to remain, to stay in a place. The real meaning of the verb, *bauen*, namely, to dwell, has been lost to us. It is essential to be able to understand and make the best use of materials and concepts (immaterial in nature) in daily practices (Heidegger, 1971 & Fry, 1994)[24].

Contents	Organizational Identity	Corporate Identity	Product Identity
Forms of expressions	Expressions of the set of beliefs through words	Visual identity because of the use of visual forms – symbols through which these beliefs are expressed and shaped	Expressions through artifacts and objects-products and services
Tools of communication	Mission statements, codes of ethics, & newsletters	Symbols and graphics	Product and services

Fig. 2.7 The Variables of Organizational Identity and Image
Source: Adapted from Vihma (1993), Willig (1994), Whetten (1998)

In order to extract testable variables in operating the survey, besides basing on Fry's thinking, Willig (1994), Aaker (1996) and Whetten (1998) provided concepts in

[23] This information is derived from Heidegger, M., Hofstadter, A. trans (1971). *Poetry, Language, Thought.* NY: Harper & Row, Publishers, p.xviii.

turning some forms of expressions into tools of communication (see Fig. 2.7). Furthermore, more supporting evidence (see Fig. 2.8) could illustrate Fry's design identity through the decoding of EcoDesign Foundation.

2.2.3 Case Study – EcoDesign Foundation

In order to exemplify the intrinsic values more clearly, a case study will be used for in-depth illustration. EcoDesign Foundation is chosen as it has established itself at the forefront of the critical advancement of sustainable design in Australia. As Fry defined environmentally-friendly design as 'materialized ethics', a closer look of the object per se will support how organizational identity can be constructed in real lives. It is an incorporated non-profit association, with a member elected board. Dr. Tony Fry was the Director of The EcoDesign Foundation. Its contribution was threefold including the establishment of a conceptual and theoretical work, professional practices and educational activities. The emphasis of Fry's thinking was being drivers for innovation, organizational change and learning rather than reducing environmental impact. It is a continual delivery of new ways of sustainability in business practices, new ways of caring for production and usage.

[24] This information is derived from Heidegger, M., Hofstadter, A. trans (1971). *Poetry, Language, Thought.* NY: Harper & Row, Publishers, p.146 and Fry, T. (1994). *Remakings*. Sydney: Envirobook.

Background information: The EcoDesign Foundation was founded by a small group of professionals working in design, education, research and industry in Sydney in 1991. It organized a number of local and national courses, events and exhibitions in its first few years. By the end of 1993, it had acquired and retrofitted a former school building in Rozelle. The results of this work have been taken up by a number of governmental organizations, industries, corporations,and professional associations. Its areas of experience include:

- Design and environmental management (including environmental plans and planning)
- Sustainable design project development and management
- Design research
- Sustainable design education
- The organization and management of design competitions.

All these works provide evidence and materialize design ethics into practice under Fry's concept of 'Caring'.

Design Identity (management measures)	
Aims: to adopt new norms and add values into product/service identities Indicators: measures of environmental management	
1. Mission Statement	The EcoDesign Foundation was created to support and accelerate the transformation to ecologically sustainable cultures and economies.
2. Environmental design standards and management systems	It has involved a number of design projects through consultancy and management.
3. Quantifiable goals	Goals are set up according to the individual projects and consultancy participated.
4. Environmental manager or assigned staff	No specific environmental manager but rather depending on the expertise of the research team for different projects.
5. Environmental committee	The EcoDesign is comprised of a core team of highly qualified and experienced designers, consultants, architects, educators, writers and researchers.
6. Environmental policy in purchasing products & services	Sustainability is the major key environmental policy.
7. R & D	Practical projects included ESCAL (1995-97), Renewable Energy and Demand Management (1994-96), Retrofit of EcoDesign Foundation Building (1994-95).
8. Environmental auditing	He has environmental audit and reports for design planning (in-house or consultancy).
9. Environmental training & seminars	Active communication with the public through educational activities, events and exhibitions.

Fig. 2.8 Case Study: Management Measures of Organizational Identity
Source: Willig (1994)

As the mission statement of EcoDesign Foundation states, it aims at developing knowledge and practices that are able to effectively engage with the problems of our biological, technological and social/cultural environment. Scope of EcoDesign's activities includes: theoretical and applied research, education, information dissemination, events and demonstration projects, consultancy services, projects and product innovation[25].

It has implemented its environmental design standards and Management systems into its practical projects, namely, Olympic Site Projects (1996-97), Northern Rivers Regional ESD Development Planning (1997), ESD Retrofit Scheme – Public Housing (1997), Rozelle Public School Masterplan (1995-96), Preparatory Environmental Review, Intershed (1995-96), Archival Storage Warehouse, Brambles Records Management (1995), Australian Technology Park, NSW Public Works (1993-94).

As different projects were different in nature and in scale, it varied its goals accordingly. Starting from 1991, it organized a number of local and national courses, events and exhibitions in its first few years. At the end of 1993, EcoDesign Foundation set up a more permanent base in a former school building in Rozelle. Since 1994, it has developed a range of consultancy services and educational activities that both pursue its mission and respond to changing external conditions. Each service and activity mobilizes

[25] This information can be derived from EcoDesign Foundation website www.edf.edu.au

EcoDesign's conceptual approach to thinking the processes of developing ecological sustainment across applied knowledges and practices.

For environmental manager, assigned staff or committee, The EcoDesign is comprised of a core team of highly qualified and experienced designers, consultants, architects, educators, writers and researchers. This team (as Team DES), has the professional expertise in contributing knowledge for ecological sustainments across various practices including architecture and product development; policy and curriculum development and planning for built, social and cultural environments.

As far as environmental policy in purchasing products and services are concerned, an example was illustrated through Retrofit of EcoDesign Foundation Building, Rozelle (1994-95). Sourcing and procurement of environmentally low impact materials and products including floorcoverings, recycled timbers, stains and finishes, office equipment and supplies. Retrofit also includes roofwater collection and re-use system.

For R&D, applied research projects included, for instance, ESCAL (1995-97) for creating an ecologically sustainable controller and lighting system. Renewable Energy and Demand Management (1994-96) resulted in the installation of a grid-connected photovoltaic system and other energy conserving measures in EcoDesign's retrofitted building. As for environmental auditings, many works required careful calculations; examples include Wood in Context:

Using Timber Sustainably (1997). This was an authoritative guide for architects and specifiers on ecologically responsible uses of timber.

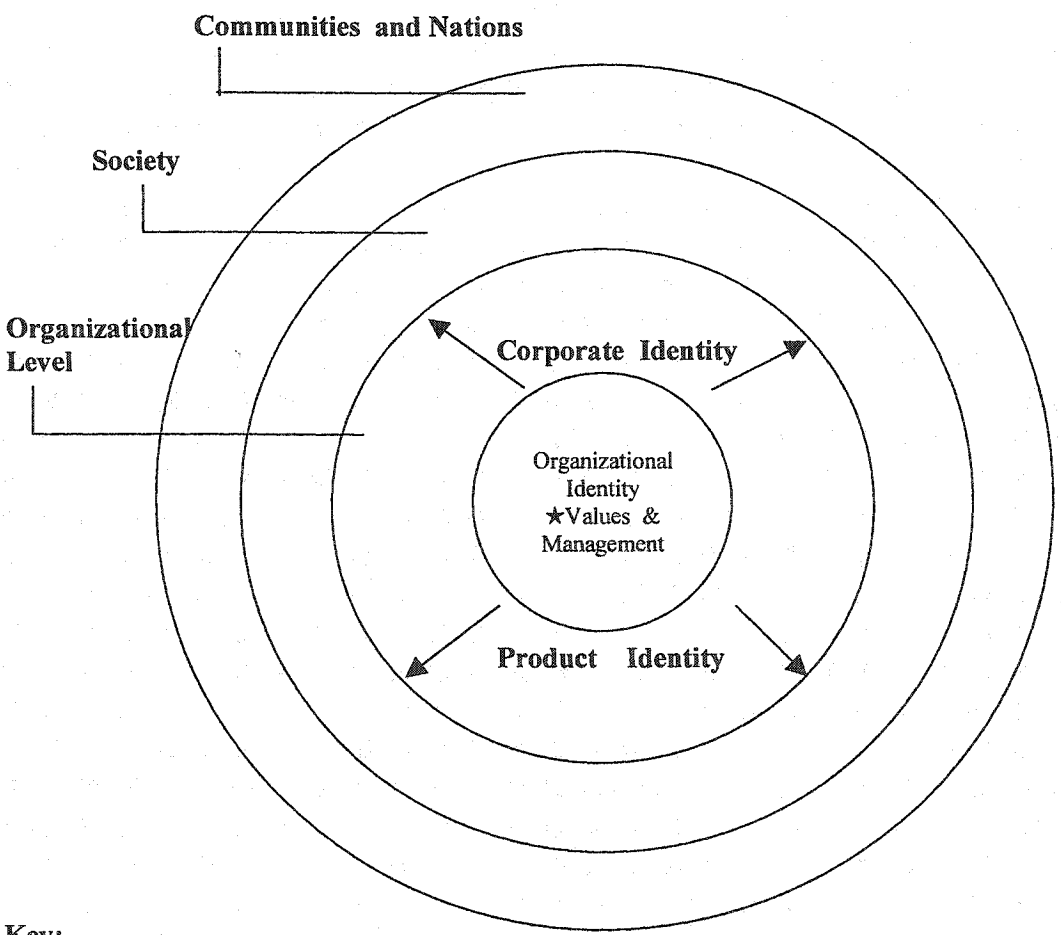
For environmental training and seminars, a major priority for EcoDesign is the development and offer of undergraduate and professional development education. All courses are accreditable either through professional bodies such as the Royal Australian Institute of Architects (RAIA)(NSW) or to degree courses, such as Master of Sustainment or other postgraduate studies. EcoDesign Foundation acts both as a publisher itself as well as distributing its literature to other publishers. Other examples include *EcoDNotes*, EcoDesign Foundation's quarterly newsletter and *EDFWebSite*. Active dissemination to the community is their key strategy and project as well.

Identity Images		
Image	Aim: to reduce short sign life ➢ From mass consumption to caring/concern ➢ From material/immaterial Indicators: Images ➢ Corporate and product identity	➢ Being a sign Approaches: ➢ To decode and then recode new values for communication and distribution (Use and exchange values)

Fig. 2.9 The Meaning of Image in Fry's Thinking
Source: Adapted from Fry (2000)

Regarding image of identity, Fry defines it as a sign of 'Quality' which sustains life (see Fig. 2.9). It represents re-materialized ethical value and delivers "care" in meaning. Similarly, Manzini states that in order to gain general social attention and widespread exposure in economic circles, it needs to be turned into

visible forms presentable as organizational structures, processes, objects, images and desires. Thus it will shift the ecological imperatives into concrete forms of action. In other words, active communication of environmentally-friendly design to the community through image is an effective means of change. (Manzini, 1994, p.238). From the literature of Fry's thinking, a schematic model can be drawn to encompass the key testable variables as below (see Fig. 2.10)



Key:

→	Communication Forces
*	Fry's theoretical construct is built upon Heidegger's Dwelling, Thinking, Building

Fig. 2.10 Fry's Schematic Model of Organizational Identity and Image

2.3 Towards a Framework for Research and Analysis

Before making any empirical and secondary research, it is important to have a review about the research tradition beforehand.

2.3.1 Characteristics derived from Environmentally-Friendly Design

In Fry's term, *"Design is the materialized ethics"*. In other words, design should provide the designed products cultural significance or value for the user(s) on the demand side. Similarly, Marzano (1994) states that design is in essence a cultural and ethical communicator, that includes communication of cultural value and identity. Whereas the organizational identity is the reflection of the design firms or designers' ethos and commitment on the providers' side. Although continuous controversies on the ideologies and terminologies of design practices and criticisms have taken place, these stimulated more and more in-depth analysis of meanings, with methodology devised according to their changing environment. In analyzing the changes of these design movements, 2 characteristics can be drawn:

(a) Identity-creation:

There have been on-going identity-creation and re-creation evolution in these movements. Definition of terms are in fact, the creation of design identities.

"Identity relating to belongingness and is also maintained through social and material condition." (Whetten, 1998). Taking a view in the past, the majority of design research in the United Kingdom and elsewhere emphasized on the trivia of Ecodesign practice, ranging from a systems approach either to the individual product or product system, or to industry as a whole. With environmental awareness heightened, there were continual changes for more radical design ethos and practices.

(b) Active communication to the community through image

"Image is the expression of identity-creation. Identity is relational, and difference is established by symbolic marking in relation to other" (Whetten, 1998). This can be illustrated by the "Green" symbol within the design movement. Although there have been on-going controversies between environmentally-friendly design theories and practices, the design movement started rapidly once "Green" became the jargon of the 80's throughout Europe; a sudden profusion of greenery penetrated into all sorts of media and public affairs with a ready-made symbolism associated with green design, namely, green products, green packaging and tips on

green lives[26]. A massive effect has been spread throughout providers' sides including design profession, (design associations and designers) commercial, industrial sides and consumers' sides.

There are reasons for taking a brief review upon the environmentally-friendly design movement in American and Europe, which can be broadly divided into two, internal and external factors. Firstly, since Hong Kong designers have been greatly influenced and have received education in the western countries[27], this western movement can served as a benchmark of theories in Hong Kong. By the 1970s, many famous first-born generation of post World War II and ex-patriates always sought work in Hong Kong after graduating from overseas universities. They have tried to translate the ambience of European, American and Japanese cities into an international cultural climate. In order to gain more shares in the competitive hotel markets, more and more deluxe hotels seeked exclusive styles and cordial services in attracting hotel guests. The 'Class system'[28] has been

[26] The Advisory Council for Research on Nature and the Environment was promoting research into product design: J.C. Van Weenen, C.A. Bakker, and I.V. de Keijser. (1991). Eco-design: An Exploration of the Environment. Milieukunde: Universiteit van Amsterdam, 1991.

[27] By the 1970s, some of the first-born generation of post World War II drifted back after graduating from the overseas universities.

[28] Hong Kong hotels have been classified according to a 'Class' system. They are categorized into deluxe, first class, tourist according to their quality, services and facilities with different room rates. Go & Ray. (1995). *Globalization Strategy in the Hotel Industry*. London: Routledge, pp. 170-171.

adopted as the classifications of design quality and exclusiveness. Similarly, the impact(s) of western environmentally-friendly design movement can bring forth their experience in supporting Hong Kong environmentally-friendly design.

Secondly, socio-culturally speaking, similarities are found between these countries and Hong Kong. These countries are basically capitalist in nature with non-interventional policies, they are also facing excessive consumption resulting in serious pollution and wastage. As mentioned before, since the cultural research in environmentally-friendly design is underdeveloped, it is essential and worthwhile to refer to some other successful theories and models for improving the effectiveness in Hong Kong.

2.3.2 Research Tradition for Design Methodology

Knowledge is a common terminology being discussed in the processes of design research. The significance of the thesis is to explore how identity (normative knowledge) will generate into symbol (symbolic knowledge). Normative knowledge refers to preferences, values, tastes and attitudes of designers. It consists of value-laden statements of philosophers, politicians and architects, on 'what ought to be' while

symbolic knowledge is grouped under declarative knowledge or expressive knowledge which refers to the 'knowing what' or 'knowing that' type of factual information about design and design process (Bayazit, 1994). In other words, it is a study about how implicit knowledge externalize into explicit knowledge through communication. With the synthesis of these 2 modes of knowledge, it will substantiate Fry's thinking in filling the gap(s) for the local context (see Fig. 2.11).

Explicit knowledge

Epistemology (Judging/choosing) *Theories* (Symbolic knowledge e.g. Images)	*Methodology (Means)* *Practices*
Ontology (Being) (Normative knowledge e.g. Identity)	*Teleology (Becoming)*

Implicit knowledge

Fig. 2.11 Nature of Knowledge in Relations to State-of-the-art Design Methodology

Source: Adapted from De Vries et al. eds. (1993) Design Methodology and Relationships with Science: Introduction. Netherlands: Kluwer Academic Publishers, p.14.

2.4 Summary

The thesis started out from Fry's thinking in formulating the conceptual construction. As there was a missing gap between Fry's thinking and the local context, testable variables were added to the research, key concepts of organizational identity and images have been extracted from Whetten (1998) and Willig (1994) as research variables for supporting the arguments (see Fig. 2.12). Also, corporate identity from Aaker (1996) as well as product identity from Vihma (1994) provided more elements in formulating the questionnaires. (see Fig. 2.8 and Fig. 2.12).

In order to gain a better understanding of the thesis, several assumptions had to be taken into consideration.

- Firstly, this was a newly developed area with lots of room left for research further. Even now, there are on-going controversies over their ideologies and actions; the concepts of trade-offs and conflicts of interests all make the research far more difficult to carry out. So simplification of technical terms is one way of reducing confusion and existing controversies.
- Secondly, as the nature of the environmentally-friendly design is greatly complicated and extensive, cross-disciplinary studies are necessary in dealing with these interconnected factors together.
- Thirdly, as cultural values are extremely difficult to measure, both surveys and case studies will be explored using triangulation as multiple criteria for supporting the argument. In order to make the research feasible and concrete, a focused study is required to make an in-depth exploration upon this. Thus, an elaboration of Hong Kong culture and hotel design are necessary for future study from the conceptual level into a specific and

practical level.

Theoretical framework: Fry's thinking (Western)
- Abstract philosophy based on Heidegger
- Based on cultural concept of 'Caring' using Design as 'Materialized ethics'

Fry's thinking ('Caring' Values)		
Dwelling	Thinking	Building
(Identity)		
Being (Organizational Identity)	Sign (Images)	

Operationalization of Fry's thinking:
Testable Variables
(Add practical concepts)

Problem: Conspicuous Consumption		
Organizational Identity – management measures	Images – explicit and visible	
Total Quality Environmental Management	Corporate Identity	Product Identity

Findings of the thesis:
New theory is addressing at design and management level

New theory		
Organizational Identity	Corporate Identity	Product Identity
Implications		
Design Profession	Design Education (Research)	Design Management

Fig. 2.12 The Schematic Diagram showing the Research Methodology

CHAPTER 3

3. Hong Kong Culture and Service Design in Hong Kong

Although environmental movement had been promoted for a few decades, Hong Kong is still lagging behind than other S.E. Asian countries. As some Hong Kong designers and design educators have commented[29], most of the designs were constructed only with economic profit in mind. The design professionals have put themselves in a position of service-providers in meeting the needs of developers and clients respectively. As a result, short-term, profit-oriented interest has provided a strong, deep-rooted bias that is working against change.

3. 1 Problems - External Factors in Hong Kong

3.1.1 Political Aspect:

For more than 150 years, the Hong Kong colonial government imposed the non-interventional policy on ruling the public and economic affairs. Even after the hand-over of Hong Kong sovereignty in 1997, the Hong Kong government has still kept adopting a lenient approach towards the ever-increasing ecological problems.

3.1.2 Economic Aspect

The capitalist nature of the Hong Kong economy is basically economic dependent, aiming at immediate economic returns rather than over social benefits. So most of the financial policies and

[29] A small-scale pilot study of the attitudes of the design professions concerning environmentally-friendly design in Hong Kong was concerned between 1997-2000. The interviewees included interior designers (Mr. Dale Keller and Mr. Nathan Tsang) and design educators (Mr. John Laine, Miss Pollycaster Wong and Miss Teresa Ho) shared that the difficulties of promoting environmentally-friendly design were due to the market-driven economy, and that the professional roles of the designer was limited to that of service-provider.

businesses are market-driven for profit-oriented and short-term gains.

3.1.3 Socio-cultural Aspect

Socio-culturally, massive promotion of "Consumerism" and "Pleasure-seeking" mentality prevail over Hong Kong as social norms, which has been developed into an intensive consumption resource centre for material comfort and higher status.

3.1.4 Education Aspect

Due to a deemphasis of civic education and citizenship in the Hong Kong school curriculum, people of Hong Kong have not yet developed a strong consciousness and concern for environmental issues.

3. 2 Problems - Internal Factors in Hong Kong

3.2.1 Poor Environmental Knowledge-Based in Natural Resources

It has been hindered the progress of environmental measures in design, thus leading to huge wastage due to misuse of technology and natural resources such as sunlight, air and water. Meanwhile, the sporadic and piecemeal measures are insufficient to develop an adequate body of knowledge for gaining a competitive position for environmental design.

3.2.2 Indifferent Attitudes and Low Sensitivity to the environmental measures

The professional fees for architects and engineers simply do not cover the extensive extra service to develop new techniques. Also, since the nature of design works are extremely complicated

and time-consuming projects with lots of established practices already, they are not willing to make an environmental shift in accepting new innovation and technologies by following the past practices in order to reduce the inconvenience from implementing changes.

3.2.3 A Shortage of Team Effort from the Professional

A more effective environmentally-friendly design knowledge should be developed in a multi-disciplinary approach which require mutual commitment and joint-efforts of designers (including developers, designers, architects, interior designers, contractors, technicians and so on). In doing so, an integrated approach of environmentally-friendly design system and knowledge are essential for designers.

3.2.4 The Presence of Competition from Design Business

All these add pressure on designers for quick and maximum returns within a shorter period of time as possible for quick completion and duplication. Construction speed is a factor of prime importance in the Hong Kong building process sometimes, even outweighting the factor of quality. As 'Time is Money' is the slogan for the rich developers who are continuously protruding buildings to re-shape Hong Kong's skyline[30], so shorter completion time and greater profits become the argument of environmentally-friendly designs versus economic imperatives.

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[30] Wong Wah Sang. (1991) *Building Materials And Technology In Hong Kong*. Hong Kong: All Arts Limited, p.21.

3.2.5 Structural Problems of Design

There is negligence and mal-practice of design in Hong Kong due to division of labour, specialization of work and systematic management for rapid production and consumption in Hong Kong. Then with the massive-use on mechanization and rationalization of the whole industry, on one hand, it has facilitated larger units for economies of scale; however, on the other hand, Braverman mentioned that the capitalist mode of production systematically destroyed all-round skills where they existed and brought skills and occupations in accordance to its needs. Technical capacities as well as knowledge were thus distributed on a strict 'need to know' basis. What was worst, the labour power degenerated into a commodity whose uses were no longer organized according to the needs of its purchasers but rather to be the exploitation and expansion of their capital values, that was for the economies of scale. Therefore, the resultant phenomenon is a loss of consciousness of 'Caring'.

3.3. Hong Kong Culture – Urban Ecology

The concept of sustainable development and sustainability has aroused great controversies as there are more than 60 definitions associated with these. (Pearce et. al., 1989) There is still no agreed definition and recognition of its significance by worldwide governments, NGOs, business sectors because of its difference in ideologies and actions. Nevertheless, the need for development is obvious; we live in a world where a minority of the world's population live with practices of unsustainable, wasteful consumerism, while the majority live in circumstances that do not provide

basic human needs.

Before exploring any further environmentally-friendly design in Hong Kong, it is worthwhile to identify its nature of ecology and its outcomes of problems. Lau (1996) stated that an urban ecology was basically a man-made system, which utilized lots of natural resources. The level of destruction was intensively affected by the design and planning of human activities, the degree of consciousness and control over sustaining the carrying capacity of natural resources. (see Fig. 3.1- 3.2) In general, Hong Kong is characterized with the following phenomenon:

3.3.1 Unsustainable Population Growth in the Urban Ecology[31]

Due to intensive activities of urban lives, these will bring trade-offs in the natural environment for the sake of economic and social activities. In order to satisfy the living standards of Hong Kong, huge amount of materials and energy inputs, are released into the environment; these always go beyond the homeostasis of urban ecology if it is not kept in equilibrium.

In view of HK development, "within an area of about 1,000 square kilometres, the population has reached nearly 7 million people (and another 7.4 million visitors in 2001) in this economically energetic and socially active community. In order to sustain this population and its activities, it requires a transport system with 1,911 kilometres of public roads, 148 kilometres of rails

[31] Urban Ecosystem refers to those urban cities with a huge population of over 100,000. With residential buildings, commercial, administrative and entertainment buildings take up 50% of the whole area. Infrastructures include traffic routes over the densely-populated region operated within these ecosystems. Lau. (1996). *Huan Jing Dao Lun.* China: Tsinghua University, pp. 62-63.

(including MTR, East Rail and Light Rail) and 525,000 registered vehicles. An extensive network of airflight services operates with nearly 23 million passengers in 2001. HK's population is projected to increase to 8.1 million by 2011 [32]." If no immediate, fundamental changes in the development patterns of Hong Kong are implemented, immense strain will be put on the built and natural environment in the future.

3.3.2 Unsustainable Distribution of Resources: Consumers exceed Producers in Urban Ecology

Under the urban ecological system, more consumers will use larger amount of natural resources resulting in serious pollution and wastage problems. Consumption is viewed as an essential indicator of social and economic achievement which will promote wasteful habits and life-styles if it goes beyond the carrying capacity. According to a survey conducted by Friends of the Earth (1999), Hong Kong people occupied an average ecological footprint[33] of 6 ha, about the size of 3 city blocks, much larger than some developed countries e.g. Germany, U.K. and Japan while the world average is 2.3 hectares per person [34]. In their terms, the

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[32] This is derived from the website of Census & Statistics Department from Http://www.info.gov.hk/censtadtd/eng/hkstat/hkinf, which is reproduced from the pocket data guide "Hong Kong in Figures" released in March 2002.

[33] The Ecological Footprint is calculated as how much land and water area is required on a continuous basis to produce all the goods consumed, and to absorb all the wastes generated by that population. These include food, housing, transportation, consumer goods and services. Friends of the Earth. (1999) *One Earth.* HK: Friends of the Earth, pp. 10-18.

[34] In theory, the Ecological Footprint of a population is estimated by calculating how much land and water area is required on a continuous basis to produce all the goods consumed, and to absorb all the wastes generated by that population. These include food, housing, transportation, consumer goods and services. It is an indicator that shows whether our population and lifestyles can fit on this planet without breaking the environment. Friends of the Earth. (1999). *One Earth, Summer '99, Issue No. 42.* HK: FoE, p.10.

environmental problems of Hong Kong could be illustrated as 'Big Foot for a Small World'. Hong Kong has evolved from a fishing village into a consumer society extremely rapid within this century culminating into a generation of an extravagant culture. The economic affluence and promotion of consumption resulted in approximately 16,000 tonnes of solid waste disposed at landfills per day in 2001[35]. Besides, the buildings around have led to lots of threatening environmental problems originated from the design values of conspicuous consumption. (see Fig. 3.3)

3.3.3 Urban Ecology is Wrongly Treated as an Open Ecological System rather than a Closed Natural Ecology

The ecological system is a self-regulating system which requires lots of resource inputs from other producers in meeting the present needs of the consumers. However, the supply of food, water and other daily necessities have certain limits. Regarding the pollution problems in Hong Kong, they are becoming increasingly more threatening as more wastage accumulates which need to be transported to other producers for dumping and treatment. Ultimately, these will upset the overall self-regulating system. Global and foreign experience can be borrowed from other countries but localization of their environmental theories and actions are necessary before implementation. Hong Kong is a highly artificial environment with tremendous man-made cultures; therefore the

[35] This information is extracted from Environmental Protection Department (2002). *Monitoring of Solid Waste in Hong Kong – Waste Statistics for 2001.* HK: EPD, pp.2-3.

scales of changes should be considered thoroughly and discreetly according to its urban ecology.

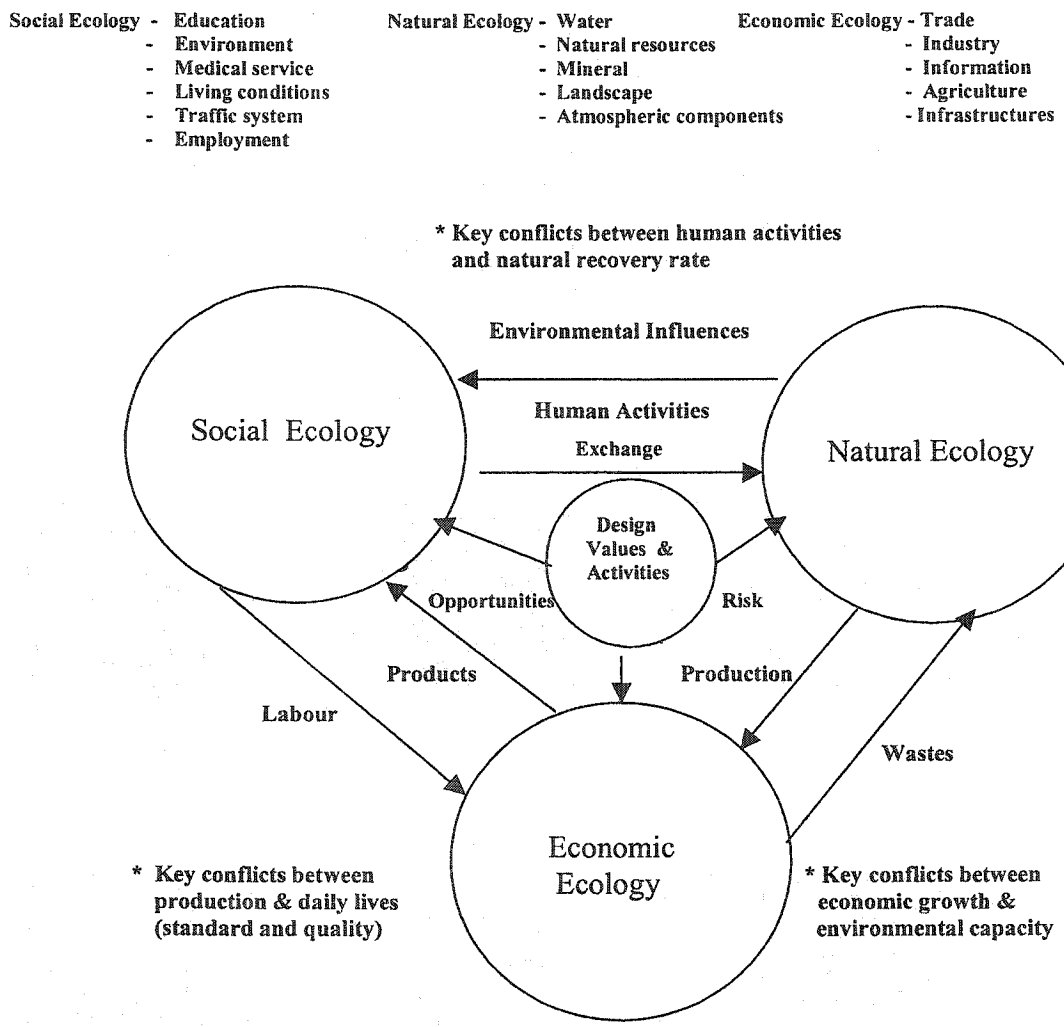


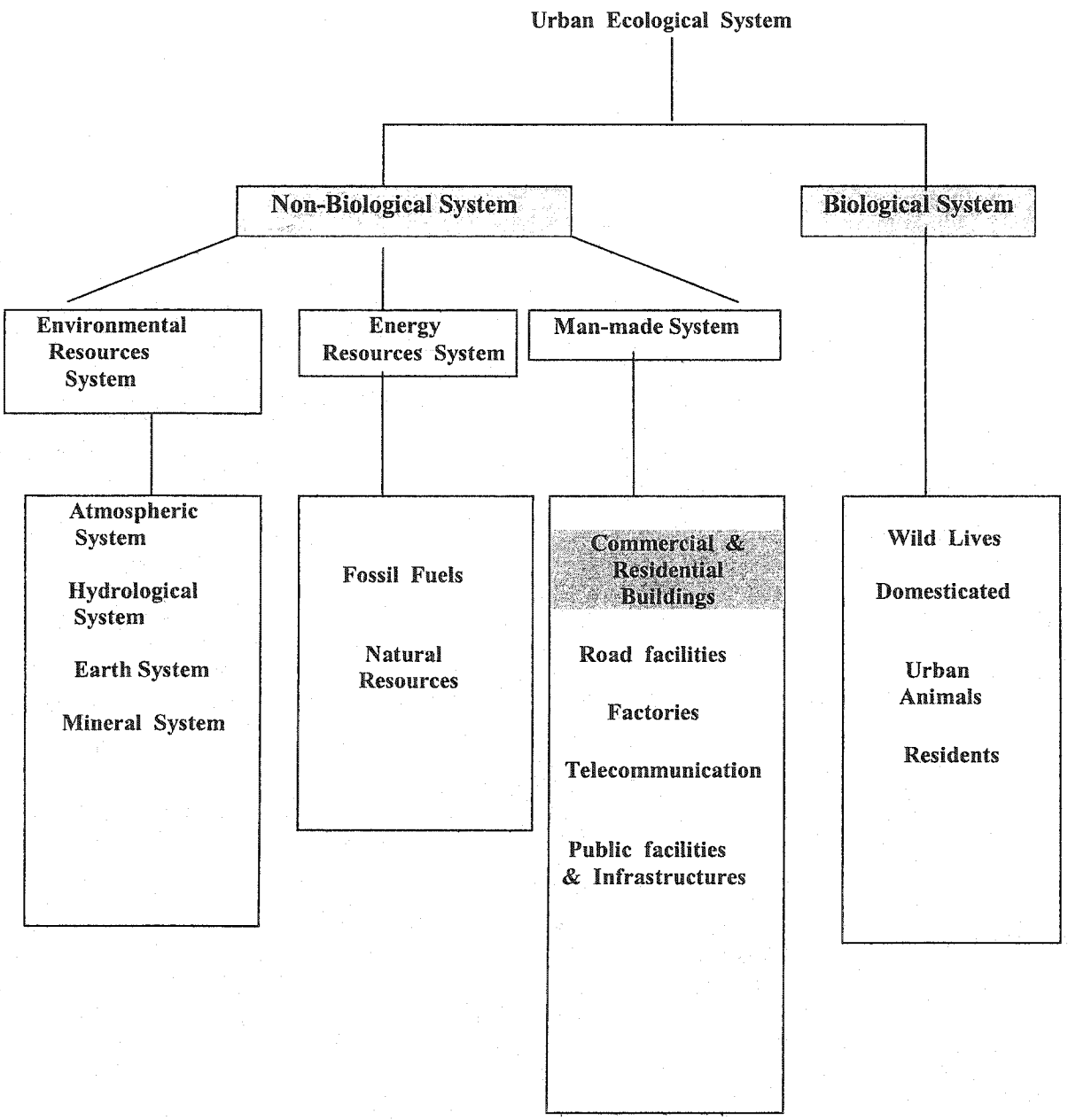
Fig. 3.1 The Urban Ecological System and its inter-relationships

Source: 劉天齊主編 (1996)。<環境保護>。北京：化學工業出版社，頁 31。

Fig. 3.2 The Urban Ecological System and the Man-Made System

Source: 何強編 著(1994)。《環境學導論》清華大學出版社，頁 66。

or (trans.) Lau (1996). *Huan Jing Dao Lun*. China: Tsinghua University, p.66.



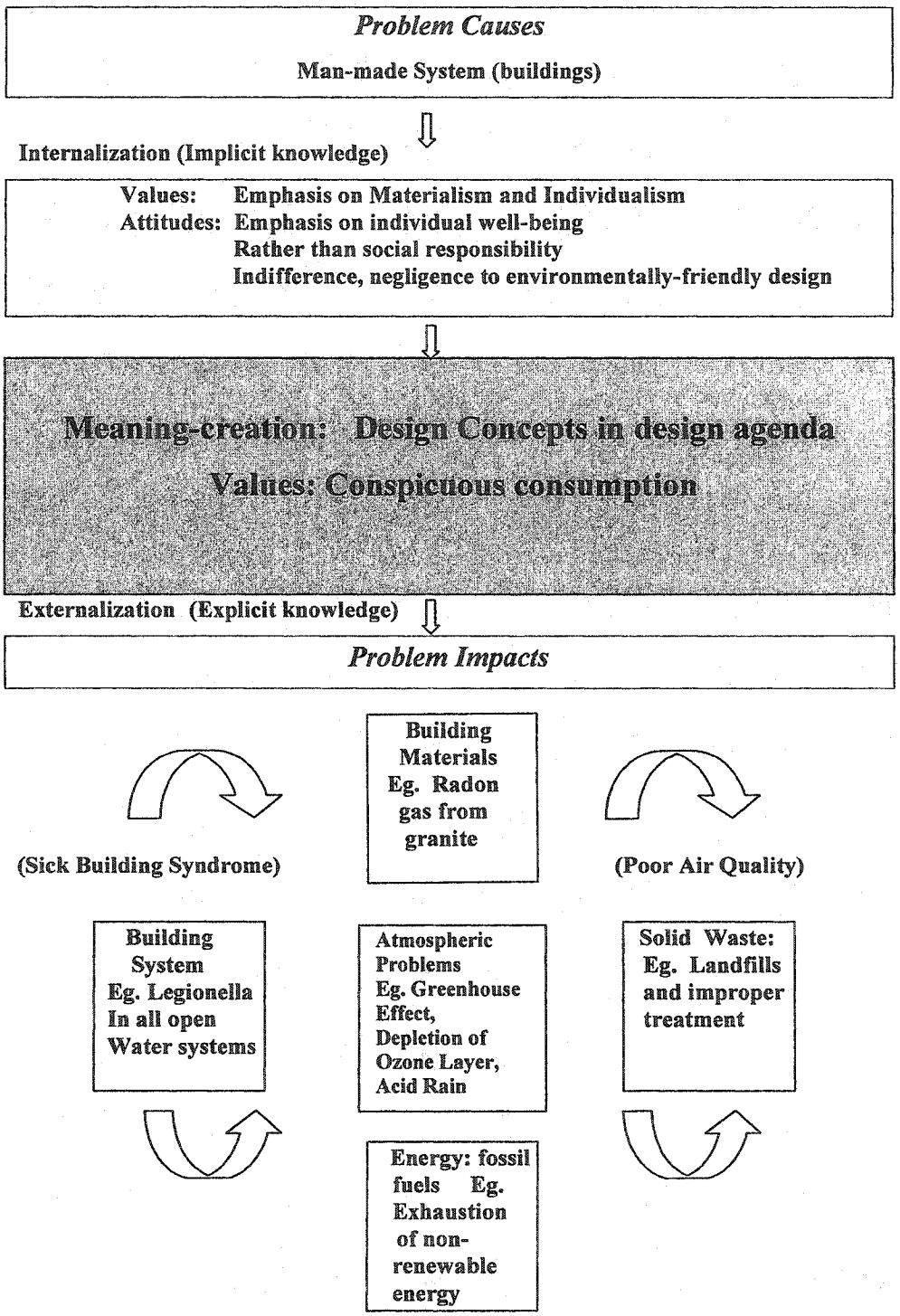


Fig. 3.3 **Problem Causes and Impacts: Hong Kong Buildings**
Source: *Adapted from Palmer (1998)*

3.4 Ecological Perspective of Chinese people

Among the limited research available, Bond's model (1986) can give clear illustration about the changes of human character traits from the traditional Chinese society to modern Hong Kong society (see Fig. 3.4). As environmental problems are really value-laden issues, the changes of behaviour are closely related to the changes in values and attitudes. Even though this is just a schematic diagram representing two polarization of character traits, it can give a brief overview about the changes in Chinese people, which is applicable to Hong Kong. As environmental concern is a movement that requires a joint-effort, the success and the intensities of the committment are basically related to the values and attitudes of the mass towards the notion of nature and environment.

There are 3 significant points drawn from the diagram worthy to be noted:

- Spatial dimension: Hong Kong is an intensively urbanized ecology with lots of man-made environment. Unlike traditional society, Hong Kong Chinese people presently do not respect and enjoy natural ecology like before.
- Temporal dimension: The mentality of Hong Kong people strives for short-termed profits rather than long-termed well-being.
- Human dimension: Moral and religious thoughts or doctrines were dominant in the traditional society, such as Confucianism and Taoism which emphasized 'Harmony with Nature'. Nowadays, the mentality of materialism and consumerism turn out to be the dominant beliefs in Hong Kong.

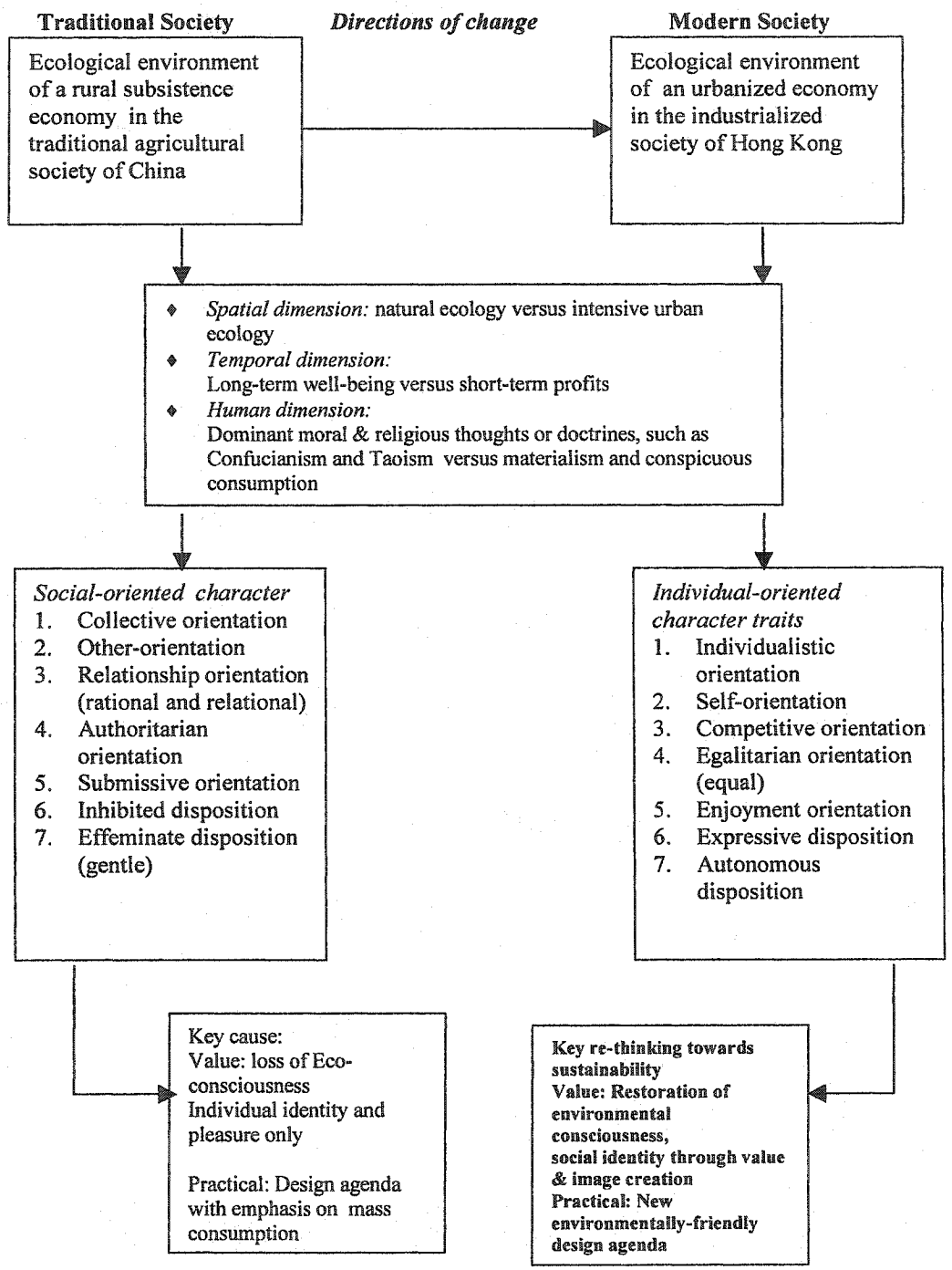


Fig. 3.4 **Ecological Perspectives of Chinese people**
Source: *Adapted from Bond (1986)*

Kalland (1998) commented that there should be some clarifications evolved from a fishing village into a consumer society extremely rapidly within this century culminating into a generation of an extravagant culture. The economic affluence and promotion of consumption have resulted in the disposal of 16,000 tonnes solid waste a day (EPD, 2001). Besides, the buildings around have led to lots of threatening environmental problems. (see Fig. 3.3)

Basically, the concepts derived from the schematic diagram are broadly shown as a comparison of differences in spatial, temporal and human dimensions only. Nevertheless, the key intrinsic factor affecting the ecological perspectives of Hong Kong people is their values and attitudes towards the environment.

Presently, due to rapid industrialization and urbanization, the focus for most of the initiatives are basically related to pollution and the quality of life. It is no doubt that most of the present measures are just addressing the specific, short-term local environmental problems rather than the long term solutions.

Over the past few years in Hong Kong, while there is a high awareness of the problems, the public are still reluctant to change their behaviour or pay more money to solve the problems. As Lau (2000) mentioned Hong Kong society was basically a 'utilitarian individual' society, the identity of Hong Kong people were calculative in thinking and materialistic in mentality. As the current offence charges are not effective to curb pollution practices, both the government and the citizens have not shown enough consideration and environmental consciousness for improving the

worsening pollution in Hong Kong. As Hills and Chan (1997) pointed out, it was the very nature of current life-styles in Hong Kong, especially their general expectations for material progress which led to the imbalance of our ecological system. In view of the ever-increasingly high rates of growth and prosperity, it is partly due to the materialistic expectations which that have led to measure success in terms of tangible and physical comforts. Also due to the presence of limited space, environmental factors have always been neglected in the course of development.

In the main, excessive consumption can be inferred broadly from the changes of character traits from social-oriented to individual-oriented traits. Such changes will cover human, temporal, spatial and structural factors. In order to put the study into focus, a case study on hotel design in Hong Kong will be a good illustration on the patterns of conspicuous consumption. In the main, excessive consumption can be inferred broadly from the changes of character traits from social-oriented to individual-oriented traits. Thus, no changes in environmentally-friendly design can be seen unless there are changes in the consumption pattern of the hotel design agenda.

3.5 Hong Kong Service – Hong Kong Hotels – Role of Tourist Agencies

Tourism played an important role in Hong Kong as it was the biggest foreign exchange earning industry, attracting more than 13.73 million visitors in 2001, representing a 5.1% growth over the previous year. In 2001, the average per capita spending of visitors is $4,532. The average hotel occupancy rates reached 79% in 2001 [35].

However, Friends of the Earth in Hong Kong released some findings from their survey that if tourists would not want to revisit a polluted destination like Hong Kong, the cost of decreasing tourism was calculated as $4.5 billion (Hong Kong Standard, 1997). This was further supported by the findings of 2 other western surveys, firstly, 85% of the citizens living in the industrialized world believed that the environment was the number one public issue (Carson and Moulden, 1991). Secondly, according to the previous poll undertaken by the British Travel Agents Association (*Hotels*, 1992), the tourists were increasingly conscious about the environmental quality of the destinations they visited. As a result, there is urgent need for changes due to both global trends and local needs.

3.5.1 Why there is a Need for Sustainable Tourism

"Over the past 25 years, travel and tourism has developed into the world's largest industry, generating an estimated US $3.4 trillion in gross output annually. The industry continued to

[36] The information is derived from the HKTC (2002). Fact Sheet "Tourism in Hong Kong", Sept. HK: Hong Kong Tourism Commission, p.1. under Http://www.info.gov.hk/tc/paper/doc/fact_e.doc

expand and is presently employing over 200 million people worldwide and has become the primary source of revenue for many countries. It has been growing faster than the global economy as a whole, to the point where it has become the largest currency earner in many developing countries[36]" (Carlene, 1998).

In June 1992, a blueprint for sustainable development called Agenda 21 was produced and adopted by 182 governments at the United Nations Conference. It was proposed and passed on Environment and Development Conference (UNCED) held in Rio De Janeiro. It was a comprehensive document with long-term approaches to planning and arrangement of the travel and tourism industry. It aimed at effectively guiding these activities in a sustainable manner into the future. Since the travel and tourism industry has a vested interest in protecting natural and cultural resources, therefore, through a joint collaboration, leading industry organizations including the World Tourism Organization (WTO), World Travel & Tourism Council (WTTC) and the Earth Council created the "*Agenda 21 for the Travel and Tourism Industry: Towards Environmentally Sustainable Development*" document. (A21) with their terms defined as follows:

"Sustainable Tourism Development- Sustainable Tourism

[37] Van Toen, Carlene. (1998). Conference Paper *of "Agenda 21 for the Travel & Tourism Industry: Towards Environmentally Sustainable Development: An Overview of Key Issues Related to Sustainable Development", Sept.* In the Seventh Annual Business & Industry Environment Conference and Exhibition. HK: Centre of Environmental Technology Limited.

Development meets the needs of present tourists and host regions while protecting and enhancing opportunity of the future. It is envisaged as leading to the management of all resources in such a way that economic, social and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological processes, biological diversity and life support systems [37]." (World Tourism Organization)

With a worldwide agreement on this declaration of Agenda 21, more and more countries and cities started applying A21 Actions within their Travel & Tourism Industry. In one of the ten priorities listed, Design for Sustainability is one key issue being addressed for change [38] .

Taking the Hong Kong tourism industry and hospitality services into consideration, tourism and environment are both irrevocably linked, as the success of the first lies on the preservation of the second. Go and Pine (1995) stated that (environmental) strategic management would maintain the competitive advantages of the local hotel industry and evolve towards a business proactively in the future. They mentioned

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[38] ibid.

[39] ibid., the 10 priority areas for travel and tourism are listed as follows: i. Waste minimization, reuse and recycling, ii. Energy conservation, conservation and managements, iii. Management of fresh water resource, iv. Waste water management, v. Hazardous substance management, vi. Transport planning, vii. Land-use planning and management, viii. Involving staff, customers, and communities in environmental issues, ix. Design for Sustainability, x. Partnerships for sustainable development.

[40] Go & Pine (1995). *Globalization Strategy in the Hotel Industry*. London & NY: Routledge, p.327.

that the greening of a number of companies in the hotel industry was taking an active stance that were most likely to affect the travel and tourism in the 1990s [39].

3.5.2 Why there is a need for Environmentally-Friendly Hotel Design

Hotels are regarded as very complicated systems among building design. Basically they are divided into building amenities, building materials and building systems. The standards of hotel design have been classified under the "Star" system. The larger the star, the more deluxe will be the hotel designs. These include the elements of architecture, decoration, facilities, equipments, varieties of products and services and also quality of design and so on. (see Fig. 3.6). The hotel industry in Hong Kong can be seen as a three-tier business, namely, Deluxe (room rates above US$205), First-class (room rates between US$133-205), and Tourist class (room rates below US $133) respectively [40].

3.6 Identity and Image of Hotel Design

Go and Pine (1995: 170-171) pointed out that the hotels in Hong Kong could be classified according to location, number of rooms, principal markets and other criteria, such as room rate. Most of the Hong Kong hotels were regarded as center city hotels as they were located in proximity to transportation networks. Meanwhile, there were

[41] ibid, pp.170-171.

76 hotels registered under the membership of the Hong Kong Hotels Association listed in the Hotel Directory 1998.

Identity

(Hotels) were based on a basic human necessity in the past. But as time went by, in addition to simple shelters, money bought individuality, the integrity of people and property is essential to the middle-class self-conception, which had been disturbed almost exclusively on an ability-to-pay basis. They turned out to be a tool or catalyst of consumerism, which was itself a commodity. Dell (1998) fully illustrated that as one ascended the social scale to the middle-and upper-class hotel, more facilities are provided including products and services. He pointed out that (hotel) architecture had always been an alienable property in the 19th century and became a consumer commodity which emphasized pleasure and luxury.

In an intensive consumption society like Hong Kong, hotels were served as the principal sign of self; the ability to consume accommodation and amenities were turned out to represent social status in defining one's personal identity. In order to enhance the hotel users as "Guests", there is a detailed planning and classification of design agenda for attracting consumption. Regarding hotel design concepts, luxury and exclusive themes are still the mainstream of establishing the corporate identity of hotel design. In order to gain more shares in the competitive hotel markets, the deluxe hotels try to seek exclusive styles and cordial services for attracting customers. According to the previous literature review and surveys conducted, (Friends of the Earth, 1998)

consumption for luxury living was still the dominant mindset within customers' behaviour. So the hoteliers were conservative in their changes for reducing guests' disturbance. Currently, the guests put emphasis on consumption for personal well-being rather than social quality/well-being (John, 1994 & Mackie, 1994).

- Hoteliers' strategies are rather reactive to environmental shift. Since hotel businesses are very complicated systems of social, cultural and business complex, there are thousands of items to be considered in their normal agenda. So without any issue of regulations and well-designed agenda, they will not care about change because of their busy workload.
- Secondly, maintaining first-costs are still their primary concern besides setting good images. Under the historically established classifications of hotel design, any minimal changes may take time as the hotel concepts and themes are deep-rootedly and centred on 'Excessive consumption'.
- Thirdly, commitment to environmental change is still passive, no matter in design concepts, products, equipments, management or technology.

Image

As Leach and Eco analysed, architecture consisted of two main levels of meanings, namely denotative as primary function and connotative codes, the secondary function being a form of mass communication (See Fig. 3.5). These concerned the significant units of architecture, or the relations established between individual architectural

sign vehicles as well as their denotative and connotative meanings.

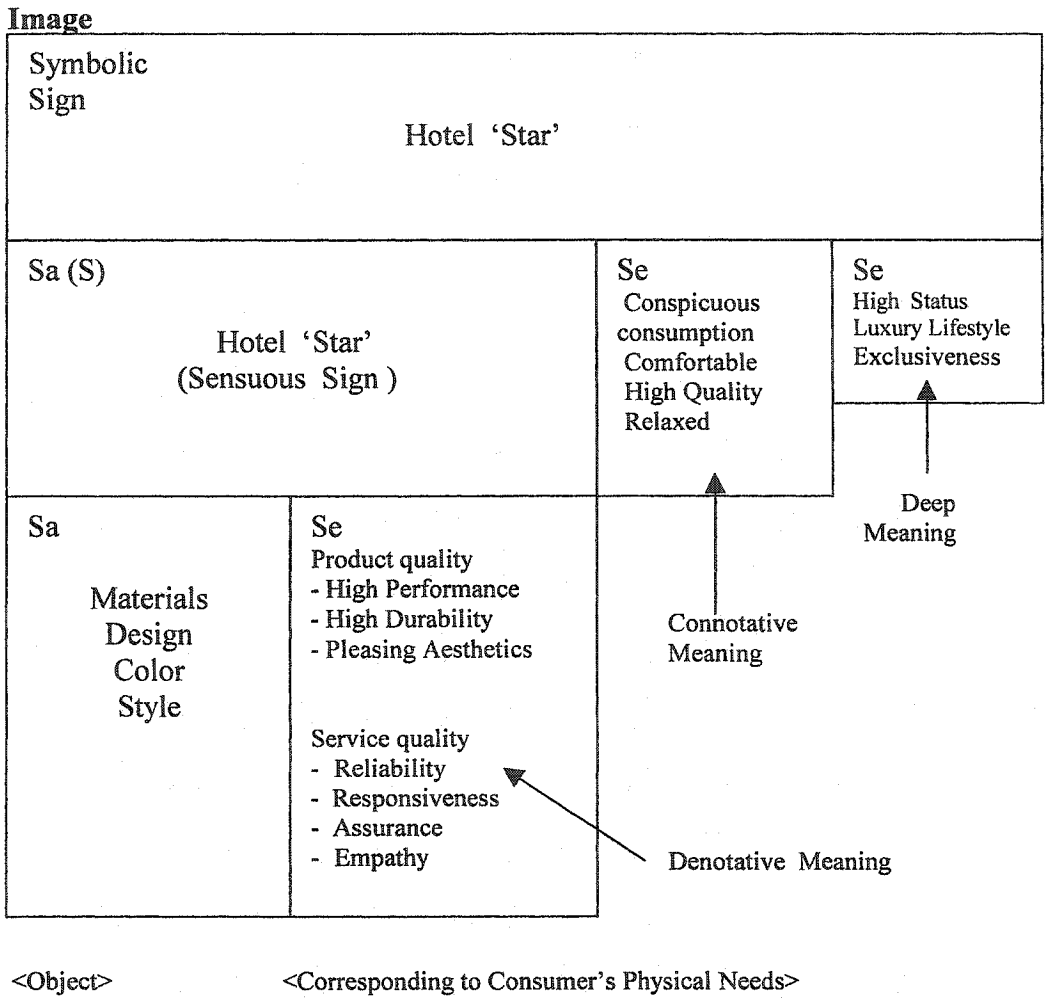


Fig. 3.5 Image: The Semiotic Structure of a Hong Kong Hotel

Source: Adapted from Umiker-Sebeok ed. (1987)

Taking hotel design into consideration, it is a complex system of a great variety of products and services. Lovelock (1994) explained that the former means durable products with three-dimensional physical characteristics. They are visible, tangible and produced for inventory and eventual use. By contrast, service products are not produced for inventory but rather provided for customers' needs. Besides product

differentiation, a bundle of supplementary services which add value to the core products, namely hotel services, amenities and ambience. One universally applicable definition of service is 'all actions and reactions that customers perceive they have purchased.'

In the past, Hong Kong hotels were simply designed to meet the basic demand in providing shelters for travellers and tourists. However, for the past thirty years, increasing more hotel guests have changed their purposes of visits to business transactions, conferences and academic exchanges. The concept of a one-stop location with a diversification of increasingly heterogeneous facilities and functions has arisen. No matter what was in The Brundtland Report or Agenda 21, they just provided broad guidelines which are actually inadequate in recognizing the existing discontinuities involved among varied interests.

Class / Criterion	Tourist 5 star	4 star	First-class 3 star	4 star	Deluxe 5 star
Total Architectural Areas	40~48 sq.m.	48~56 sq.m.	66~72 sq.m.	74~80 sq.m.	82~100 sq.m.
1.Guestrooms	27 sq.m.	32 sq.m.	38 sq.m.	40 sq.m.	45 sq.m.
2.Public spaces	1 sq.m.	2 sq.m.	3 sq.m.	5 sq.m.	6 sq.m.
3.Beverage Spaces	5 sq.m.	7 sq.m.	9 sq.m.	10 sq.m.	11 sq.m.
4. Offices	4 sq.m.	4 sq.m.	8 sq.m.	9 sq.m.	9 sq.m.
5. Engineering Departments	2 sq.m.	2 sq.m.	7 sq.m.	8 sq.m.	9 sq.m.
6. Others	1 sq.m.	1 sq.m.	1 sq.m.	2 sq.m.	2 sq.m.

Class / Criterion	Tourist 5 star	4 star	First-class 3 star	2 star	Deluxe 1 star
No.of Guestrooms	>20	>20	>50	>50	>50
Telephone/TV	-	50%	100%	100% (IDD & Coloured)	100% (IDD& Coloured)
Audio-visual Equipment	*	*	*	*	*
Building Systems					
Water Supply (Hot)	12 hr.	16 hr.	24 hr.	24 hr.	24 hr.
Lighting	*	*	*	*	*
Air-conditioning	*	*	*	(Central A/C with thermostat)	(Central A/C with thermostat)
Heating	*	*	*	*	*

Lighting					
Bedside lamps	*	*	*	*	*
Desk lamps/ Table lamps	*	*	*	*	*
Lounge seating lamps	*	*	*	*	*

Furniture and facilities					
Casepieces					
Bed	*	*	*	*	*
Dressing Table/ Table	*	*	*	*	*
Chairs	*	*	*	*	*
Dresser	*	*	*	*	*
Desk	*	*	*	*	*
Nightstands	*	*	*	*	*
Coffee Table	*	*	*	*	*
Closet	*	*	*	*	*
Seaters	*	*	*	*	*
TV stand	*	*	*	*	*
GUESTROOM FINISHES					
Floor : Carpet/ Wood parquet			*	*	*
ACCESSORIES					
Stationery		*	*	*	*
Windows fenestration					
Curtains	1 layer	1 layer	1 layer	2 layers	2 layers
Building materials					
	good quality	good quality	high quality	very high quality	exclusive quality
Building Styles					
Design/ Decoration	pleasing	pleasing	very pleasing	luxury	exclusive luxury
Bathroom facilities					
Bathroom equipments out of the total guestrooms	75 % (*3 basic pieces)	95% (*3 basic pieces)	100% (*3 basic pieces with dressing table with mirror, bathroom exhaust, phone, 110/220 voltage outlets, shower head)	100% (*3basic pieces with dressing table with mirror, bathroom exhaust, phone, 110/220 voltage outlets, shower head)	100%

Fig. 3.6 Hotel Classification (in terms of area and design features)

Source: Adapted from Tong & Zhang (1993). Hotel Architectural Design. (Luguan Jianzhu Sheji). PRC: China Architectural Industrial Publisher, pp.44-45.

Note: All the figures are based on the standards in PRC, just for reference only

* Required (The more stars the hotel has, the higher will be the class)
* 3 basic pieces: toilet bowl, bath-tub, basin

3.7 Summary

The first part of the chapter was an overview of Hong Kong urban ecology and environmental problems. Then followed by an understanding of how consumption affected our cultural identities and images in terms of spatial, temporal and human dimensions with the changes of Chinese ecological psychology. In the second part, sustainable tourism and environmentally-friendly hotels were reviewed. Similarly, a deeper understanding was followed by analyzing their identities and images through sign system. This system created a set of symbolic objects and symbolic events, both tangible and intangible seen for attracting the hotel guests (see Fig. 3.6). The classification of hotels were categorized according to a standardardized 'hotel agenda' (Note: this set of standard was used in PRC only, the items were common at difference countries but the figures and details were for reference only). The product identity enhanced further the promotion of corporate identity under the values of conspicuous consumption. A field research would be conducted to verify Fry's thinking and filling the gaps when applied to the Hong Kong situation.

CHAPTER 4 Methodology

4. 1 Field Research

Objectives:

It is basically a descriptive and attitude-probing study about the feasibility and attitude changes towards environmentally-friendly design. 41 questions were formulated to identify their problems, to understand their degrees of environmental shift and acceptance in design concepts, management and communication.

4.1.1 Research Schedule

Research Planning Stage
&
Literature Review
⇓
Questionnaire Design
⇓
Pilot Test
⇓
Questionnaire Distribution
&
Structured Interview (selected samples)
⇓
Survey & Interview Analysis

4.1.2 Literature Review

Theoretical framework:

What is the link between Fry's thinking and the survey - questionnaires and interviews? The thesis started out from Fry's thinking, which provided the basic framework and guidelines for formulating research questions of identity values and image. In order to externalize the values, practical

questions had been asked to gain background information, values, opinion-seeking and design projects involved. Besides extracting ideas from Fry's thinking on environmental management (2000) and his book *Remaking* (1994), other sources were added to substantiate the study, namely Willig (1994), Aaker (1996), Whetten (1998). Furthermore, attitude-probing questions were raised to explore their attitudes and methods towards environmentally-friendly design changes and direction(s) in terms of positioning their identities and images-creation.

Survey methods: In order to obtain empirical data on Hong Kong design firms about their attitudes towards environmentally-friendly design, general research methodology are used, such as Patton (1990) on *Qualitative Evaluation And Research Methods,* Veal A. J. (1992) on *Research Methods For Leisure And Tourism,* de Vaus (1993) in *Surveys In Social Research,* Creswell (1994) in *Qualitative & Quantitative Approaches,* Fink (1995) *The Survey Handbook, In-Depth Interviewing* by Minichiello (1995), all provide systematic guidelines for principles, techniques and analysis .

Questionnaires and structured interviews:

- **For Section A:** Background information, nature of services, staff number, services of Hong Kong design

firms were referred to *Survey on Status of the Hong Kong Design Profession in 1995* [42].

- **For Section B**: Design factors. In order to back-up the survey targeted on the design firms, some literatures were reviewed such as Veal A. J. (1992) in *Research Methods For Leisure And Tourism*, IHEI (1993) in *Environmental Management for Hotels: The Industry Guide To Best Practice* provide basic and comprehensive information about questionnaire design and in-depth interviews both technically and operationally.
- **For Section C**: Design innovation. Images and symbols concepts were extracted from Bocock (1994), corporate and product identity under brand identity concepts were referred from Aaker (1996).
- **For Section D**: Design identity and management. Key references of Total Quality Environmental Management were extracted from Willig (1994), internal and external identities were drawn from Whetten (1998) and then the surveys from Friends of The Earth (1998) in *The Feasibility Study of Waste Minimization for Hotel Industry in Hong Kong-*

[42] It was a joint-project by The Chartered Society of Designers, Hong Kong Designers Association, Hong Kong Fashion Designers Association, Hong Kong Polytechnic University and Hong Kong Interior Design Association issued in 1997.

Replacing Disposable Toiletries with Eco-Friendly Designs provided basic reference information for questionnaires. The management measures of 2 successful case studies - Hotel Nikko and Headland Hotel (see Appendix G and H) were analyzed as survey variables. Other environmental surveys conducted by Mandarin Oriental-The Hotel Group, Friends of The Earth (1992) in *Environmental areas in which local hotels are making an effort*, (1996) *Manual for Environmental Protection and Energy Conservation*, and (1996) *A Guide to Energy & Water Conservation in Hotels: A Practical guide for management, employees & engineering staff* about the Hong Kong auditing hotels in Aug., all these provided basic information for formulating the survey.

4.2 Questionnaire Design

Methodology : A joint-methodology

The survey was consisted of 2 sets of formats, namely questionnaires and structured interviews. For the former one, nominal questions were asked for getting simple and direct answers about the existing practices, difficulties and attitude changes of design firms. Most of the questions were close-ended, whereas open-ended questions were asked once there was a need for details and specifications. For the

time-conscious design firms, the response rate was apparently higher with multiple-choices questions. Follow-up interviews were arranged among the respondents after their questionnaires were returned. During the interviews, structured questions were raised for more in-depth opinions in values, attitudes and behaviours.

- **Section A** - Company Profile, aimed at acquiring the background information of design firms. This section consisted of 5 questions concerning their years of operation, the nature of business and scope of design services.
- **Section B** - Design Factors, aimed at exploring the current practice(s), reason(s), part(s), source(s), element(s) of design projects and difficulties of design practice(s).
- **Section C** - Design Innovation, aimed at searching for opinions and practices of the HK design firms.
- **Section D** - Design Management, questions were related to environmental missions, leaders, strategies, training and promotion.
- **Section E** – consisted of personal data of the respondents.

(refer to Appendix E-H for survey details)

4.3 Pilot Test

Prior to the surveys, the researcher had sought opinions from the supervisors and advisor about the reasoning of questions. Then further revisions of theoretical framework and technical details were adapted afterwards. In order to collect more opinions from different

providers and users' sides, a series of pilot studies were conducted on some selected practitioners (designers, educators and hotel environmental manager) for the validity of the questionnaires and feedback. Once feedback was received, revisions were made accordingly.

4.4 Questionnaire Distribution

4.4.1 Criterion of Samples Selected:

There were in total 100 design firms selected for the survey. Criterion-based selection was used, firstly, they were registered or chartered members of the Hong Kong Institute of Architects (60 from HKIA), Hong Kong Interior Design Association (20 from HKIDA), or Hong Kong Designers' Association (20 from HKDA) respectively. Most of them had worked for hospitality designs, either architectural, interior design or corporate design and images. Secondly, besides recommendation from their professional associations, the researcher could find more information about contact addresses and portfolios of individual design firms through their association directories or webpages easily (see Appendix – Reference). In Hong Kong, most of the design firms were quite diversified in their services, so there was no single firm just specialized in hotel design only. So this research aimed at deriving information from both general to specific levels, that was, researching the

attitudes of design firms on environmentally-friendly design in general, and then hotel design in particular.

4.4.2 Distribution and Collection Periods:

Basically there were 3 periods for sending out the questionnaires:

(a) Early Dec (deadline by the end of Dec 2000):
15 responded with 4 interviews inclusive.

(b) Mid-Dec (deadline on mid-Jan 2001): 0 responded

(c) Mid-March (deadline on mid-April 2001):15 responded.

Data Collection

The survey is consisted of structured questions. During the first round, questionnaires with nominal choices and open-ended questions were asked. The respondents could complete the questionnaire by simple ticks. A total of 100 questionnaires were sent out to the selected design firms in Hong Kong. The survey data was collected from Dec. 2000 to mid-April 2001 through mail questionnaires. After the first round, all open-ended questions were adapted to closed-ended questions according to the options gathered from the respondents. Follow-up telephone calls and fax were made. The survey was directly addressed to the general design managers for completion of questionnaires. After a period of 5 months, a

total of 30 questionnaires were received yielding a response rate of 33.3%. 100% of the questionnaires returned were usable. Data was analyzed, tabulated and summarized as frequency tables, histograms and cross-tabulations.

Questions Response Rate from Design Firms

Total no. of questionnaires sent out	100
Total no. of returned	30
Total no. of incomplete	0
Total no. of unreturned	70
% of returned out of total no. sent out	33.3%

Fig. 4.1 A Summary of Survey Response Rate

4.5 Statistical Results: A Summary of Empirical Findings

4.5.1 Survey Findings

Key: * Subsidiary questions are added for the second and third round after gathering more information from the feedback of the open-ended questions during the 1st round. The findings will be analysed according to Sections A to D issued in the questionnaires and interviews. (see Appendix E and F)

*(Key: * Subsidiary questions were developed for the second and third round after the feedback of the open-questions had been gathered during the first round)*

Section A Company Profile of Design Firms

1.	**Year(s) of establishment**	1970 or before (33.3%)	1971-1980 (10%)	1981-1990 (20%)	1991– now (33.3%)	Others (3.3%)
2.	**Nature of business**	Local firms (76.6%)		Branch of an overseas firm		(3.3%)
		Joint-venture (0%)		Partnership		(3.3%)
		In-house department of a non-design firm				(6.6%)
		Others				(10%)
3.	**Area(s) of Design Services**	Hospitality	(50%)	Corporate		(53.3%)
		Retail	(36.6%)	Exhibition & display		(20%)
		Institutional	(36.6%)	Industrial		(23.3%)
		Others	(50%)			
4.	**Kind(s) of Design**	Conceptual design				(90.0%)
		Space & facilities planning				(66.6%)
		Technical planning				(53.3%)
		Project management				(63.3%)
		Contracting/sub-contractors				(20.0%)
		Project consultancy				(73.3%)
		Materials & products				(13.3%)
		Furniture design & suppliers				(20.0%)
		Lighting design & suppliers				(3.3%)
		Others				(6.6%)

5.	**No. of employees in 2000**	1-50	51-100	101-150	151-200	201-250	251 or below
		(60%)	(16.6%)	(10%)	(3.3%)	(6.6%)	(3.3%)

Fig. 4.2 A Summary of Survey Findings (Section A Q.1-5)

For Q.1, regarding the **years of establishment** for the 30 design firms that responded, 33.3% were established between 1970 or before and 1991-now. 20% were set up between 1981-1990, 10% were formed between 1971-1980 and for the rest was 3.3%.

For Q.2, regarding the **nature of business**, 76.6% belonged to local firms, 10% were regarded as others, 6.6% belonged to an in-house department of a non-design firm, 3.3% were branches of overseas firms and partnerships respectively and none were joint-venture.

For Q.3, relating to the **area(s) of design services**, 53.3% provided corporate design, 50% were involved with hospitality design and other kinds respectively. 36.6% provided retail and institutional design respectively, 23.3% dealt with industrial design and 20% with exhibition and display design.

For the **kind(s) of design services** in Q.4, 90% provided conceptual design, 73.3% involved project consultancy, 66.6% provided space and facilities planning and then 53.3% served technical planning. For the rest such as contracting/sub-contracting, materials and products, lighting design & suppliers and others it was below 50%. Most of the design firms that responded were involved with the key initial phases of design stages.

For Q.5, the **average no. of employees in 2000**, 60% of

the design firms employed 1-50 staff, 16.6% had 51-100 staff, 10% had 101-150 staff, 6.6.% employed 201-250 staff, 3.3 % of the design firms had 151-200 staff and 251 or above. On the whole, most of the design firms that responded were categorized as small to medium-sized companies.

Section B Design Factors

1.	**3 Most considered design factors**	Function (83.3%)	Budget (70%)	Aesthetic (70%)
2.	**Environmentally-friendly projects**	Yes (80%)	No (20%)	
3.	**Reason(s) for implementation**	Reduce cost which leads to cost saving		(53.3%)
		Bring "Green" images to design firm		(50.0%)
		Minimize natural resources		(56.6%)
		Enhance customers satisfaction		(30.0%)
		Others		(13.3%)
		N/A		(6.6%)
4.	**Part(s) for implementation**	Design drawings		(63.3%)
		Project management		(23.3%)
		R & D		(33.3%)
		Maintenance & operation		(26.6%)
		Wastage disposal or treatment		(43.3%)
		Environmental auditings		(20.0%)
		Others		(13.3%)
		N/A		(10.0%)
5.	**Source(s) of ideas**	Design books & magazines		(60.0%)
		Literature (philosophies, articles, journals)		(33.3%)
		Observation from daily lives		(60.0%)
		Follow design themes & briefs from clients		(30.0%)
		Intution		(40.0%)
		Follow government regulations		(20.0%)
		Collective ideas from team work		(40.0%)
		Others		(13.3%)
		N/A		(6.6%)
6.	**Design element(s)**	Figurative forms (33.3%)	Abstract forms	(13.3%)
		Typology (30.0%)	Colour	(23.3%)
		Materials (76.6%)	Others	(26.6%)
		N/A (10.0%)		
7.	**Difficulties in implementation**	Increase of operation costs		(6.6%)
		Increase of workload		(13.3%)
		Increase of operation time		(3.3%)
		Lack of design innovation		(26.6%)
		Insufficient R & D		(30.0%)
		Insufficient environmentally-friendly design products/materials supplied		(36.6%)
		Difficult to do environmental reports and audits		(30.0%)
		Others		(13.3%)
		N/A		(6.6%)

8.	**Satisfaction of HK hotel design**	Yes	No	Others	N/C
		(3.3%)	(73.3%)	(3.3%)	(20%)
*8i.	**If yes, which are the following you are satisfied with?**	Products have environmentally-friendly qualities			(3.3 %)
		More services to replace product wastages			(3.3%)
		Creative use of design elements			(3.3%)
		Comply to international environmental standards			(0 %)
		N/A			(93.3%)
*8ii.	**If no, which are the following you are dissatisfied with?**	Lack of design creativity			(40.0%)
		Lack of regional & climatic characteristics			(13.3%)
		Energy wastage			(26.6%)
		Lack of clients acceptance			(13.3 %)
		Insufficient environmental management			(46.6%)
		Others			(6.6%)
		N/A			(93.3%)
9.	**Improvement(s) in hotel design**	Yes	No	Others	N/A
		(62.7%)	(16.5%)	(6.6%)	(13.2%)
*9i.	**Improvement(s) in existing hotel design?**	Functions			(40.0%)
		Create environmental meaning through styles			(13.3%)
		Price			(6.6%)
		Environmental management			(53.3 %)
		Others			(6.6%)
		N/A			(33.3%)
*9ii.	**3 Most considered features in existing hotel design**				
		Air-conditioning			(21)
		Energy			(19)
		Natural ventilation			(17)
*9iii.	**3 Most considered design features in future hotel design**	Energy			(21)
		Air-conditioning			(18)
		Building shape & orientation			(14)
*9iv.	**Improvement(s) on**	External factors:			
		Clients acceptance			(53.3%)
		Reduction of excessive consumption through design			(40.0%)
		Government regulation			(46.6%)
		Staff consciousness & support			(26.6%)
		Others			(3.3%)
		N/A			(3.3%)

Fig. 4.3 A Summary of Survey Findings (Section B Q.1-9)

(**Note:** For Q.8 and Q.9, fine-tunings were made on the findings as above. Some technical analysis involved by categorizing the comments of the open-ended questions during the first round into the close-ended variables, previously the open-ended comments were grouped under the variable of Others, which actually require further analysis for more accuracy.)

For Q.1, the **3 most considered design factors** as a percentage were, 83.3% of the design firms chose function, while 70% chose budget and aesthetic features. About 25% of the design firms that responded gave more than 3 choices, so the findings were assessed according to their ticks. For other factors, 2 design firms specified that they had responsibility for environmental concern.

For Q.2, 80% of the design firms indicated they had considered **environmentally-friendly projects** before while 20% indicated no.

For Q.3, the **major reason(s) for implementation**, 56.6% indicated they had to minimize natural resources, 53.3% chose to reduce cost which led to cost saving and 50% selected to bring "Green" images to design firm. For the rest, their choices were 30% or below. Among these, 3 out of 30 specified that their concern for environmental responsibility was their major reason. As a result, the findings of conveying "Green" images could support the argument that it would bring effectiveness to environmentally-friendly design once they were developed more.

For Q.4, regarding **part(s) of implementation**, 63.3% chose design drawings, 43.3% selected wastage disposal or treatment and then 33.3% indicated that they were involved with research and development.

For Q.5, regarding the **source(s) of ideas**, 60% of the

design firms derived their sources from design books & magazines as well as observation from daily lives respectively. 40% were stimulated from intuition and also collective ideas from team work. 33.3% chose literature (philosophies, articles, journals), 30% selected following the design themes and briefs from clients.

For Q.6, the **choices of design element(s) implemented** were 76.6% from materials, 33.3% from figurative forms and 30% from typology.

For Q.7, for the **3 major difficulties of implementation**, 36.6% selected insufficient environmentally-friendly design products/materials supplied, 30% chose insufficient R&D and then 26.6% indicated there was a lack of design innovation.

For Q.8, during the first round, it was an open-ended question asking for their opinions towards existing Hong Kong hotel projects. After collecting the opinions of the firms that responded, their feedback could be divided into 2 types, positive and negative comments. Then this was further adapted to a multiple-choice question for the second and third round. Regarding the % of **satisfaction of HK hotel design**, 3.3% design firms chose yes whereas 73.3% chose no, 3.3% selected others and 20% preferred N/C. Some typical comments from the interviewees expressed that no clear environmentally-friendly concept, lack of aesthetic quality in Hong Kong hotel design, lots of energy wastage, too opulent design, lack of imagination and

creativity etc. were the weakness of Hong Kong hotel design.

*For Q.8i, following Q.8, **which were the following(s) you were satisfied**, only 3.3% of the design firms chose the following 3 options, products had environmentally-friendly qualities, more services to replace product wastages, creative use of design elements respectively, no design firm chose complying to international environmental standards, whereas 93.3% indicated N/A.

*For Q.8ii, following Q.8, **which were the following(s) you were dissatisfied,** 46.6% indicated insufficient environmental management, 40% chose lack of design creativity and then 26.6% chose energy wastage.

For Q.9, regarding **improvement(s) in hotel design,** 62.7% indicated yes, 16.5 % chose no, 6.6% indicated others while 13.2% expressed N/A. Opinions from the interviewees expressed that ISO 14000 certification could be used as a means of corporate identity and more uses of natural materials etc. were some possible solutions.

*For Q.9i, **concerning improvement(s) in existing hotel design**, 53.3% indicated environmental management, 40% chose functions and 33.3% indicated N/A. *For Q.9ii, concerning the **3 mostly considered design features** (5 major areas selected within the hotel) **in existing hotel design which were left to be improved**, air-conditioning ranked first with 21 ticks, energy

ranked second with 19, and natural ventilation ranked third with 17. For the rest, building material and finishes with 15, waste disposal and treatment with 14 and landscape/greenery with 13. These rankings of design features could support the development of product identity in the present.

*For Q.9iii, concerning the **3 mostly considered design features** (5 major areas selected within the hotel) **in future hotel design which were left to be improved,** energy ranked first with 21 ticks, air-conditioning ranked second with 18, and then building shape and orientation ranked third with 14. For the rest, landscape/greenery, natural ventilation, building material and finishes and waste disposal and treatment all with 12 ticks respectively. These rankings of design features could support the development of product identity in the future.

*For Q.9iv, **regarding improvement(s) on external factors**, 53.3% indicated clients acceptance, 46.6% chose government regulation, 40% indicated reduction of excessive consumption through design. Lots of typical opinions expressed that it was important to seek clients acceptance as designers were service-providers to the society.

Section C Design Innovation

1.	**Design innovation is important for the effectiveness of environmentally-friendly designs in the present**	Yes (90.0%)		No (6.6%)	Others (3.3%)
1i.	**In the present, changes in design innovation**	should be :		Systematic Gradual Dynamic Others N/A	(46.6%) (20.0%) (40.0%) (6.6%) (6.6%)
2.	**Design innovation is important for the effectiveness of environmentally-friendly designs in the future**	Yes (93.3%)		No (3.3%)	Others (3.3%)
2i.	**In the future, changes in design innovation**	should be:		Systematic Gradual Dynamic Others N/A	(46.6%) (20.0%) (40.0%) (6.6%) (6.6%)
3.	**Culture as a source of innovation (e.g. Confucianism, Taoism and western philosophies)**	Yes (56.6%)		No (23.3%)	Others (23.3%)
4.	**Design innovation is important for the effectiveness of environmentally-friendly designs in the future**	Yes (90%)		No (10%)	Others (0%)
4i	**If yes,**	Culture can be used as business ethics It can convey symbolic values It can convey ritual meanings Others N/A			(33.3%) (66.6%) (33.3%) (0%) (20%)
5.	**Images used as cultural innovation**	Yes (70%)	No (20%)	Others (0%)	N/A (10%)
6.	**Corporate Identity is essential for the effectiveness of environmentally-friendly ideas**	Yes (56.6%)	No (30%)	Others (10%)	N/A (3.3%)
7.	**If yes, please choose 3 major areas of corporate identity**	Service Leadership Product/Organization			(53.3%) (33.3%) (20.0%)
8.	**Product identity is essential for the effectiveness of environmentally-friendly ideas**	Yes (46.6%)	No (36.6%)	Others (10%)	N/A (6.6%)
9.	**If yes, please choose 3 major areas of product identity**	Product concept Product delivery & services More service design to replace product			(60.0%) (26.6%) (20.0%)

Fig. 4.4 A Summary of Survey Findings (Section C Q.1-9)

For Q.1, regarding whether design innovation was important for the effectiveness of environmentally-friendly design in the present, 90% indicated Yes while 6.6% indicated No. *For Q.1i, concerning changes in design innovation in the present, 46.6% indicated systematic, 40% indicated dynamic.

For Q.2, regarding whether design innovation was important for the effectiveness of environmentally-friendly design in the future, 93.3% indicated Yes while 3.3% indicated No.

* For Q.2i, concerning changes in design innovation in the future, 46.6% indicated systematic, 40% indicated dynamic.

For Q.3, regarding **culture as a source of innovation,** 56.6% chose Yes while 23.3% chose No and others respectively.

For Q.4, whether **cultural ideas could be used as design concepts**, 90% indicated yes while 10% indicated No.

* For Q.4i, if the choice of Q4 was yes, 66.6% indicated **culture could be used** to convey symbolic values, 33.3% indicated culture could be used as business ethics and it could convey ritual meanings respectively.

For Q.5, regarding **images could be used as cultural innovation**, 70% indicated Yes while 20% indicated No, whereas 10% indicated N/A. Typical opinions from the interviewees expressed that images could be used as identity of design concept, which were visually communicable as promotion. Images should be used effectively if they were not used superficially.

For Q.6, concerning **corporate identity was essential for the effectiveness of environmentally-friendly ideas**, 56.6% indicated Yes, while 36% chose No, 10% indicated others and 3.3% chose N/A.

* For Q.7, as far as the **3 major areas of corporate identity** was concerned, 53.3% indicated service, 33.3% indicated leadership, 20% indicated product and organization respectively.

For Q.8, concerning **product identity was essential for the effectiveness of environmentally-friendly ideas,** 46.6% indicated yes, 36.6% indicated no, 10% chose others and 6.6% were N/A.

* For Q.9, as far as the **3 major areas of product identity** was concerned, 60% chose product concept, 26.6% chose product delivery and services and 20% chose more service design to replace product.

Section D Design Management

1.	**Environmental mission statement**	Yes (23.3%)		No (73.3%)	N/A (3.3%)
2.	**Environmental design standards & management systems**	Yes (26.6%)		No (70%)	N/A (3.3%)
3.	**Environmental quantifiable goals**	Yes (16.6%)		No (76.6%)	N/A (6.6%)
4.	**Environmental design manager or assigned staff**	Yes (13.3%)		No (83.3%)	N/A (3.3%)
5.	**Environmental committee**	Yes (6.6%)		No (90%)	N/A (3.3%)
6.	**Environmental policy in purchasing products & services**	Yes (16.6%)	No (73.3%)	Others (3.3%)	N/A (6.6%)
7.	**Environmental research & development in your products & services**	Yes (16.6%)		No (76.6%)	N/A (6.6%)
8.	**Environmental audit & reports for design planning**	Yes (6.6%)		No (73.3%)	N/A (6.6%)
9.	**Environmental training promoted before**	Yes (16.6%)		No (76.6%)	N/A (6.6%)

Fig. 4.5 A Summary of Survey Findings (Section D Q.1-9)

For Q.1, 73.3% of the responded design firms did not have this statement while 23.3% indicated they had **environmental mission statement** within their companies. Typical opinions from the interviewees expressed that for those who indicated Yes, most of their mission statements were informally documented, especially those small-sized design firms.

For Q.2, 70% indicated No while 26.6% indicated they had **environmental design standards and management systems.**

Some typical findings could be drawn from the interviewees. Most of the firms were small-sized design companies. The smaller the firms, the easier to communicate their environmentally-friendly ideas to their staff. However, as the manpower was limited, most of respondents had to devote their extra time and workload to set up their own management system, such as doing R&D, establishing their in-house library and resources. For the large-sized design firms, they preferred to adopt some well-documented systems, such as ISO 14000 and HKBEAM.

For Q.3, 76.6% indicated they did not have any environmental quantifiable goals while 16.6% chose yes.

For Q.4, 83.3% responded they did not have any environmental design manager or assigned staff while 13.3% chose Yes.

For Q.5, 90% showed that they did not have any environmental committee within their firms while 6.6% chose Yes.

For Q.6, 73.3% showed that there was no environmental policy in purchasing products and services while 16.6% responded Yes.

For Q.7, 76.6% replied they did not have any environmental research & development within their product and services while 16.6% chose Yes.

For Q.8, 73.3% indicated they did not have any

environmental audit & report for design planning while 6.6% shown Yes.

For Q.9, 76.6% of the design firms did not have any environmental training promoted before while 16.6% indicated Yes. As the findings show, on an average only about 20% or less of the design firms had their management measures. On the whole, most of the design firms who responded, did not implement any in-house environmentally-friendly management systematically.

For those who indicated that they had supported environmentally-friendly design, most of their practices were not well-documented and formally promoted. As environmentally-friendly design concepts were recently started in Hong Kong, the findings justified that only a few design firms had expressed their concern by practising the management tools within their design projects. Thus their organizational identities in adopting environmentally-friendly designs were still not concretely developed.

4.5.2 Follow-up Structured Interviews

Objectives:

To seek more detailed information from the interviewees for supplementing the questionnaires, especially those probing for cultural values and attitudes.

To clarify the design terms and meanings of questions if needed, as the environmentally-friendly design was a newly developed concept.

Processes

At the same time, 4 design firms were selected for in-depth interviews. Basically the interview questions were the same as the questionnaires. All the interviews lasted for about an hour. Places of interview were mainly in their offices, and were chosen at their convenience as they were quite time-conscious and busy. All interviews were taped for future scrutiny. Thus, more detailed information were deduced from in-depth interviews such as their difficulties, experiences and participation of design work. Further elaborations were raised for probing their opinions, their attitudes of environmental-shift and difficulties in implementing more environmentally-friendly design initiatives.

After receiving the feedback from the questionnaires, 4 structured interviews were arranged at the interviewees' convenience. Only on one or two occasions were filling of the questionnaire and personal interview conducted at the same time. In case of queries, the researcher elaborated and clarified the meanings of the questions.

Interview Duration:

As the interviewees of the design firms were very time-consciousness, the questions for the whole survey were kept to a short and simple format. With the consent of the interviewees beforehand, the required time usually lasted for an hour on average. The interviewees had sufficient time to answer the questions openly and thoughtfully.

Interview Venue:

The interview was usually held at the interviewees' office or conference room, which had been kept free from disturbance. Under this circumstance, the interviewees and the researcher could communicate more effectively. After the interviews were completed, the tapes were transcribed to supplement the primary data. Most of the information were compiled and analyzed in statistical formats for further analysis (See Appendix F).

CHAPTER 5

5. Analysis

5.1 Key Survey Findings

5.1.1 Organizational Identity (Values and Management Measures)

Types	No. of design firms which have considered environmentally-friendly design within their projects in the past 5 years
Architectural Firms (20)	16
Interior Design Firms (5)	3
Corporate Design and Advertising Firms (5)	5
Total (out of total 30 Firms)	24 (80%)

Reason(s) of implementation		
Minimize natural resources	Reduce cost which lead to cost saving	Bring 'Green' images to design firms
(56.6%)	(53.3%)	(50%)

Fig. 5.1 Survey: Values of Organizational Identity

The value of design firms can be illustrated through their projects and reason(s) of implementation. In order to avoid lip-service answer(s) of supporting environmentally-friendly designs, questions were raised for their projects involved and the reasoning(s) behind them (see Fig. 5.1). From the findings, 80% (including 20 architect firms, 5 interior design firms and 5 corporate and advertising firms) had indicated they considered environmentally-friendly

designs within their projects. Then, the 3 most considered factors were minimization of natural resources, reduction of cost which lead to cost saving and bringing 'Green' images to design firms respectively. The first factor was more related to environmental concern, whereas the second and the third ones were related to the well-being(s) at firm level, that is, for better budget control and corporate identity. On the whole, approximately half of the design firms had indicated about considering resources of the environment and the interests of the firm as their priorities in design factors.

5.1.2 Image-Creation (Corporate Identity and Product Identity)

Organizational Identity	Sizes of firms				
Levels of involvement	1-50	51-100	101-150	151 or above	Total
Low	17	5	2	3	27 (90%)
Medium	--	--	--	--	--
High	1	1	1	--	3 (10%)
Total (30)	18	6	3	3	30

Key:

Level of involvement (measures)	
Low	0-3
Medium	4-6
High	7-9

Fig. 5.2 Survey: Management Measures of Organizational Identity

The 9 management measures were divided into 3 categories according to the measure(s) of implementation. For those firms who had 0-3 measures, they were regarded

with a low level of involvement. Between 4-6, they were viewed as medium level, whereas those who had 7-9 were regarded with a high level of involvement. In order to have detailed analysis about the relationship between the level of involvement and the size of companies, sizes of design firms are divided according to their number(s) of staff. From the findings in Fig. 5.2, 27 design firms (90%) were regarded as having low level while 3 (10%) had a high level of involvement. Regarding those design firms having 1-50 staff, only 1 out of 18 design firms (5.5%) belonged to a high level of involvement. For those design firms having 51-100 staff, 1 out of 6 design firms (16.6%) had a high level of involvement. Then for those having 101-150, there was only 1 out of 3 (33.3%) had high levels of involvement. However, for the 3 largest-sized design firms, they only had a low level of involvement. On the whole, the findings did not indicate whether there was any direct relationship between these two variables. The level(s) of involvement depended upon the commitment of individual design firms. Among the 2 design firms having high levels of involvement, they chose a well-documented management system ISO 14001 as their management systems whereas the small-sized firm implemented their own management system and R&D. In the main, the design firms that responded did not recognize the effectiveness of adopting

the identity measures within their daily practices. Without a well-structured and organized system in their operations, these added difficulties in progressing to the environmentally-friendly design in Hong Kong.

Image is a means to express organizational identity. As hotel design projects were very complicated that included various kinds of product and services, the thesis focused upon 2 areas, namely corporate and product identity.

As derived from the findings (see Fig. 5.3), slightly more than ½ (56.6%) of the respondents agreed that corporate and product identity were essential for the effectiveness of environmentally-friendly design. For the former one, the design firms response showed that hotel service (53.3%), leadership (33.3%), product and organization (20%) were the 3 major areas under corporate identity. In general, about ½ (53.3%) considered the service of hotel design would be an influential means of promotion and communication to the society. For the rest, about 1/3 (33.3%) indicated that leadership of the hotel was important while only 1/5 (20%) agreed that organization and product played the least role of effectiveness. For product identity, the 3 major areas were product concept (60%), product delivery and services (26.6%), more service design to replace product (20%) respectively.

Similarly, slightly more than ½ (60%) of the design

firms indicated that the ideas of product were essential for the effectiveness of environmentally-friendly design. This finding showed that they were more concerned about on conceptual development before the production stage. Vihma (1994) explained that these concepts could extensively cover product origin, quality and performance, which could be further developed in the future. Next, slightly more than 1/5 (26.6%) chose the product delivery and services, that is, the post-production stage. Lastly, only 1/5 (20%) indicated that they preferred using more service designs to replace product designs. In fact, this was one of the core concepts of environmentally-friendly design in replacing quantity by quality design. However, derived from this finding, the design firms that gave such responses did not show much support for this concept.

There may be different reasons accounting for this. But in the main, low sensitivity in environmental attitudes may be one of the reason. Meanwhile, numerous researchers and organizations were exploring the policy implications of reducing the energy/material throughout so-called advanced economies. They concluded that the material intensity of consumption industrial countries should be reduced by a factor of up to ten to accommodate it, i.e. a "factor-10" economy (Rees, 1998, 118). This showed that the design firms who had responded had a low sensitivity of changing

quantity to quality design.

Images	Sizes of firms				
Types	0-50 (19)	51-100 (5)	101-150 (3)	151 or above (3)	Total (30)
Corporate Identity Service (53.3%) Leadership (33.3%) Product/organization (20%)	11	4	1	1	17 (56.6%)
Product Identity Product concept (60%) Product delivery and services (26.6%) More service design to replace product (20%)	10	5	1	1	17 (56.6%)

Fig. 5.3 Survey: Images (Corporate and Product Identity)

5.2 Key Structured Interviews Findings

5.2.1 Organizational identity (Values & Management Measures)

Design firms	Organizational Identity (Involvement of Projects)
Values	Any environmentally-friendly design within their projects in the past 5 years? Number of projects involved
1	Yes 2 Interior projects
2	Yes Several promotion pamphlets
3	Yes About 20 advertising campaigns
4	Yes In-house management

Fig. 5.4 Structured Interviews: Involvement of Projects

The 4 design firms who had responded were basically corporate design and advertising firms (see Fig. 5.4). All of them can be categorized as small-sized companies, with the number of staff employed between 1-50. The design projects where they have considered implementing environmentally-friendly design

ideas were varied, ranging from advertising campaigns, pamphlets to in-house management. For in-house management, this included paper recycling and improving colour accuracy in design projects.

Design firms	Organizational Identity Reason(s) of implementation
1	- Reduce cost which leads to cost saving - Bring "Green" images to design firm - Enhance customer satisfaction
2	- Reduce cost which leads to cost saving - Bring "Green" images to design firm - Minimize natural resources - Enhance customer satisfaction
3	- Bring "Green" images to design firm
4	- Environmental protection

Fig. 5.5 Structured Interviews: Reason(s) of Implementation

Among the 4 design firms, 3 chose to bring 'Green' images, 2 chose to reduce cost which led to cost saving, 2 chose to enhance customers satisfaction and 1 specified environmental protection (see Fig. 5.5). These support the findings that concern for the environment and corporate image of the design firms was what motivated them to work towards environmentally-friendly design.

On the contrary, they all had very low levels of involvement in their management measures (see Fig. 5.6). Through the interviews, they expressed that despite their understanding of these urgent needs; however, the existing design workload, extra time and effort spent in R & D, the clients disapproval, the freestyle of design culture within companies, all

affected their implementation of management systems for improving their organizational identity.

Organizational Identity	Design firms			
Levels of involvement	1	2	3	4
Low Medium High	None	Low(2)	Low(1)	Low(3)

Fig. 5.6 Structured Interviews: Management Measures of Organizational Identity

5.2.2 Image-Creation (Corporate Identity & Product Identity)

Design Firms	Images: Corporate Identity
1.	Yes - Images could be the identity of design concept. - Emphasis on quality of cleanliness & pleasant-looking in their hotel agenda
2.	Yes - Brand as functions and as integrity of product values
3.	Yes - Images could be better say as 'visual communication' - To implement green concept in corporate mission and visual communication. - More seminar is needed - Designers got to make more public speech.
4.	Yes - Aesthetics and Imagery create 'Identity' as environmental- friendliness - Being actual user and practitioner of 'Environmental-friendly' concepts - Disseminating/educating through practice in HK

Fig. 5.7 Structured Interviews: Images (Corporate Identity)

All 4 design firms indicated that they supported the view that corporate identity would improve the effectiveness of environmentally-friendly design (see Fig.5.7). Besides, they elaborated that the nature of corporate identity could stand for the design identity and imagery, to communicate the mission as a visual communicator, to create brand in quality and to be pleasing to the eye. In doing so, they would convey a strong sense of

exchange values to the society. Furthermore, some suggested that designers should share their success and results through public media and seminars. In other words, active communication to the society are some possible alternatives. Through design works, these could serve as effective models of disseminating knowledge and educating the public as well.

Design Firms	Images: Product Identity
1.	No
2.	Yes
3.	Yes - Base on a very strong design philosophy - Successful case study - Strong R & D in green product
4.	Yes - Overall aesthetic and material use - Production/manufacturing technology are environmentally sound - Disseminating/educating through practice

Fig. 5.8 Structured Interviews: Images (Product Identity)

3 out of 4 indicated that product identity could play an effective role in the Hong Kong environmentally-friendly design. Functional values such as performance in production, technology, materials were essential through careful selection and R & D (see Fig.5.8).

5.3 Case Study Comparison

Among the 30 design firms that had responded, only 3 had high levels of involvement in organizational identity through management measures. Even though the response rate was low, a comparative case could be used to support the argument that organizational identity will increase the effectiveness of environmentally-friendly design.

The case was TaoHo Design Architects, a local design company. Dr. Tao Ho, the company owner, was one distinct example of a promoter of environmentally-friendly design in Hong Kong. 2 kinds of datum were extracted from primary and secondary sources respectively. The former one provided key basic data for the thesis, while the latter one substantiated detailed information for the survey.

5.3.1 Company Profile

Dr. Tao Ho was the principal of the company. It was a locally practised design firm which was established in the 1960's. His business covered a great variety of areas, including hospitality, corporate, retail, exhibition & display, institutional, industrial & housing projects. His company provided various kinds of professional practices, namely conceptual design, space and facilities planning, technical planning, project management, project consultancy, materials & products, furniture design & suppliers, lighting design & suppliers and art (stained glass, sculpture, painting). The average number of employees in 2000 was 36.

5.3.2 Organizational Identity(Values & Management Measures)

In the past 5 years, he has considered some environmentally-friendly designs within his projects in Hong Kong such as the Giant Panda Habitat, Wing Kwong Church, Hong Kong Ocean Park and Lok Fu in Kowloon.

Fry's Thinking	Key Meanings generated from Fry's Thinking	Dr. Ho's survey feedback & secondary review
1. Dwelling	Twofold: (a) Being with others (b) Being with the world	Values in twofold: (a) Firm level: - To reduce cost which leads to cost-saving; - To bring "Green" images to design firm. (b) Social level/Environment level - It was the right thing to do as designers.
2. Thinking	Twofold: (a) Calculative thinking (b) Non-calculative (Meditative thinking)	Attitudes in twofold: (a) Instrumental: 'Greed' 'Ignorance' and 'Indifference' were the major pitfalls of environmental crisis in HK. (b) Intrinsic/non-calculative: He promoted 'low-tech, high IQ' in dealing with the environmentally-friendly design. It was a reciprocity to the creator to have 'harmony with nature'.
3. Building	Able to dwell with Eco-craft, i.e. Able to understand and make the best use of material and immaterial concepts	Actions: (a) Objects-Product basis: to learn and use materials effectively, such as solar energy for water cooling and heating. (b) Communication His concepts and ideas were actively promoted through mass media and design magazines. Strong leadership and organization, quality service and projects were his strategies in developing his corporate and product identity.

Fig. 5.9 Relationship between Fry's Thinking and Ho's Case

In order to compare the case details between Ho and Fry's thinking, 3 major areas were explored, namely

'Dwelling, Thinking, Building'. New concrete meanings were used as comparison variables (see Fig. 5.9). Under Fry's thinking, the 'Dwelling' values were divided into two (a) Being with others and (b) Being with the world. These could compare with Ho's reason(s) of implementation, his values could be divided into 3 (firm level, society and environment level). He was concerned in cost reduction, and bringing 'Green' images at the firm level. At the same time, he stated that it was the right thing for designers to do, which could illustrate his attitudes about the professional role of designers towards the environment.

Regarding 'Thinking', these would include calculative and non-calculative thinking (meditative thinking). He criticized that Hong Kong designers were mostly consulted for economic gains, so 'Greed', 'Ignorance' and 'Indifference' were the 3 major pitfalls of environmental crisis in Hong Kong. He declared that it was a reciprocity to have 'harmony with nature'. He strived for a higher level of global ethics as a global understanding of ecology, which was paramount to the ongoing modernization of the planet. His contemporary thought attains a harmony between cosmic forces and the energy of his creative gesture, calling this meeting point 'cosmic resonance'.

For 'Building', that is, able to understand the Eco-craft, in other words, able to understand and make the best

use of materials and immaterial concepts. Ho agreed that it was essential to learn and use the material properties effectively. In his R & D, he developed solar energy for water cooling and heating in Hong Kong and China Mainland buildings.

Design Identity (management measures)	
1. Mission Statement	His environmental mission statement for his design firm depended on the future of humankind.
2. Environmental design standards and management systems	They were learnt from natural ecology.
3. Quantifiable goals	They were set to make full use of all environmental elements gained which are given free from God.
4. Environmental manager or assigned staff	He himself took up the full responsibility of being the environmental design manager.
5. Environmental committee	An environmental committee was set by him in his firms as well.
6. Environmental policy in purchasing products & services	Effectiveness was his major key environmental policy.
7. R & D	He developed solar heat for hot water, heating and cooling.
8. Environmental auditing	He has environmental audit and reports for design planning (in-house or consultancy).
9. Environmental training & seminar	He has environmental training promoted before.

Fig. 5.10 Case Study: Management Measures of Organizational Identity

Out of the 9 management variables listed, his company has implemented all of them (see Fig.5.10). This can be regarded as a high level of involvement. The limitation of

this case is the shortage of concrete data and results received from its hotel design project.

Regarding the mission statement, he has developed some environmental statements for operating his design firm. Its significance lay on the future of humankind. His environmental design standards and management systems were learnt from natural ecology.

His environmental quantifiable goals were to take full use of all environmental elements gained, which were given free from God. He himself took up the full responsibility of being the environmental design manager in his company. He has set up an environmental committee in his firm as well. Effectiveness was the major key environmental policy in purchasing his products and services. Regarding environmental research and development in his products and services, he developed solar heat for hot water, heating and cooling. He conducted environmental audit and reports for design planning (in-house or consultancy). He had also promoted environmental training programs for his firm before.

5.3.3 Image-Creation (Corporate Identity & Product Identity)

Despite his indication that corporate identity was not related to the effectiveness of environmentally-friendly designs, in reality, his concepts and ideas were actively

promoted through mass media and design magazines (see Fig. 5.11).

Design firms	Corporate Identity
TaoHo Design Architects	- Corporate image had nothing to do with environmentally-friendly ideas. - However, from the literature review, he was very active in promoting his mission- global ethics, his organization and his services in design through architectural magazines and media.
	Product Identity
	- It is more related.

Fig. 5.11 Case Study: Images (Corporate Identity and Product Identity)

He tried to design and be involved in all his projects, no matter whether it was in Hong Kong or in China. Being well-established for more than 30 years, he developed a strong sense of leadership and organizational abilities, quality service and creative concepts in projects, and strategies in consolidating his corporate and product identity. Furthermore, he indicated that images could be an effective means as long as they were not used superficially in his survey feedback. To conclude, corporate identity could support the overall findings that it could affect the effectiveness of Hong Kong's environmentally-friendly designs.

In his opinion, design innovation was important for the effectiveness of environmentally-friendly designs both in the present and in the future. Design books and magazines, literature (philosophies, articles and journals), observation from daily lives, intuition, collective ideas from team work and research work were the major sources of environmentally-friendly design ideas in his projects. He agreed that cultural elements, such as Confucianism, Taoism and western philosophies could be used as a source of innovation, only if they were not taken superficially and literally. Although Hong Kong had been a British colony for 150 years, Sutton (1994) stated that Hong Kong was still subjected to Chinese traditional culture to a certain extent. These ideas could be used as design concepts only if they were dealt with sensitivity and creativity. He disagreed that images could be used in environmentally-friendly design if image was used just for the sake of an image. Regarding the means of image-creation, figurative forms, typology, colour, materials, active and passive solar design are the design elements he had implemented in environmentally-friendly design projects.

Although there is not much research on the effectiveness of environmentally-friendly hotel design in Hong Kong design firms before, 2 existing cases on hotel design changes can be used as comparative cases. As there

is no successful environmentally-friendly hotel design project found in Hong Kong so far, survey data have been divided into different sets for comparison (see Fig.5.12). The significance of these successful cases in other service industries could be used to support design identity in terms of management measures. (a) The first one was Hotel Nikko, which illustrated how present hotel design were improved through design and management (see Appendix G).

(b) The second one was Headland Hotel, which was recently completed in 1998, and could be used as a new holistic environmentally-friendly design in Hong Kong (see Appendix H).

Organizational identities	Hotel Nikko (1990- present)	Headland Hotel of Cathay Pacific Airways (1990- present)
1. Mission statement	Its mission has been formulated within the Code of Practice. (Appendix G)	It formulated its mission statement in 1992. (Appendix H)
2. Environmental design standards and management systems	Formerly, they were clearly stated in the Code of Practice. Since 1999, Hotel Nikko, has followed the ISO 14001 Environmental Management System Certification closely.	It incorporated a system of Environmental Management System (EMS) recording all environmental phases and performances.
3. Quantifiable goals	Clear goals were planned, including energy-saving, water-saving measures.	It targets to get ISO 14000 Certification for Headland hotel in 2000-2001.
4. Environmental manager or assigned staff	A specific staff has been assigned as environmental manager to take charge of the environmental policies and management in 1998. She needs to coordinate with all the heads of various departments.	CX has its environmental committee with an assigned environmental manager.
5. Environmental committee	Specific environmental committee was set up for the ISO14001 Certification in 1998.	Specific environmental office was set up.
6. Environmental policy in purchasing products and services	The sourcing products and services would conform to their 6R policy on Waste Minimization – Reduce, Reuse, Replace, Repair, Refill, Recycle.	With the achievement of ISO 14000 certification in 1997, CX committed to implement an EMS to monitor the building, design and operation.
7. R & D	It has established frequent research projects and co-operation with the local universities.	Environmental Program for 2000/2001, including EMS, training, noise, fuel consumption & emission, energy, waste, wastewater, indoor air quality, community sharing.
8. Environmental auditing	Both in-house and consultancy auditings have been used.	CX audited its environmental performance including its in-house, suppliers, and contractors, and published their reports for in-house and public.
9. Environmental training & seminar	Regular training with staff, sharing with clients, stakeholders, suppliers and community.	CX has organized their environmental training & seminars frequently since 1992.

Corporate Identity		
1. Service	'Green' color of logo stands for being an environmentally-friendly hotel. Clear environmentally-friendly concept is promoted extensively through pamphlets and websites.	'Green' color of logo stands for being an environmentally-friendly airlines. Clear environmentally-friendly concept is promoted extensively through pamphlets, conferences, seminars, websites and yearbook
2. Leadership	Mr. Leclercq has deep commitment towards environmentally-friendly designs and sought continual improvement from staff, suppliers, academicia and green groups. He won the IHA Environmental Award – Green Hotelier of the Year in 1995.	The airline missions have been undertaken by the Environmental Office as team leadership.
3. Product/Organization	The hotel won awards frequently for its events and activities before.	The airline won various awards for its environmentally-friendly planning and actions.

Product Identity		
1. Product concept	His sourcing products and services would conform to their 6R policy on waste minimization – Reduce, Reuse, Replace, Repair, Refill, Recycle.	Concepts have closely followed the ISO 14000 certification.
2. Product delivery & services	Hotel Nikko has issued letters to suppliers in English, Chinese and Japanese for providing green products in materials and packaging. Guest cards were issued for saving water and energy.	Concepts have closely followed the ISO 14000 certification.
3. More service design to replace product	Service design includes 6R policy. From 1991-1995, the expenditures of water, gas, electricity and diesel oil out of total reduced from 3.4% to 2.6%.	A holistic environmentally-friendly design including air-conditioning, energy, building materials & finishes, waste treatment & disposal, water/laundry, amenities, pest/fly control and fire extinguishers.

Fig. 5.12 Practical Cases: Identity and Image

5.4 Directions for Environmentally-Friendly Design in Hong Kong

Directions		
Internal areas of improvement	Environmental management Functions Create environmental meanings through styles	(53.3%) (40%) (13.3%)
Improvement on external factors	Clients acceptance Government regulation Reduction of excessive consumption through design	(53.3%) (46.6%) (40%)
Changes	Present - Systematic (46.6%), Dynamic (40%) Future - Systematic (46.6%), Dynamic (40%)	
Sources	Culture (eg. Confucianism, Taoism and western philosophies) as a source of innovation	(56.6%)
Design Concepts	- Convey symbolic values - Used as business ethics - Convey ritual meanings	(66.6%) (33.3%) (33.3%)
Means	Images	(70%)
Corporate Identity	Service Leadership Product/organization	(53.3%) (33.3%) (20%)
Product identity	Product concept Product delivery and services More service design to replace product	(60%) (26.6%) (20%)
Design features	Present hotel design - Air-conditioning - Energy - Natural ventilation Future hotel design - Energy - Air-conditioning - Building shape & orientation	(21) (19) (17) (21) (18) (14)
Design elements	- Materials - Figurative forms - Typology	(76.6%) (33.3%) (30%)

Fig. 5.13 Directions of Environmentally-Friendly Hotel Design

From the findings of the surveys and interviews, there were some indications about new directions for environmentally-friendly designs in the present and in the future (see Fig. 5.13). Regarding internal improvement, slightly more than ½ (53.3%) of the responded design firms chose environmental management, 40% chose functions of materials used; whereas only 13.3% chose to create environmental meaning through styles. Although the overall involvement of the management measures were low, some indications here show that more and more design firms started to be concerned about how to operate in a systematic manner for better effectiveness. For the large design firms, they preferred some well-documented management measures with certification eg. ISO 14000 or qualified building systems eg. HKBEAM. For the small-sized companies, they might follow and refer to some existing management documents as guidelines.

As far as improvement on external factors, 53.3% of the design firms that responded chose clients acceptance. Then 46.4% chose government regulation whereas 40% chose reduction of excessive consumption through design. From the figures, the design firms were quite client-driven as service-providers. Also, they were law-abiding, command-and-control types in response to the environmentally-friendly design. At the same time, slightly

less than ½ of the design firms recognized the role(s) and effect(s) of design in cutting down excessive wastage and resources.

Nearly most of the design firms (about 90%) agreed that design innovation was important for the effectiveness of environmentally-friendly design in the present and future. Only slightly less than ½ (46.6%) of the design firms preferred systematic innovation changes while slightly less than ½ (40%) chose dynamic changes. The design owners expected to run their environmentally-friendly design projects in a systematic manner for efficiency and effectiveness. In the midst of internal and external problems, they were rather careful or even reactive in making any drastic changes. Besides, 40% would like to have dynamic changes in this regard.

Regarding the sources of cultural innovation, 56.6% agreed that Chinese philosophies eg. Confucianism, Taoism and western philosophies were some effective means for promoting environmentally-friendly designs. More than ½ of the design firms (66.6%) that responded agreed that it could serve as design concepts to convey symbolic values, 33.3% agreed that it could be used as business ethics as well as conveying ritual meanings.

About 70% indicated that cultural innovators could be effectively communicated in terms of images. There

were some controversies over the term 'Images' (see Ch 1 – Definition of Terms). A few design firms suggested that images should not be used superficially rather in a sensitive and creative way. In order to externalize the intrinsic values, corporate and product identities were used to express the organizational identity. Corporate Identity was commonly recognized as visual communication such as symbols or images. In order to broaden the meanings of corporate identity, some information was drawn from Aaker (1996) under the brand identity system. This turned out to be a relevant variable as hotels were viewed as a class of brands after the establishment of the 'Star' system. Under corporate identity, slightly more than ½ of the design firms (53.3%) that responded chose service, in other words, intangible quality of design service such as assurance, readiness and so on. Then 33.3% selected leadership and 20% chose design product as well as organization. As far as product identity was concerned, 60% chose product concept whereas 26.6% selected product delivery & services and then 20% chose more service design to replace product design. Here the design firms tended to choose variables during the conceptual stage, next the post-production stage and finally turned material into immaterial design stage, which is the core concept of environmentally-friendly design; here the findings indicated

that the understanding of the concept of an environmentally-friendly design in these Hong Kong design firms was still in its formative stage.

The 3 most considered design features were air-conditioning, energy and natural ventilation in the present hotel design whereas in future hotel designs were energy, air-conditioning, building shape and orientation. In fact, these elements of utilities have been researched for better efficiency in the past decade already.

However, design innovation could be used in presenting these design features through design elements. From the findings indicated, 76.6% of the design firms that responded chose materials, 33.3% chose figurative forms whereas 30% chose typology.

With the key findings listed, the effectiveness of environmentally-friendly design could be improved through the organizational identity measures as strategic means whereas the new directions could be used as the guidelines and criterion for future strategic and operational planning.

5.5 Summary

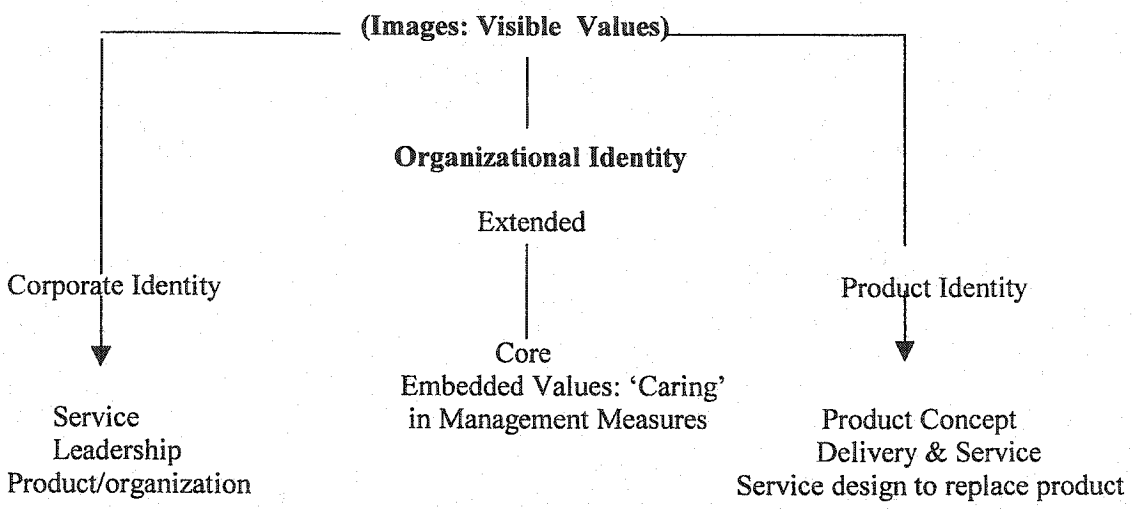


Fig. 5.14 Core and Extended Concept of Organizational Identity

The findings of supporting environmentally-friendly design in terms of organizational identity, product and corporate identity showed a low to medium level. However, the majority of the design firms indicated that they were not satisfied with the present hotel design; they would also like to look for more innovation through cultural variables, so there was potential for design changes. With the findings derived, some more variables could be added under the new identity model (See Fig. 5.14).

CHAPTER 6

6. Discussion:

Overview

The research started from the use of Dr. Tony Fry's thinking, the contemporary design academia and practitioner. Instead of involving into the controversial issues of 'sustainable growth' verus 'sustainable development' or 'weak' verus 'strong sustainability', he initiated his own concepts practically as 'industrial culture' in 1990s. 'Sustainments' is the term being used to represent his set of thinking nowadays after changing over from 'Ecodesign', which was developed during his earlier stage. It was originated from the study of cultural philosophies on environmentally-friendly design, including design projects, research and management. In fact, he integrated cross-disciplinary knowledge together stemming from the intrinsic values before practices. He emphasizes the value of 'Caring' which can be strengthened by 'Images' and 'Management' for improving the environmentally-friendly design as the 'Initial' stage. He shared similar propositions with Dr. Tao Ho, a local design theorist and architect in building environmentally-friendly design values and attitudes beforehand. In applying to my study, I conducted an initial explanatory research on translating Fry's abstract and new values to concrete practical terms in Hong Kong context. Since this is a study of complicated human beings towards ecological culture, through the exploration of the case study on the attitudes of design firms towards environmentally-friendly design in general and hotel design, some 'pattern thinkings' can be identified as interconnected thoughts or relationships of values, corporate and product identity during the triangulation

study. In doing so, it can specify a sequence of phases or links parts to a whole Fry's model (Creswell, 1994, 94).

The research questions addressed in the thesis were divided into 2 parts, the first part was descriptive facts, namely the experience, involvement, organizational identity and image of the Hong Kong design firms towards environmentally-friendly design. The second part was the exploratory part probing for the effectiveness of environmentally-friendly design in relation to the identity and image of Hong Kong design firms. Regarding the questionnaires, 100 copies were sent out to some selected architectural, interior design, corporate design or advertising companies. This aimed at researching the attitudes of environmentally-friendly designs in general and hotel design in specific. Complete, usable survey questions were received from 30 design firms, with a percentage of 33.3%. Key findings were illustrated in cross-tabulation tables (see Ch.4-5) and in histograms (see Appendix E). Then 4 out of 30 (13.2%) design firms that responded attended the structured interviews for more detailed information about their values, attitudes and involvement of environmentally-friendly design projects. This was followed by a comparative case study for supporting the explanatory research of Fry's thinking in applying in local context. With the use of focus group interviews during the pilot test, one relatively successful local case study as a cross reference, these strengthened the feasibility and internal validity of the study. The contribution of the study and knowledge are twofold, addressing to the theoretical level and practical level respectively. The former one is to build up a localized model with the inclusion of the survey findings, the latter one is to bring forth the design direction(s) in the present and

future of Hong Kong hotel design.

Elements	Content
Research Methodology	Descriptive (descriptive approach) and Explanatory (relational approach) Research
Theoretical framework	Based on Fry's thinking (Values, Organizational identity, Images) Testable variables: (a) using Willig's – Values expressed in management terms; (b) using Aaker's & Vihma's – Corporate identity; (c) using Vihma's & Cooper – Product identity
Survey format	Survey & interview
Types of data	Combination (qualitative & quantitative)
Data Collection Method	Questionnaire & interview
Data Analysis Method	Statistical: histogram & cross-tabulation Non-statistical: interview (content analysis)
Level of Measurement	Categorical (Nominal)
Temporal Dimension	One-shot Cross-sectional
Sample Selection	Criterion-based selection (architectural, interior design & corporate design firms)
Research results	- Questionnaires: 33.3% of the design firms responded may not fully support the verification of Fry's thinking applying into Hong Kong situation. - Complemented by the 4 personal interviews with structured questions to support the environmentally-friendly design in H.K. situation. - Comparison with 1 local case study.
Contributions	Theoretical framework: - New Fry's model Practical framework: - New Design Directions
Implications	Design Profession - Strategic & Operational level Design Education Design Management

Fig. 6.1 A Summary of Research Methodology and Outcomes

6.1 Theoretical Significance: New Model of Fry's Thinking

6.1.1 Implicit Characteristics of Fry's Thinking on Identity

With the findings derived, some new meanings can be discerned and briefly described in this section:

(a) The stronger the sense of environmental responsibility, the stronger the organizational identity. Previous exposure to environmental experiences would be stronger motivation for their changes: these were directly related to their specific and general understanding. They were also culturally-driven. The more they subjected to environmental movement and practices before, the more commitment they had. Typical findings were derived from some interviewees, 2 had been educated in North America, which were more environmentally conscious in practice. The other 2 were asked to consider the environmental concepts according to their projects and clients' requirements. While comparing with the initial interviews of the pilot tests 2 years ago, nearly all of them expressed that great difficulties were present while implementing environmentally-friendly designs in Hong Kong. Meanwhile, there were changes in the attitudes of design firms in these few years, but they were still reactive in responding to these environmental issues as they were very pragmatic and profit-driven. With the overall findings

derived, 2 main types of design firms can be seen: first, those bearing environmental responsibility were more proactive in developing their projects and management; secondly, many of them were still customer-driven and law-abiding, they would take passive roles as service-providers. These could be fully exemplified through their degree(s) of environmentally-friendly management. Extra effort and time would be devoted through their self-initiatives as responsibilities rather than for economic values. 80% of the design firms indicated that they had considered environmentally-friendly ideas within their projects in the past 5 years. However, they have not implemented much systematic practices in their management.

(b) Implicit characteristics of Localization of Fry's Image

The stronger the organizational identity, the more effective the image

Based on the results obtained, more systematic design innovation should be disseminated through promotion and education. Generally, most of the design firms who responded had a positive attitude towards Chinese and western philosophies as sources of cultural innovation, irrespective of whether they were obtained from the

questionnaires or from the interviewees. Further research could be developed by re-designing these philosophies and expressing them through image. At the same time, image could be used as an effective communicator for linking the core concepts of the organizational identity.

The environmentally-friendly design concept has gained momentum in recent years. If the design firms had stronger organizational identity, in other words, if more management measures had been implemented, then these cumulative results could be used as effective indicators of corporate identity. At the same time, with the environmentally-friendly design projects they achieved, these would consolidate the product identity.

6.1.2 A Localization View of Fry's Model

Purposes

To build up a cross-disciplinary thinking using cultural concepts and management terms, that is, caring, organizational identity and image for the effectiveness of environmentally-friendly designs in Hong Kong.

(a) To establish a simplified model out of a complex concept for easier communication.

(b) To bridge the gap between Fry's thinking and the existing situation in Hong Kong, from implicit values to tangible symbol.

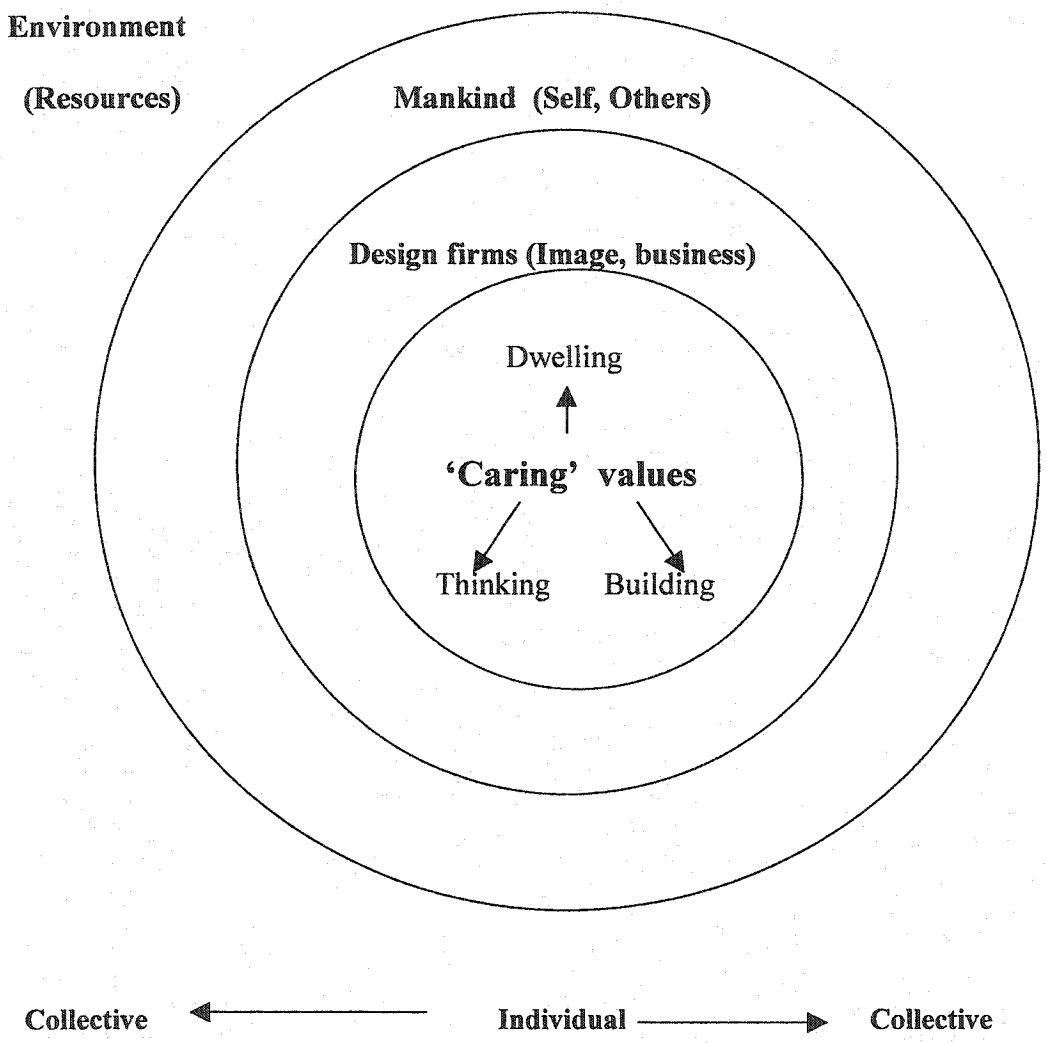


Fig. 6.2 The Localization Model of Fry's Thinking – Intrinsic "Caring" Values

Structure of the model

In order to show Fry's thinking of 'Caring, organizational identity and image' more clearly, 2 conceptual models are built for illustration. (Fig. 6.2 and Fig. 6.3)

Regarding Fig. 6.2, a circular model is built of 3

layers. The model originates from 'Caring' as there is an absence of 'Caring' in the environmentally-friendly movement in Hong Kong.

In view of this, modifications were inevitable in applying Fry's thinking into the local situation. The problems can be broadly divided into external and internal factors, i.e. design professions in Hong Kong. Regarding the former one, those factors can be subdivided into four aspects. Fry, as a contemporary practitioner, has explained that sustainable design should develop ethos as 're-think', 're-make', and 're-build' within the embodiment of 'Caring'. In the course of *re-think*, our sense of 'Caring' attitude in terms of craft value will be manifested. It is a means to sustain a re-creational environment, on one hand one not devoid of advanced technology whilst one still subordinates it to the sustainable development. With the *re-making*, craft product will be produced. Craft in this context, is a form of knowing the 'materiality', care in making and the quality of the made. Furthermore, it is important to *re-build* craft knowledge and skills which is a key element of an applied ecology, centers on the conservation of skill that maintains re-creational knowledge for the present and future use.

6.1.2 Knowledge, in fact, it is actually posited between mental thinking and making. Under the notion of sustainable development and consumerism, there are 2 basic approaches. To increase the life-span of products and also to reduce people's desires to consume. The outcomes of sustainable design would conform to certain ecological, technological and social performance. As these factors are concerned, they have to subordinate themselves to aesthetic of change that powers humanity towards a culture of survival. With this aesthetic, design needs to create objects of desire which deliver the material fabric uniting with changing values. Moreover, this does not prelude the object giving pleasure to its maker and giving a pleasure of appearance and use across its lifespan.

The structure of the model (Fig. 6.3)

Another structure of the model is consisted of a set of concentric circles with the centre represented by organizational identity. It is basically consisted of 3 layers of conceptual components.

The centre: (internal values) of Hong Kong design firms

Within the firm level internally, the co-operation and the consciousness of the staff will improve the effectiveness of environmentally-friendly designs in Hong Kong. With references to the relatively successful case of TaoHo Design Architects provided (see Fig. 5.9 – Fig.5.11), it will reinforce the relationship as follows: the stronger the consciousness, the stronger will be the identities.

The first level:

Externally, the stronger the relationship between the corporate identity (service, leader and organization) and product identity (product concept, delivery and distribution), the more effective will be the environmentally-friendly design.

Second and Third level: Hong Kong society

Most of the firms that responded pointed out that the presence of external factors namely, resistance from clients' acceptance and a lack of government regulation. So the stronger the consciousness of the clients, the stronger will be the identities. There is also a direct relationship between the government support and identities, namely the government regulation. So the initiatives and consciousness from the clients as well as the law-abiding approaches are necessary for such changes in the environmentally-friendly design in Hong Kong.

Causal Relationships Derived from the Model

Based on the empirical findings and the concepts embedded in the model, several propositions were derived.

(a) At the firm level, there was a **direct relationship** between the identities and their design attitudes and management. Since identities were underlying intrinsic values, they were more easily communicated through corporate and product identities visually. The stronger the relationship between corporate and product identities, the more effective was the environmentally-friendly design.

(b) At HK society level, there was an **inversely proportional relationship** observed. The more resistance exerted by the external factors, namely clients' unwillingness, the less effective was the environmentally-friendly design. However, there was a **positive relationship** between the organizational identity and the government regulations. The stronger their acceptance towards environmentally-friendly design, the stronger would be the design progress.

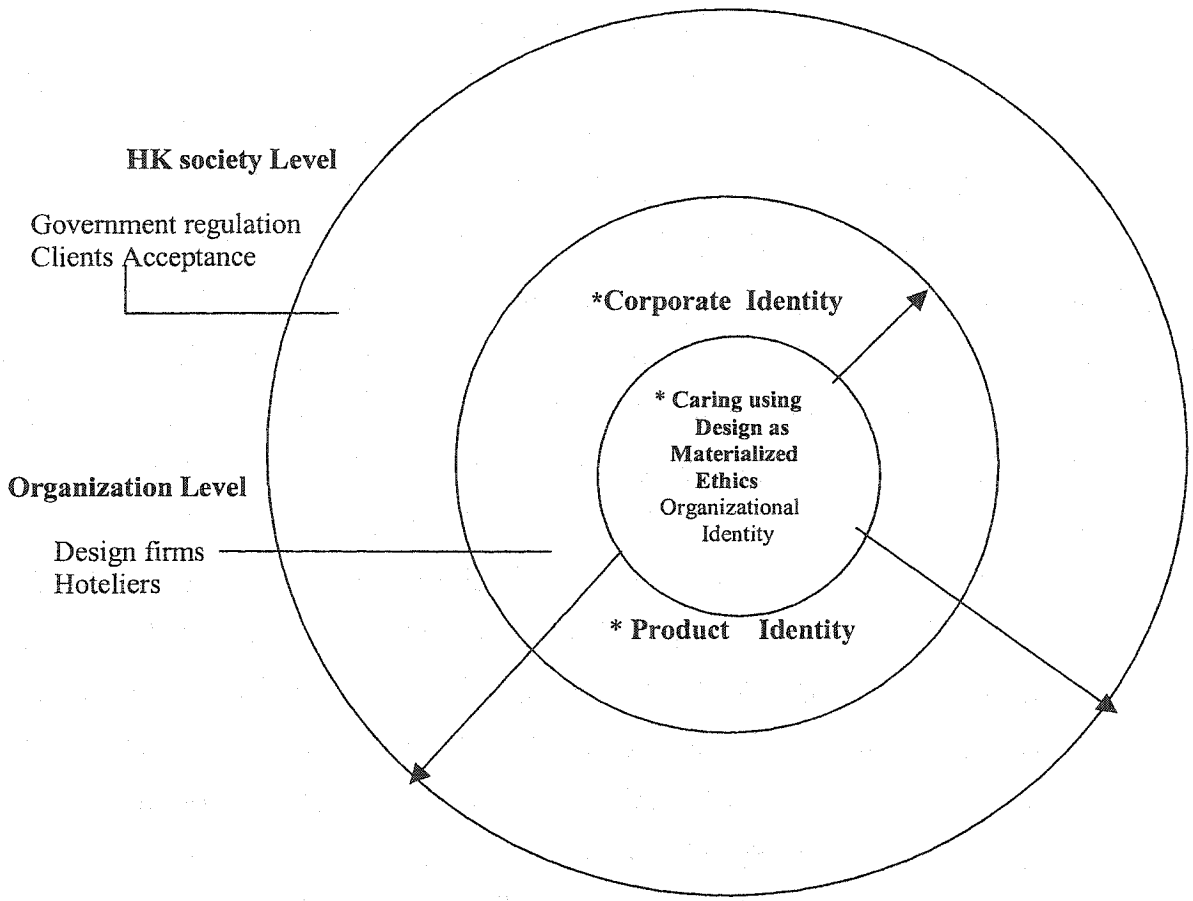


Fig. 6.3 The Localization Model of Organizational Identity and Image

→ Communication Forces

*Strengthening of organizational identity through management measures.

*Corporate Identity: Service, leadership, product and organization

*Product Identity: Product concept, delivery and replacement by service design

Since environmental concern had been initiated in Hong Kong for a few decades, it was found that the design firms preferred to take stepwise process of change, it was particularly difficult for the Hong Kong society to be commercially-driven under such an intensive-consumption. As criticisms raised that there was a shortage of design consciousness in response to environmentally-friendly designs, changes and thinking were essential in Hong Kong – a place of intense urban ecology.

Since little design research had been conducted locally before, it was inevitable to have modifications on Fry's thinking, the possibility was explored to apply it locally. His thinking could be used as a general conceptual framework to start with. In the midst of all the external and internal problems of Hong Kong, the researcher found this concept was very difficult to pursue immediately as it was a radical ideal to proceed along and work with. However, Fry noted that his thinking was also subjected to critical analysis and interpretation. So a localized model was formulated in order to bridge the existing gaps. It was a dynamic model rather than a static model. In other words, it offered flexibility for continual changes in order to meet the local needs for the present development. It provided directions and different stages of environmentally-friendly designs with regard to the existing

Hong Kong design profession. So this localized model could be viewed as the initial stage of Ecodesign. Although Fry changed his concepts from Ecodesign to 'Sustainments' later, he still admitted that the value of 'Ecodesign' could be viewed as a strategic and transitional stage, which could be offered as an ongoing process to break away from the existing paradigm. (Fry, 1998, 61)

Furthermore, Fry stated that no sustainment per se could be called sustainable, both because sustainability was an ideal, something to be pursued in many, innovative and changing ways, and because the sustainability of any sustainment was something that only emerged over time. Sustainments were processes, ways of actively promoting and sustaining what was more sustainable about a project[43]. In order to elaborate Fry's concept into details, the researcher used Minai's (1984) divisions of ethics to illustrate the stepwise changes. Any value-laden thinking for changes broadly consisted of 3 stages- 'What is', 'What can be' and then 'What ought to be'. (see Fig. 6.4) Although Fry's thinking has emphasized its ideal approach – 'Ought to be' in its mission statement; however, it also offered flexibility for progressive changes in meeting the local needs. Such approaches involved 2 basic steps: firstly, the passive approach of resources minimization, and secondly, the

[43] Information is extracted from Http://www.edf.edu.au/Sustainments/What_are/Story.htm, p.4

proactive approach of innovative changes in lifestyles and work practices. Taking the spatial, temporal and human dimension into consideration, without the successful results of resources minimization, it was not likely for Hong Kong design firms to move towards innovative changes massively on a large scale immediately in the midst of the existing problems.

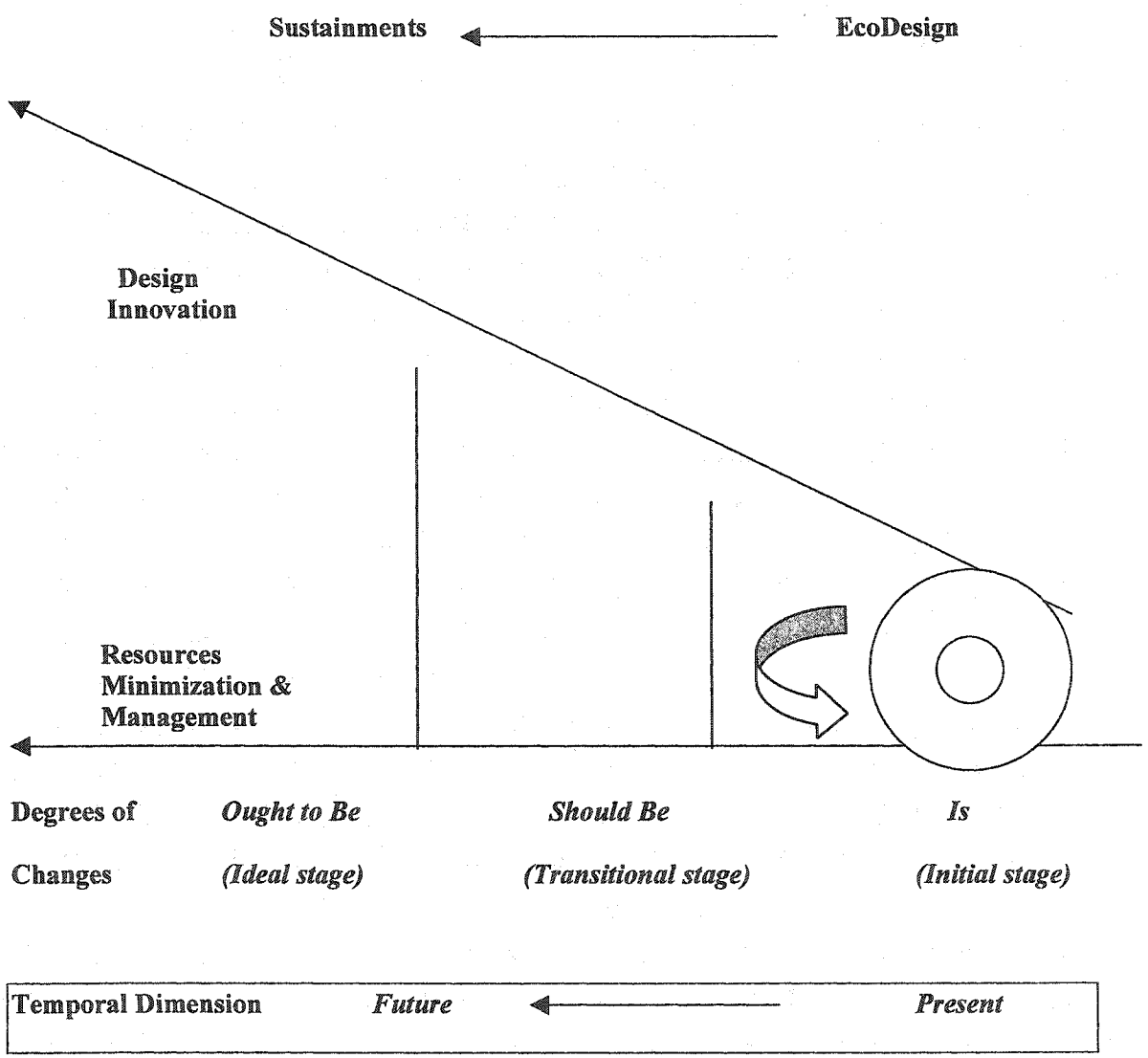


Fig. 6.4 The Localization Model of Fry's Thinking – From Initial, transitional to ideal stages

6.2 Practical Significance of Hong Kong Design

With the findings derived from the attitudes of design firms, a new design agenda can be generated for the hotel design. These can be broadly divided into new directions and design activities.

	Planning Design	Implementation & monitoring
Directions	*Strategy* ➢ Define corporate strategic objectives with mission statement ➢ Ensuring design strategy covers products, communications and environment	*Documentation/ Communication* ➢ Communicate statement of mission/objective *Projects* ➢ Determine priorities for programmes
Design activities	*Strategy* ➢ Maintain awareness of design trends ➢ Contribute to design objectives and strategy *Policy* ➢ Inform policy and define design specifics of corporate identity e.g. materials, figurative forms, typology, colours, shapes, sizes	*Projects* ➢ Brief ➢ Research ➢ Concept

Fig. 6.5 Proposed Direction and Design Activity of Design

Source: Adapted from Cooper, The Design Agenda (1995: 134, 273-74)

For design direction, new design planning and strategy are needed with a mission statement defining corporate strategic

objectives. The mission statement will take products, communications and other environmental factors into consideration. Under implementation and monitoring, there is a need for documentation and communication of the mission statement through organizational identity and image. At the same time, priorities will be determined for new environmentally-friendly design programmes. For planning the environmentally-friendly design activity, strategies can be formulated to heighten its awareness and design trends with design objectives defined. Besides, design policies can be set up for implementation, for example, using the design elements of materials, figurative forms and typology. More operational projects can be conducted through design brief, research, concept based on the product and corporate identity as a means of image innovation.

In pursuing this research, some guidelines were suggested by Hills (1998). An on-going strategic changes and collaboration among different interested parties were necessary for sustainable development. Moreover, a focused study was necessary to seek possible solutions in dealing with different environmental problems. With a further elaboration on Bond's model about the ecological perspectives of the Chinese people (1986), 3 dimensions and/or should be taken into consideration, namely: spatial, temporal and human factors. Through this research, the findings could be formulated as the initial and also later transitional stage of Fry's

thinking. Since there were on-going changes, this was regarded as a dynamic rather than a static model, continuous practices and education were the means of accumulating achievements.

6.3 Theoretical Implications of Hong Kong hotel design

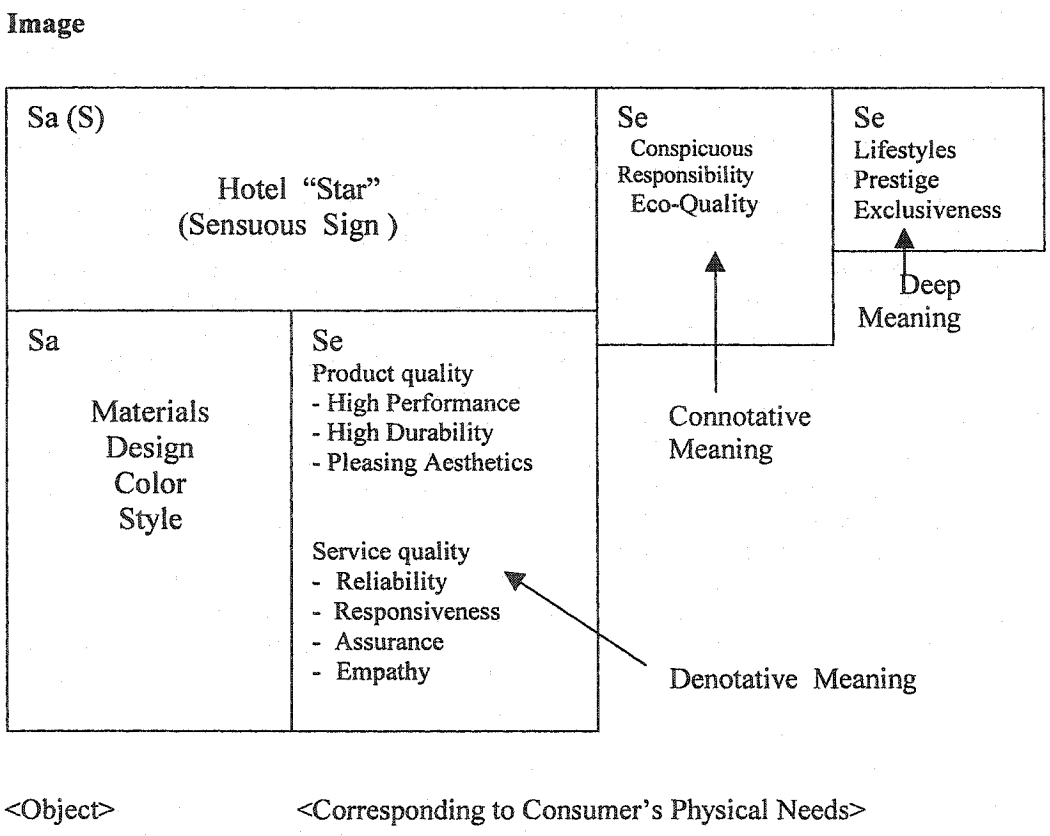


Fig. 6.6 Image:The Semiotic Structure of An Environmentally-Friendly Hotel
Source: Adapted from Umiker-Sebeok ed. (1987)

When comparing with the previous semiotic model of conspicuous consumption in Ch.3 (See Fig. 3.5), a new model can be re-modelled with the new meanings created. (See Fig.

6.6) At theoretical level, new meanings can be developed through semiotics, which is commonly expressed in terms of advertising signs, may take various forms of expression in promoting environmentally-friendly design in Hong Kong. These are often the aesthetic components of the sign which are used as indicators of the nature of the establishment known as 'corporate identity'. This is illustrated through design elements in the sign, typology, symbolization, etc. According to Peirce[44], signs can be expressed in three modes, i.e. icon, index and symbols respectively (see Fig. 6.7).

Iconic Signs	Indexical Signs	Symbolic Signs
Signified by :		
Resemblance	Causal connection	Convention
Process:		
Can see	Can figure out	Must learn
Ways of expression:		
1. Color 2. Material 3. Metaphor 4. Style 5. Environment	1. Tool 2. Direction/Form 3. Marks of use 4. Trace 5. Signals (light & sound) 6. Smell 7. Touch 8. Markings	1. Graphics 2. Colour 3. Form 4. Position /postures 5. Material

Fig. 6.7 Table showing the distribution of the modes of sign functions
Source: Adapted from Vihma (1995, 141) & Berger (1984,13)

[44] The information is derived from Jay, Zeman, "Peirce Theory of Signs" in T. Sebeok, *A Perfusion of Signs*, 1977:36)

6.4 Limitations

First, this study is a cross-disciplinary research covering cultural thinking and expressed through design and management terms. In the course of research, simplification of concepts was inevitably occurred for the sake of clarity. Such situations were encountered when using 'environmentally-friendly design', a more general term in Hong Kong, to cover all the environmental terms e.g. Green, Ecodesign and Sustainable design for reducing the controversies to a minimum. Also, in order to interpret Fry's thinking as concrete variables, some of his terms such as 'Dwelling, Thinking, Building' were interpreted from conceptual variables to testable variables to facilitate easier analysis and comparison during the research.

Second, due to the time-conscious attitude of the design firms, more attitude-probing to behavioural questions with well-defined variables could be formulated. Moreover, the survey could also be arranged in ordinal or interval scales for detailed analysis with more defined variables later.

Thirdly, regarding the 4 interview samples, all of them were belonged to corporate and communication design firms, which were small-sized in scale. Due to the time-conscious mentality and technical difficulties with other companies, the findings should be viewed with caution due to the sample bias.

With the supportive attitude of those responded to Fry's organizational identity and image, it is unknown whether those design firms which completed and returned their questionnaires were quantitatively different from those design firms which did not return their response. It is possible that the former group represented a more involved group to support environmentally-friendly design in Hong Kong than those who did not return the survey.

On the other hand, the strengths of the survey had kept as short questions as possible with nominal options and multiple choices provided. As a result, the answers responded gave an initial data about their attitudes towards environmentally-friendly designs in general. Based on these findings, more variables were developed and elaborated from organizational identity and image in terms of design factors, design innovation and design management.

6.5 Review Objectives and Research Questions

The obtained results satisfied the objectives of the field research in 2 directions. First, it has provided basic descriptive data including their involvements and practices of the existing design firms in Hong Kong. Secondly, most of the design firms agreed positively on the need for change both in the present and in the future. Cultural innovation through identity and images was one of the possible ways for the effectiveness

of the environmentally-friendly design in Hong Kong.

Why are there inconsistencies between attitudes of support and level of involvement?

Acceptance and changes to environmentally-friendly design will take time, effectiveness and successful results will be influential but cumulative over time.

"Most urbanities have no difficulty paying lip-service to vague ideas of environmental protection. However, when it comes to changes in behaviour or habit, especially when it involves personal sacrifices, it is much more difficult to actualise" (Chan, 1997).

The findings of this study confirm the literature listed above which suggested there were discrepancies between supportive attitudes and practices in design situations. More actual findings about their difficulties have been obtained from the interviewees after the interview. Most of design firms that responded were small-sized companies, which employed less than 50 staff. Typical opinions from interviewees expressed that they had to put in extra time and effort in developing and promoting environmentally-friendly design in-house. Due to the limited knowledge, manpower and budget, they just promoted their environmentally-friendly design measures informally without systematic planning and documentation. They indicated that they had carried out their

missions in their daily operations rather than following any package of management measures, which were very expensive. With the heavy workload, limited budget and knowledge about environmentally-friendly designs, lack of external support from clients and government were all the difficulties they were facing.

Cumulative growth of communicating the effectiveness of environmentally-friendly design to the society take time: with the findings derived from survey and structured interviews, characteristics drawn from the western environmentally-friendly design and the local study, any stages of changes took time to evolve. Such changes were accelerated with continuous efforts and cumulative results through identity-creation and image communication (see Fig. 6.3). This was particularly (the case) difficult if the movement has to evolve and develop amid different ideologies and degrees of commitment from different parties.

The contribution will be twofold: the integration of identity values and images in general, and the application of service design in Hong Kong hotels in specific.

The research findings indicate that (see Fig. 6.8):

(1) Fry's thinking could be used as a general conceptual framework in applying to the environmentally-friendly design in Hong Kong. In order to fill up the existing

gaps between the ideal from the excessive consumption situation of Hong Kong, a localized model basing on the current and future attitudes of design firms is needed. Through the study, Fry's Ecodesign can be used as a strategic and initial stage of design. It should be viewed as a dynamic model which subjects to on-going improvement.

(2) A series of causal and inter-relationships are drawn: the stronger the identity values, the more identity measures will be implemented; the stronger the identity values and measures implemented, the more impactful will be the organizational image, then the more actively the organization image communicates to the society, the more effective will be the environmentally-friendly design. The significance of this study has illustrated that Fry's thinking can be modelled to a more effective and wider ranging implementation in Hong Kong through stronger organizational identity and communication through images. Effective communication is the core idea of changing organizational identity turns into image; degrees of acceptance and changes to environmentally-friendly designs will take time; effectiveness and successful results will be influential but cumulative over time.

(3) Even the experiences of the Hong Kong design firms were very limited and having low levels of involvement

in environmentally-friendly design before; however, over 90% of the design firms indicated that they were not satisfied with the existing hotel design. Besides building up a 'Caring' attitude in terms of strengthening organizational identity and communication through images as intrinsic value, external factors such as client-driven and law-abiding are motivators for changes.

(4) New directions of environmentally-friendly design in Hong Kong can be divided into 2 aspects, that is knowledge claims and value claims. For the former one, Fry's thinking can be addressed to strategic and operational levels in terms of corporate identity and product identity. For the latter one, new values can be explored both in theoretical and practical levels. Such implications will be substantiated by localizing Fry's thinking in Hong Kong context, basing on the key meanings of Fry's thinking centred on 'Dwelling, Thinking and Building'. These implications will be adapted with the further exploration of his core ideas – the integration of Fry's environmentally-friendly thinking, which was originated from Heidegger's thinking, with Chinese philosophies can be developed as potential source of identity, then furtherly generate into symbols in terms of images as materialized ethics (see Fig. 6.8 for details).

Research Question	1. How to verify, expand and develop Fry's thinking?		
Research Methodology		**Findings**	
Fig.2.4	Tools of Change in Fry's Thinking	Fig. 6.1	A Summary of Design Methodology & Outcomes
Fig.2.6	The Meaning of Identity in Fry's Thinking	Fig. 6.2	Localized model: relationships
Fig.2.7	The Variables of Organizational Identity and Image	Fig. 6.3	Localized model: new variables
Fig.2.9	The Meaning of Image in Fry's Thinking	Fig. 6.4	Localized model: stages
Fig.2.10	Fry's Schematic Model of Organizational Identity and Image		

Research Question	2. How it is localized to the Hong Kong context?		
Research Methodology		**Findings**	
Fig. 2.5	Fry's Thinking and Local Hong Kong Practices	Fig. 5.1	Survey: Values of organizational Identity
		Fig. 5.2	Survey: Management Measures of Organizational Identity
		Fig. 5.3	Survey: Images (Corporate and Product Identity)
		Fig. 5.4	Structured Interviews: Involvement of Projects
		Fig.5.5	Structured Interviews: Reason(s) of Implementation
		Fig.5.6	Structured Interviews: Management Measures of Organizational Identity
		Fig.5.7	Structured Interviews: Images (Corporate Identity)
		Fig.5.8	Structured Interviews: Images (Product Identity)
		Fig.5.9	Relationship Between Fry's Thinking and Ho's case
		Fig.5.10	Case Study: Management Measures of Organizational Identity
		Fig.5.11	Case Study: Images (Corporate Identity and Product Identity)
		Fig.5.12	Practical Cases: Identity & Images

Research Question	3. What experiences and involvement (in terms of values, management and images) do Hong Kong design firms have in environmentally-friendly design?		
Research Methodology		**Findings**	
Appendix A	Questionnaire Format	Fig.4.2 Fig.4.3 Fig.4.4 Fig.4.5	Survey Findings (Section A) Survey Findings (Section B) Survey Findings (Section C) Survey Findings (Section D)

Research Question	(4) What new directions are appropriate for environmentally-friendly hotel design in Hong Kong?		
Research Methodology		**Findings & Implications**	
Fig. 3.5	Image: The Semiotics Structure of a Hong Kong Hotel	Fig.6.5 Fig.6.6 Fig.6.7	Proposed Directions Image-creation: Environmentally-friendly model 3 Modes of Sign System
Fig. 3.5	Image: The Semiotics Structure of a Hong Kong Hotel	Fig. 6.8 Fig. 6.9 Fig.6.10	Strategic Functions of Corporate Identity Strategic Planning of Product Identity Implementation Level of Product Identity
Fig. 3.6	Agenda showing the classification of hotels	Fig.6.12 Fig.6.13 Fig.6.14	New Environmentally-friendly Agenda of Hotel Classifications Implementation level of Corporate Identity (in Hotel Design) Implementation level of Product Identity (in Hotel Design)
Fig.2.11	Nature of knowledge in relation to state-of-art	Fig.6.15 Fig.6.16 Fig.6.17	Nature of knowledge in relation to Future Design Methodology Future Approaches in Design Education Future Approaches in Design Management

Fig. 6.8 A Summary of Key Schematic Diagrams

6.6 Implications for Future Research

6.6.1 Hong Kong Design in General

As this is an initial exploratory study on the feasibility towards environmentally-friendly designs, this study inspired many issues which can become further research issues.

Regarding the general sustainability thinking, it is worthwhile to pursue how a general thinking can be applied to a local situation in view of its own spatial, temporal and human factors. Consequently, more interdisciplinary studies will be elaborated especially in the pluralist or hybrid societies of Hong Kong.

6.6.2 Hong Kong environmentally-friendly designs in general

Design profession: Through the survey, some successful cases of using environmentally-friendly designs can be good illustrations to the rest of the Hong Kong design firms. Although the results of the environmentally-friendly design movement will take time to be seen, as the findings indicated, they will accumulate over time if the design firms are willing to make changes. Theoretically and practically speaking, the survey findings can serve as initial cases supporting Fry's thinking, that both the environment and management can be operated as a single entity.

As this study is just an initial start in the design profession, more in-depth research can be explored along identity values, identity symbols in terms of corporate and product identity. There are potential findings to look into how Chinese or western philosophies can be used as cultural innovations, then how they can be developed into visual images for easier communication and promotion. In doing so, these will contribute new knowledge into the theoretical and pragmatic levels of design. In other words, to turn implicit values into explicit knowledge at organization level.

The theoretical frameworks can be discussed into 2 levels:

(a) Strategic functions of Corporate Identity:

Corporate Identity (C.I.)	Characteristics
1. Meanings	(a) Recognition/distinction (b) Same standard and quality (c) Continuity
2. Componets	(a) Visual Identity (V.I.) e.g. typology, colour, sign/symbols/slogen (b) Behaviour Identity (B.I.) (c) Mind Identity (M.I.)
Corporate Identity	
Specification - is used as a set of guidelines for strengthening and unite all the chain companies worldwide. It contains a complete package of corporate graphics, printing samples, and supplies and so on.	
Corporate Design System - Corporate Logo Type - Corporate Colour Scheme - Alphabet Typeface - Pattern	

Fig. 6.9 Table showing the Strategic Functions of Corporate Identity

(b) Strategic planning of product identity:

Attributes	
1. Performance 1.1 Performance in production 1.2 Performance in utilization	Non-price factors: product-related (Product specification & quality) In use - Convenience of production - Safety of production - Harmful effects of production In use Instrumental: - Efficiency of utilization - Convenience of utilization - Safety of utilization - Harmful effects of utilization
2. Services	Non-price factors: company-related (Company images and sales promotion) - Product presentation - Packaging - Display - Brand loyalty (Delivery to time) - Availability of product - Ease of development - Meeting delivery schedule (After-sales service) - Ease of service and repair
3. Aesthetics (perceptual)	- Symbolic - Appearance of instrumental performance in use
4. Perceived Quality	- Overall quality - Technical performance - Innovation - Time

Fig. 6.10 Table showing Strategic Planning of Product Identity
Source: Adapted from Cook (1997: 77)

From the findings, the 3 most considered design features were air-conditioning, energy and natural ventilation respectively in the existing hotel design. While energy, air-conditioning, building shape and orientation were chosen for the future hotel design.

Building Design Criterion

Design features	Conceptual	Schematic	Design Development
Air-conditioing	- Basic energy concepts - Impact of mechanical concepts on facility - Initial systems selection - Space allocation - Performance requirements for air-conditioning	- Mechanical systems selection plans - Refinement of service and distribution concepts - Refinement of service and distribution concepts - Input to schematic Energy conservation	- Detailed system selection - Initial system drawings and key details - Outline specifications for system elements
Energy	- Basic power supply - Approaches to use artifical lighting - Performance requirements for lighting - Need for special electrical systems	- Window/skylight design & sizing - Selection of lighting and electrical systems - General service, power and distribution concepts	- Detailed systems selection - Distribution diagrams - Lighting layouts - Specification for electrical elements
Natural ventilation	- Approaches to use natural lighting	- Initial site plan	- Site plan
Building shape & orientation	- Site selection - Site forms & massing - Requirements for access - Utility supply	- Design concept elaboration - Initial site plan - Schematic planting,grading,paving plans	- Site plan - Planting plan - Typical site details - Outline specification for ite materials

Fig. 6.11 Table showing Implementation Level of Product Identity
Source: Adapted from Dell'Isola and Kirk, (1998:92)

6.6.3 Hong Kong Design in Particular

Since hotel design is very complicated in hierarchy embodied with lots of products and services design, more research can be conducted involving hoteliers and guests in the future for acquiring in-depth information about their specific expectations and solutions. Short-term and long-term changes can be set for probing more details about their feasibility of environmental shift. As hotel design is a combination of multi-design disciplines, further research can be conducted involving these design firms, hoteliers and guests as a triangulation study in the future. Furthermore, a new set of environmentally-friendly design agenda (seeFig.6.12) can be formulated based on the current design agenda (see Fig. 3.6). Such changes will serve to function in twofold, as far as strategic design is concerned, management measures can be implemented including mission, goal(s), leadership, R & D, promotion, training and so on. Regarding the operational means, the new design policy can be developed further as guidelines for change. These can be discussed in 2 levels:

(a) Strategic level: (A new Environmentally-friendly Agenda of Hotel Classifications can be provided)

Class	Tourist	First-class			Deluxe
	Minimal ----------	Medium			Maximum
	Reduce/ Recycle/ Replace/ Reuse	Reduce/ Recycle/ Replace/ Reuse	Reduce/ Recycle/ Replace/ Reuse	Reduce/ Recycle/ Replace/ Reuse	Reduce/ Recycle/ Replace/ Reuse
Areas					
- Guestrooms					
- Public spaces					
- Beverage spaces					
- Offices					
- Engineering Departments					
- Others					
Numbers					
- Guestrooms					
- TV & AV-equipment					
Building Systems					
- Water supply					
- Lighting					
- Air-conditioning					
- Heating					
Building Materials					
- Finishes					
Building Facilities					
- Furniture & facilities					
- Lighting					
- Accessories					
- Bathroom facilities					
Building Styles					

Fig. 6.12 New Environmentally-friendly Agenda of Hotel Classifications
Source: Adapted from Tong & Zhang (1993)

Recently, more and more design associations, design firms, hoteliers, government have showed increasing concern and started implementation on environmentally-friendly design in Hong Kong .

- (a) Hong Kong Institute of Architects promoted its sustainable design through its websites to strengthen its corporate identity;

- (b) Similarly, Hong Kong hoteliers such as Hotel Nikko has disseminated its contributions in environmentally-friendly design and management through websites in attracting stakeholders and guests.
- (c) Universities in Hong Kong got government fundings in research and published manuals suitable for hotels locally providing sources for environmentally-friendly design, education and managment, e.g. Hong Kong Polytechnic University (2000).

(b) Implementation level of corporate identity:

Corporate Identity Images	Present/ Future hotel design	Outcomes (eg. Corporate Identity Manual)
▪ Service ▪ Leadership ▪ Product/ organization	▪ Materials ▪ Figurative forms ▪ Typology	▪ Company Name ▪ Brand Name & Logo ▪ Marketing Report /Yearbook ▪ Uniform ▪ Exhibitions ▪ Accessories ▪ Interior Design ▪ Packaging ▪ Product ▪ Transportation ▪ Stationery
Design System Applications and Supplies		
▪ Hotel Logotype ▪ Reception: room key booklet, room key tag, luggage tag, luggage sticker ▪ Guest's Desk: stationery folder, memo pad, ballpoint pen, executive /regular letterhead & envelope, airmail envelop, guest matches, sewing kit, compliments card, no smoking notice, room service menu, service directory, tent card ▪ Dresser: shoe shine paper, laundry bag, shirt wrapper ▪ Bathroom: guest's soap, guest's shampoo, shower cap, toothbrush set shaver, first aid set, towels, bath mat, Yukata ▪ Door: Do-Not-Disturb Card, Clean-up Card, Breakfast Order Sheet ▪ Food/beverage facilities		

Fig. 6.13 **Table showing the implementation level of Corporate Identity**
Source: *Adapted from Hotel Nikko Manual (1990)*

Implementation of Product Identity :

Product Identity Images	Present hotel design	Future hotel design
▪ Product concept ▪ Product delivery & services ▪ More service design to replace product	• Air-conditioning • Energy • Natural ventilation	• Energy • Air-conditioning • Building shape & orientation
Air-conditioning		
- Inspect all plenums and duct work quarterly to ensure they are airtight - Changes filters frequently. Use reuseable or biodegradable air-conditioning filters. - Clean coils, fans, blowers and condensation pans annually - Replace regular doors in the lobby with a revolving door to reduce heat loss - Use ceiling fans wherever practical to replace or supplement more expensive air-conditioning. *Building Automation System* Regulated air-conditioning: - Improves the environmental condition of the hotel - Improves indoor air quality *Cooling Towers* - If air-conditioning cooling towers are in use, ensure they are treated with chemicals to control bacteria - If automatic controls are installed to control Total Dissolve Solids (TDS) value, the cost of chemical treatment will be reduced - Re-use cooling tower flow down water for irrigation - Utilize outside temperatures when possible (free cooling). *Chillers* - Check chillers are compatible with new CFC control standards and are energy efficient - Carry out quarterly physical inspection of the chiller condenser tube for scale and rust - Optimise chiller use to outside temperature. *Heat Recovery* - Establish heat recovery systems for energy recuperation, clean air supply, and to absorb waste heat.		
Energy		

Electrical
Heat Tension Transformers - Install dry type transformers to reduce the pollution rate. 'Pyralene type transformers emit cancer-causing chemicals. Oil type increases pollution. *Electrical Light Bulbs* - Avoid excess lamp wastage but keep lighting consistent with safety standards - Replace fluorescent lighting with incandescent bulbs (low energy) - Install key tag or infra red room control to cut power when room is unoccupied - Install non mercury lamps to reduce pollution *Peak Controlling* - Controls the electrical demand factor - Improves the life of the equipment - Energy saving can be as high as 50%, depending on the tariff.
Lighting - Reduce excess wattage: aim for the minimum necessary number and power of lamps, at the best possible locations. - When reaching light fittings, use high energy efficiency fluorescent lamps/tubes where possible, reduction of halogen. - Consider installing key tag/infra-red room controls to switch off power when the room is unoccupied. - Choose electrical appliances with high energy efficiency ratings. - Practise peak usage control where possible. - Install sensors for demand control of lighting. - Card key or main switches in hotel rooms.
Natural Ventilation - Maximization of window opening
Building shape and orientation - South-facing orientation - Maximization of fenestration and windows - Recycled construction materials

Fig. 6.14 Table showing the implementation level of Product Identity

Source: Adapted from Lam (1992) & www.scandic-hotels.com/br/30index.html

Design Education:

Research Tradition for Design Methodology

Explicit knowledge

Epistemology (Judging/Choosing)	***Methodology (Means)***
(Symbolic knowledge - Images) Through cultural innovators *Reflective Thinking* ↑	Practices (New design agenda) - Corporate mission of organizational identity - Design policy - Design manual - Communication & innovation
Ontology (Being)	***Teleology (Becoming)***
(Normative knowledge - Identity) Internalization of "Caring"	Services replace products

Implicit knowledge

Fig. 6.15 Nature of Knowledge in relation to Future Design Methodology

Source: Adapted from De Vries et al. eds. (1993) Design Methodology and Relationships with Science: Introduction. Netherlands: Kluwer Academic Publishers, p.14

Forester (1985), Cole and Cooper (1988), Studer (1990), Cuff (1991), Innes (1988, 1995) and Sancar (1992, 1993) point out that designers' roles are changing as there are increasing expectations for research-based knowledge as a more reliable type of knowledge. The importance of the social context of design depends on the construction and definition of legitimate knowledge. In Hong Kong there is a general lack of issue-based approach, discussion of value elements and action-learning when teaching environmental topics (Cheng, 1994).

Thus the further development of environmentally-friendly research will provide cases and practical examples for design education (see Fig.6.16). In this study, the value of Fry's thinking attempt to build up both a theoretical and practically-informed framework originating from normative to symbolic values and put the measures in terms of measures organizational identity (see Fig. 6.14). Aaker's identity thinking are used for substantiating the thinking of organizational identity into testable variables which are easily understood and implemented (see Fig.6.18). In view of issue-based research, it addresses both strategic to applied research for further elaboration. As the environmental issues are indeed complicated, both qualitative and quantitative surveys are useful as triangulation methods to conduct surveys for future scrutiny.

Design Education	
Value of Knowledge	- Normative to Symbolic & Management practices - Knowledge 'about the environment' Action 'for the environment'
View of research (Issue-based)	- From strategic to applied research - Quantitative & qualitative survey

Fig. 6.16 Future Approaches in Design Education
Source: Adapted from Palmer (1998)

The significant value of the thesis will contribute further research which meet the criterion of some researchers

suggested for design education :

1. Research should not confined just within the single approach of 'quantitative research by manipulating variables'. It should be understood and expected that more qualitative research, or a combination of both quantitative and qualitative techniques, will enhance the development of environmental education.
2. Environmental education should be enlarged at a community level. Furthermore, consumer-oriented education should be an innovative approach of environmental education with emphasis on personal ethics and participation of the public in policy decisions and value choice.
3. There is a general lack of issue-based approach, discussion of value elements and action-learning when teaching environmental topics (Cheng, 1994).

Design management: In order to keep the survey questions brief and short, only 9 measures of organizational identity were asked. With the findings indicated, about ½ of the design firms chose environmental management as their internal factors for improvement. Through the personal interviews, more datum or variations about their degrees of environmentally-friendly attitudes and implementation were acquired in thinking and in management. The respondents showed positive attitudes and

provided more concrete data about their values and practices. A schematic diagram is constructed (see Fig. 6.17) basing on Truman (1996) that this survey will add to our understanding to the Hong Kong environmentally-friendly design in 4 levels of design attributes. With this study it will contribute to part of the design strategies on the different kinds of management tools. (e.g. ISO 14000 certification, Total Quality Environmental Management etc.) Flexibility needs to be seen according to the sizes of companies, mission statement, leadership, staff support, financial capacity, corporate culture and so on. So further research on design and management can be a great area of future studies, particularly the issue of cultural innovation.

Innovation

Levels of knowledge (attitudes & performance)	Methods
- Values	From firm level to clients' acceptance (customer-driven) and government regulation (law-abiding)
- Images	Cultural innovation (Symbols, Figurative and Typology from Chinese & western philosophies)
- Process	Systematic and dynamic
- Products	Product-embodied services

Fig. 6.17 Future Approaches in Design Management
Source: Adapted from VIPP design dimensions, Trueman (1996,108)

Summary: The thesis aims at exploring and developing Fry's thinking using an explanatory research into a new integrated theory (see Fig.6.18). It was originally used to study in design culture and environmental philosophy. His thinking indicates active communication between 'Caring' values and images are important means of promoting environmentally-friendly design. As applied to my study, this localized thinking will address to Hong Kong design context in a more systematic and practical way in terms of organizational identity and images. The study attempts to make a new theory of an integrated identity which provide sufficient evidences for justifying Fry's thinking as an initial stage as well as further implication. To conclude, the contributions of the novel approach of the thesis can be achieved in 4 levels.

- Through this initial study, it will pose a new relation between sustainable design and the environment in Hong Kong after the verification of Fry's thinking in local context.
- The explanatory study highlights some key issues in (a) the interconnectedness between organizational identity and images, (b) and provides a platform for further discussion on changes of environmentally-friendly design in Hong Kong formulating new design policies and practices through systematic and dynamic changes based on the new findings.
- It was argued that a mismatch was seen between the support and the practices of environmentally-friendly design in local context. The interviews and case study have illuminated the struggles and realities of the environmentally-friendly consciousness and have shown implications for a wider context.
- It has proposed specifically a possible agenda including the strategic and operational levels to illustrate and to support the argument on the development

of environmentally-friendly design in Hong Kong. At general level, it involves the transference of normative knowledge to symbolic knowledge. As Fry states it is starting to emerge as a result of the realization of the relation between design and environment crisis. It is arriving by the efforts of those members of the design community who are concerned with *reflective thinking* of our global and local environmental crisis[45] .

Theoretical framework: Fry's thinking (Western)
Abstract and philosophical cultural concepts
Based on Heidegger

Fry's thinking ('Caring' Values)		
Dwelling	Thinking	Building
(Management)		
Being (Identity)	Sign (Images)	

Operational instruments of Fry's thinking :
Testable Variables
(Add other concepts- Aaker, Willig, Whetten)

Problem : Conspicuous Consumption		
Organizational Identity – management measures	Images – explicit and visible	
Total Quality Environmental Management	Corporate Identity	Product Identity

Findings of the thesis:
New theory is addressing at
Design & Management level

New Theory: Integrated Identity		
Organizational Identity	Corporate Identity	Product Identity
Implications		
Design Profession - New design directions - Design Activity	Design Education (Research) - Integrate normative knowledge to symbolic knowledge (Quantity & quality)	Design Management - Values - Images - Process - Product

Fig. 6.18 A Summary of Research Methodology, Findings and Outcomces

[45] Fry (1992). *Green Desires- Ecology, design and products.* Sydney: EcoDesign Foundation Inc.

Appendix A: Questionnaire Format

Environmental-friendly Design of the Hong Kong Hotel Industry

Part A Company Profile

Please give a tick(s) wherever appropriate or write your opinions in the space provided.

1. **When was your design firm established?**

   ❑ a. 1970 or before ❑ b. 1971-1980 ❑ c. 1981-1990 ❑ d. 1991-now

2. **What is/are the nature(s) of your firm?**

   ❑ a. Local firm ❑ b. Branch of an overseas firm
   ❑ c. Joint-venture ❑ d. Partnership
   ❑ e. In-house design department of a non-design firm
   ❑ f. Others, (please specify): _____

3. **What kind(s) of design services your company specializes in?**

   ❑ a. Hospitality ❑ b. Corporate
   ❑ c. Retail ❑ d. Exhibition & display
   ❑ e. Institutional ❑ f. Industrial
   ❑ g. Others, (please specify): _____

4. **What kind(s) of professional practices your company provides: (Choices may be more than 1)**

   ❑ a. Conceptual design ❑ b. Space and facilities planning
   ❑ c. Technical planning ❑ d. Project management
   ❑ e. Contracting/ sub-contractors ❑ f. Project Consultancy
   ❑ g. Materials & products ❑ h. Furniture design & suppliers
   ❑ i. Lighting design & suppliers
   ❑ j. Others, (please specify) : _____

5. **Please fill in the average number of employees in 2000**

	2000
Full-time design staff	
Part-time design staff	
Administrative/clerical staff	
Total	

Part B Design factors

1. **What are the three design factors you mostly consider in your projects?**
   ❑ a. Budget ❑ b. Completion time
   ❑ c. Function ❑ d. Aesthetic
   ❑ e. Materials and finishes ❑ f. Technology
   ❑ g. Manpower ❑ h. Opinions of clients
   ❑ i. Others, (please specify): _____

2. **Have you ever considered environmental-friendly design within your projects in the past 5 years?**

   ❑ a. Yes ❑ b. No

2i. **If the choice of 2 is yes, (please specify):**

- **Number(s):** _____
- **Location(s):** _____

3. **What is/are the reason(s) for implementing environmental-friendly design into your projects?**

   ❑ a. Reduce cost which leads to cost saving
   ❑ b. Bring "Green" images to design firm
   ❑ c. Minimize natural resources
   ❑ d. Enhance customers satisfaction
   ❑ e. Others, (please specify): _____

4. **Which part(s) have you implemented environmental-friendly design in your projects and services?**

   ❑ a. Design drawings
   ❑ b. Project management
   ❑ c. Research and development
   ❑ d. Maintenance and operation
   ❑ e. Wastage disposal or treatment
   ❑ f. Environmental auditings
   ❑ g. Others, (please specify): _____

5. **Please indicate your sources of environmental-friendly design ideas in your projects?**

   ❑ a. Design books and magazines
   ❑ b. Literature (philosophies, articles, journals)
   ❑ c. Observation from daily lives
   ❑ d. Follow design themes and briefs from clients
   ❑ e. Intuition
   ❑ f. Follow government regulations
   ❑ g. Collective ideas from team work
   ❑ h. Others, (please specify): _____

6. **What kinds of design elements have you implemented in environmental-friendly design projects?**

   ❑ a. Figurative forms ❑ b. Abstract forms
   ❑ c. Typology ❑ d. Colour
   ❑ e. Materials
   ❑ f. Others, (please specify): _____

6. If you have not considered any environmental-friendly design in your projects, then what is/are the major problem(s)?

- ❑ a. Increase of operation costs
- ❑ b. Increase of workload
- ❑ c. Increase of operation time
- ❑ d. Lack of design innovation
- ❑ e. Insufficient R &D
- ❑ f. Insufficient environmental-friendly design products/ materials supplied
- ❑ g. Difficult to do environmental reports and audits
- ❑ h. Others, (please specify): _____

7. Are you satisfied with the present environmental-friendly hotel design in HK?

- ❑ a. Yes ❑ b. No
- ❑ c. Others, (please specify): _____

8i. If the choice of 8 is yes, please answer 8i and choose wherever reasons appropriate

- ❑ a. Products have environmental-friendly qualities
- ❑ b. More services to replace product wastages
- ❑ c. Creative use of design elements
- ❑ d. Comply to international environmental standards
- ❑ e. Others, (please specify): _____

8ii. If the choice of 8 is no, please answer 8ii and choose wherever reasons appropriate

- ❑ a. Lack of design creativity
- ❑ b. Lack of regional and climatic characteristics
- ❑ c. Energy wastage
- ❑ d. Lack of clients acceptance
- ❑ e. Insufficient environmental management
- ❑ f. Others, (please specify): _____

9. Are there any improvement(s) regarding environmental-friendly hotel design?

- ❑ a. Yes ❑ b. No
- ❑ c. Others, (please specify): _____

If the choice of 9 is yes, please answer 9i – 9iv

9i More improvements on design factors:

- ❑ a. Functions ❑ b. Create environmental meanings through styles
- ❑ c. Price ❑ d. Environmental management
- ❑ e. Others, (please specify): _____

9ii. **What are the three design features you mostly consider to be improved in the existing hotel design? (Please give a tick wherever appropriate and specify if needed)**

Design features / Areas of improvement	External building facilities	Function rooms, Restaurants	Business centres, Conference rooms	Lobby	Guest Rooms
a. Building shape & orientation					
b. Landscape/ greenery					
c. Natural ventilation					
d. Air-conditioning					
e. Building materials and finishes					
f. Lighting					
g. Furniture					
h. Hotel amenities					
i. Hotel services (Housekeeping)					
j. Waste disposal & treatment					
k. Laundry					

9iii. **What are the three design features you mostly consider to be improved in the future hotel design? (Please give a tick wherever appropriate and specify if needed)**

Design features / Areas of improvement	External building facilities	Function rooms, Restaurants	Business centres, Conference rooms	Lobby	Guest Rooms
a. Building shape & orientation					
b. Landscape/ greenery					
c. Natural ventilation					
d. Air-conditioning					
e. Building materials/ finishes					
f. Lighting					
g. Furniture					
h. Hotel amenities					
i. Hotel services (Housekeeping)					
j. Waste disposal & treatment					
k. Laundry					

9iv. More improvements on external factors:

❑ a. Clients acceptance ❑ b. Changes in consumption patterns through design

❑ c. Government regulation ❑ d. Staff consciousness and support

❑ e. Others, (please specify): _____

Part C Design Innovation

1. Do you think design innovation is important for the effectivness of environmental-friendly design in the present?

❑ a. Yes ❑ b. No

❑ c. Others, (please specify): _____

1i. If the answer of 1 is yes, the changes in design innovation should be

❑ a. Systematic ❑ b. Gradual

❑ c. Dynamic

❑ d. Others, (please specify): _____

2. Do you think design innovation is important for the effectivness of environmental-friendly design in the future?

❑ a. Yes ❑ b. No
❑ c. Others, (please specify): _____

2i. If the answer of 2 is yes, the changes in design innovation should be

❑ a. Systematic ❑ b. Gradual

❑ c. Dynamic

❑ d. Others, (please specify): _____

3. Some architects and scholars have put forward culture as a source of innovation, for example, Confucianism, Taoism and western philosophies, do you agree?

❑ a. Yes ❑ b. No
❑ c. Others, (please specify): _____

4. Do you agree that these ideas can be used as design concepts?

❑ a. Yes ❑ b. No
❑ c. Others, (please specify): _____

4i. If the choice of 4 is yes, please answer 4i

❑ a. Culture can be used as business ethics

❑ b. It can convey symbolic values

❑ c. It can convey ritual meanings

❑ d. Others, (please specify): _____

5. Within cultural innovation, images are largely used in promoting massive consumption, do you agree images can be used in environmental-friendly design too?

   ❑ a. Yes, (please specify): _____

   ❑ b. No, (please specify): _____

6. Do you think a strong corporate identity is essential for the effectiveness of environmental-friendly ideas?

   ❑ a. Yes ❑ b. No

   ❑ c. Others, (please specify): _____

7. If the choice of 6 is yes, please choose the 3 major areas you will consider?

   ❑ a. Product ❑ b. Organization

   ❑ c. Service ❑ d. Symbol

   ❑ e. Leader

   ❑ f. Others, (please specify): _____

8. Do you think a strong product identity is essential for the effectiveness of implementing these ideas?

   ❑ a. Yes ❑ b. No

   ❑ c. Others, (please specify): _____

9. If the choice of 8 is yes, please choose the 3 major areas you will consider?

   ❑ a. Product concept ❑ b. Product attribute

   ❑ c. Product production ❑ d. Product delivery and services

   ❑ e. Product disposal ❑ f. Product treatment (reuse, replace, recycle, reduce)

   ❑ g. Others, (please specify): _____

Part D Design management

Please give a tick against the following choices if appropriate in your design firms:

1. Any environmental mission statement ?
   ❑ a. Yes ❑ b. No
   If Yes, (please specify) : _____

2. Any environmental design standards and management systems ?
   ❑ a. Yes ❑ b. No
   If Yes, (please specify) : _____

3. Any environmental quantifiable goals ?
   ❑ a. Yes ❑ b. No
   If Yes, (please specify) : _____

4. Any environmental design manager or assigned staff?
   ❑ a. Yes ❑ b. No
   If Yes, (please specify name and position): _____

5. Any environmental committee set up in your firm ?
   ❑ a. Yes ❑ b. No
   If Yes, (please specify name and position) : _____

6. Any environmental policy in purchasing your products and services?
❑ a. Yes ❑ b. No
If Yes, (please specify) :_____

7. Any environmental research and development in your products and services?
❑ a. Yes ❑ b. No
If Yes, (please specify) :_____

8. Any environmental audit and reports for design planning (in-house or consultancy) ?
❑ a. Yes ❑ b. No
If Yes, (please specify) :_____

9. Any environmental training promoted before?
❑ a. Yes ❑ b. No
If Yes, what formats? _____

Part E Demographic Data

Name of design firm: _____

Name of contact person: _____

Position: _____ **Department:** _____

Tel No: _____ **Fax:** _____

Email: _____

May I acknowledge your design firm in my thesis and literature? Yes ❑ No ❑

* *Thank you very much for your contribution!* *

Special advice is given by: ❑

Prof. John Frazer, Swire Chair and Head of School of Design
Prof. Clive Dilnot, External Co-supervisor of School of Design
Dr. Li Leong Kwan, Department of Applied Mathematics
Mr. William Hsu, advisor, Director of Hotel Management Services, CUHK
Mr. Nathan Tsang, Education Officer of the Hong Kong Interior Design Association

✒ (Please complete this questionnaire **on or before 31 March 2001,** I will contact you to arrange an interview and to pick up the questionnaire)

✉ *In case of queries, please contact:*

Name: Miss Ng Pui-Yee, Purrie (PhD student)
Address: GH 125 Research Room, School of Design, The Hong Kong Polytechnic University

Sch: 2766-6849 **Fax:** 2774-5067 **Mobile:** 9011-
Email: 96980

Appendix B: Cover Letter to Design Firms

To:

4 December 2000

Dear Managing Director,

Re: Research on sustainable design

The School of Design of the Hong Kong Polytechnic University is undertaking various paradigms to develop research and education for Hong Kong society. Recently, one of our major studies is the incorporation of sustainable design into service industries.

The significance of this study is twofold. Firstly, with the worldwide demands of sustainable design on multinational hotel businesses, it is crucial for Hong Kong to catch up with its American, European and Southeast Asian counterparts in its environmental standards. Secondly, according to one academic survey of Hong Kong hotels undertaken in 1998, 83% of the hotel guests who responded to the survey indicated that they would feel more satisfied if the hotel provided environmental measures. Thus it is worth researching to explore more effective measures to be implemented by design firms.

My name is Pui-Yee (Purrie) NG, who is a PhD student in the School of Design of the Hong Kong Polytechnic University, is carrying out this research. I have had substantial experience in several environmental surveys, including the 1998 hotel survey mentioned above. This present project aims at researching how present and future design practices, cultural values and corporate identity affect environmentally-friendly design initiatives.

As you are highly recommended in the profession by Ms Teresa Ho, the Senior Lecturer of IVE, our school would be extremely grateful if you (or your representative) would answer the enclosed questionnaire before or by **31 December 2000**. I will contact you for a short interview at your convenience. In case of queries, please contact me at (Sch): 2766-6849, fax: 2774-5067, mobile: 9011-
or email: 9698

After the survey is completed, I will send a summary of the key findings (without reference to any individual respondents) to your firm. Your design firm will (with your approval) be listed in our final reports, and acknowledged in the Appendix of the thesis and in any related literature. **All the information collected will be handled in strict confidence, and will be used for academic purposes only.**

Thank you for your valuable contribution to this research!

Sincerely Yours,

Ng Pui-Yee, Purrie
PhD student
School of Design

Resume:

Name: NG Pui-Yee, Purrie
Tel: (Sch) 2766-6849
Department: School of Design
Email: 9698

Qualifications: BA (University of Manitoba), MA in Design (PolyU),
Experience : Interior design (Hirsch & Bedner and Associates) , Set & stage design management (RTHK)

Conference and published proceedings:

1. Attended and presented at ' Objects of Belonging' conference organized by University of Western Sydney Nepean at State Library of NSW, in 10-12 October 1997 with the paper titled *"Images of contemporary Hong Kong wedding consumption culture: a patterned package of commodified images?"*

2. Attended and presented at 'Eco-Management and Auditing' conference organized by ERP Environment on 2-3 July, 1998 at the University of Sheffield of England with the paper titled *"Chinese Philosophies with a view to Eco-management: the integration of local ethos into the Total Quality Environmental Management of the hotel industry in Hong Kong"*

3. Attended and presented at 'The Role of Tourism : National and Regional perspective' of 1998 International conference organized by the Asia Pacific Tourism Association (4^{th} annual conference) in 18-21 August, 1998 at Tanyang of South Korea with the paper titled *"Eco-quality service to hotel industry in Hong Kong: the integration of Eco-design and Eco-management"*

4. Attended and presented at 'International Conference on Atmospheric Sciences and Applications to Air Quality' organized by Chinese Research Academy of Environmental Sciences in Beijing of PRC in 3-5 Nov., 1998 with the paper titled *"An Integrated Model of Eco-philosophies, Eco-design and Eco-management with a view to Air Pollution Management in Hong Kong"*

Report published :

1. Report published and titled *"The feasibility study of waste minimization for hotel industry in Hong Kong"* co-organized by Friends of the Earth and the Hong Kong Polytechnic University Postgraduate Association

   * The survey was supported by the Environmental Committee of the Hong Kong Hotels Association and sponsored by the Environment and Conservation Fund with a funding of $92,000. The report was sent back to the Hong Kong Hotels Association and the summary was released to the press in 1999.
   Role: Co-investigator

2. Report published and titled *"A Survey on Paper Wastage at the Hong Kong Polytechnic University"* organized by the Hong Kong Polytechnic University Postgraduate Association in 1999 April

   * The survey was sponsored by Shell Better Environment Award Fund of HK$7,600. The overall report with recommendations was sent back to funding organization for reference and the key results were emailed back to the responded departments afterwards.
   Role: Co-investigator

Exhibition:

1. A joint-exhibition known as *"The feasibility study of waste minimization for hotel industry in Hong Kong"* and *"A Survey on Paper Wastage at the Hong Kong Polytechnic University"* organized by the Hong Kong Polytechnic University Postgraduate Association in 1999 April
   19-23 at the university
   Role: Organizer and display designer

Appendix C: Fax Follow-up after the Mailing of Questionnaires

To: Mr. Dennis Lau, Chairman
Fax: 2436-9564

From: Miss Ng Pui-Yee, Purrie
Tel (Sch): 2766-6849
Mobile: 9011-
Fax: 2713-2966
Totally: 1 page

Date: 3 April, 2001

Dear Mr. Lau,

Re: Survey Follow-up

My name is Ng Pui-Yee, Purrie who is currently conducted an environmentally-friendly survey on hotel design to the H.K. design firms. The whole survey I have sent out included cover letter (1 page), research resume (1 page) and 1 set of questionnaire (7 pages) in mid-March.

Thank you very much for sending back the survey to me today. But somehow there was something wrong with the transmission, only page 1, 2, 3 of the questionnaire could be faxed back successfully to our university. So following this, it would be greatly appreciated if you can check accordingly and fax me the whole set of questionnaire with your valuable opinions solicited.

In case of queries, please call me at :

Tel: (Sch) 2766-6849 Mobile: 9011-

Fax: (Sch) 2774-5067 Email: 96980
(Res) 2713-2966

Thank you very much for your attention!

Sincerely yours,

(Pui-Yee, Purrie, NG)

Appendix D: Acknowledgements to Responding Design Firms

Responded design firms		**(up to 2 Jan 2001)**
1.	Dr. Tao Ho, Principal of Taoho Design Architects Ltd.	(000)
2.	Mr. John Chan, Director of John Chan Design Ltd.	(005)
3.	Mr. Kyran Sze, Director of LPT Architects Ltd.	(010)
4.	Mr. Patrick Leung, Director of PAL Design Consultant Ltd.	(012I)
5.	Mr. Ivan Dai, Partner of Leese Robertson Freeman Designers Ltd.	(015)
6.	Mr. Sandi Lee, Director of Crossmax Interior Ltd.	(016)
7.	Mr. Gary Chang, Director of Edge (HK) Ltd.	(017)
8.	Mr. K.S. Wong, Project Director of Anthony Ng Architects Ltd.	(019)
9.	Mr. David Lo, Business Director & Head of Design, Whizzbangart HK Ltd.	(021)
10.	Mr. Hector Cheung, Director of Rocco Design Ltd.	(023)
11.	Mr. David Clarke, Deputy Director of Wong Tung & Partners	(026)
12.	Mr. Charles Ng, Managing/Creative Director, Maxi Communications Ltd.	(027)
13.	Mr. Brian Lau, Director of Mad Idea Studios	(028)
14.	Mr. Stanley Leung, Credit Suisse First Boston (HK) Ltd.	(031)
15.	Mr. Bosco Yip, Design Manager of Corporate Communications of Hang Seng Bank	(037)
Third round		**(up to 9 April 2001)**
16.	Mr. Leung Hon Ming, Seniorman Design Ltd.	(090)
17.	Mr. Wong Po Lung, John, Wong & Tai Associates Ltd.	(099)
18.	Percy Thomas Architects Planners and Designers	(086)
19.	Mr. Raymond Fan	(103)
20.	Mr. Grover Dear, Managing Director, Archasia	(055)
21.	D. Heung & Associates, Architects & Engineers Ltd.	(063)
22.	Mr. George Lau, Hsin Yieh Architects & Asociates Ltd.	(070)
23.	Mr. Christopher E.T. Kho, K.A. Kho & Associates Architects & Consultants Ltd.	(074)
24.	Iain Scott, LDAsia	(077)
25.	Mr. Ma Kim See, Ma Leung & Associates (HK) Ltd.	(080)
26.	Mr. Paul Chan, Wong & Ouyang (BS) Ltd.	(098)
27.	Mr. & Mrs. Choi Kai Yan, Choi Kai Yan Design Consultants Ltd.	(033)
28.	Ms. Gabrielle Tsui, Leigh & Orange	(050)
29.	Mr. Joseph, M.K. Tang, Lu Tang Lai Architects Ltd. / Chau Lam Architects & Associates.	(079)
30.	Mr. Dennis Lau, Dennis Lau & Ng Chun Man Architects & Engineers (H.K.) Ltd.	(065)

Categories of Design Profession

5	Corporate Designers (CSD and others)
20	Architects (HKIA)
5	Interior Designers (IDA and others)

Appendix E Survey findings

3.3 Statistical Results: A Summary of Empirical Findings (Questionnaires)

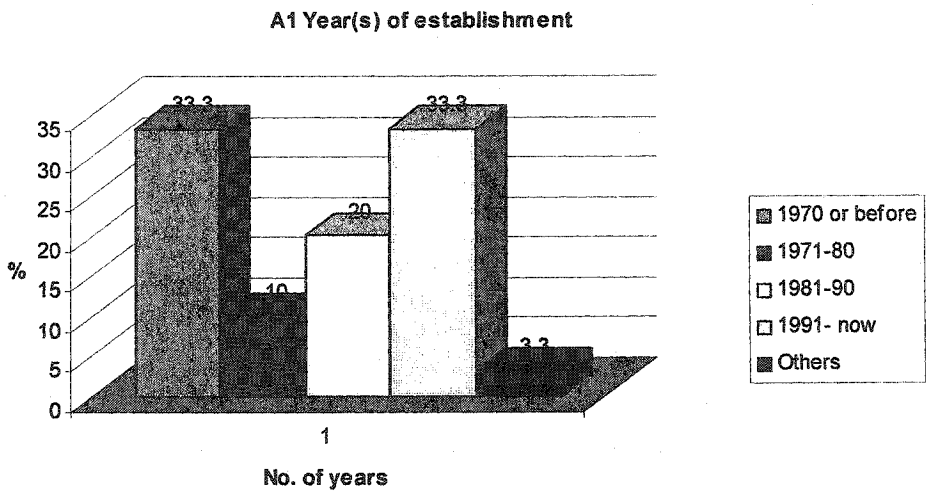
3.3.1 Survey questions: Key Survey Findings

Key: * Subsidiary questions are added for the second and third round after gathering more information after the 1st round

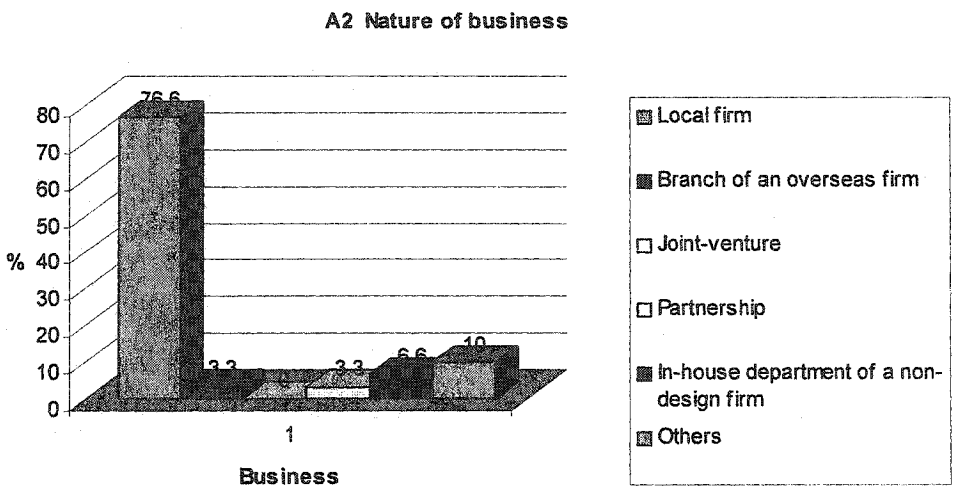
Section A Company Profile of Design Firms

The findings will be analysed according to the Sections A to D issued in the questionnaires and interviews.

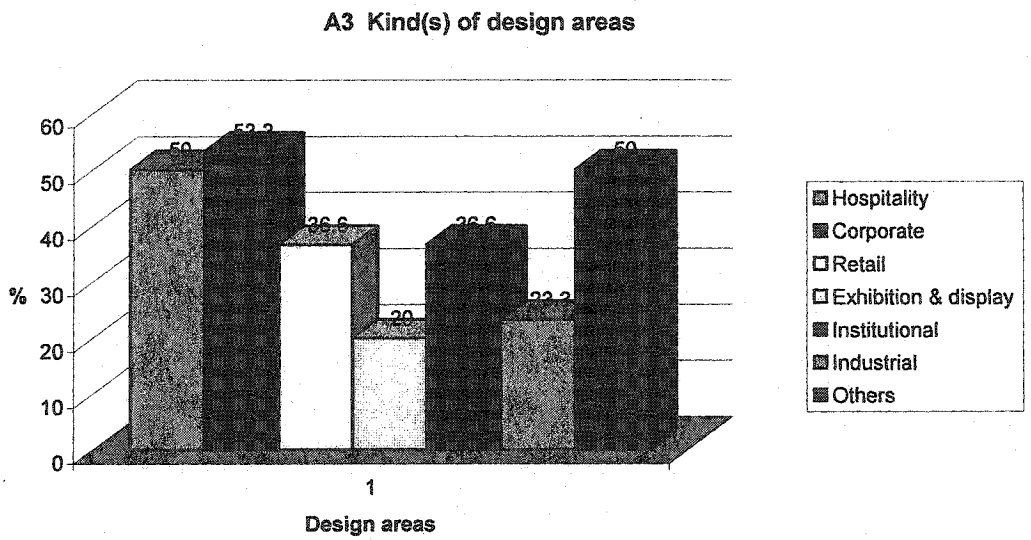
*(Key: * Subsidiary questions were developed for the second and third round after the feedbacks of the open-questions had been gathered during the first round)*



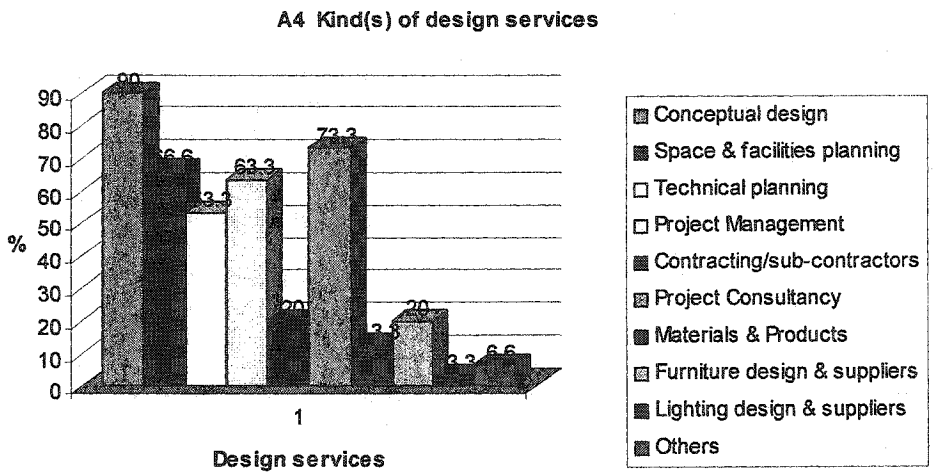
For Q1, regarding the **years of establishment** of the 30 design firms responded, 33.3% were established between (a) 1970 or before and (d) 1991-now respectively. 20% were set up between (c) 1981-1990, 10% were formed between (b)1971-1980 and for (e) others was 3.3%.



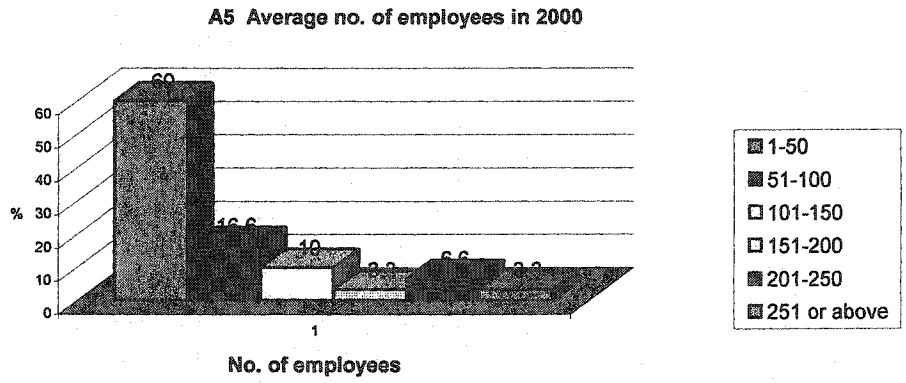
For Q2, regarding to the **nature of business**, 76.6% were belonged to (a) local firms, 10% were (f) others, 6.6% were belonged to(e) in-house department of a non-design firms, 3.3% were (b) branch of overseas firm and (d) partnership respectively and no (c) joint-venture.



For Q3, relating to the **kind(s) of design services**, 53.3% were dealing with (b) corporate, 50% were involved with (a) hospitality and (g) others respectively. 36.6% were doing (c) retail and (e) institutional respectively, 23.3% were involving industrial and 20% were doing (d) exhibition and display.

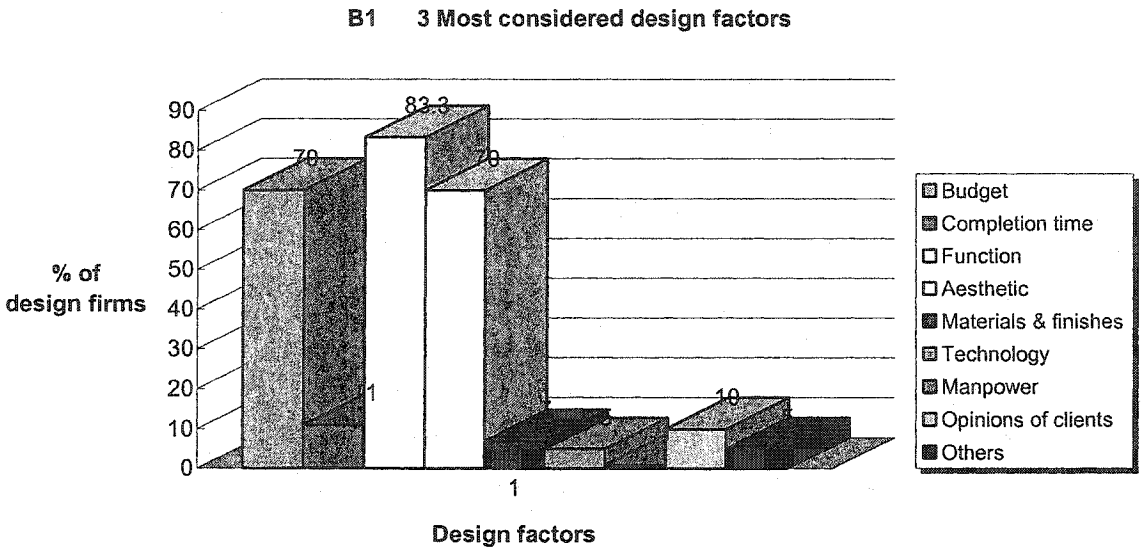


For the **kind(s) of design services** in Q4, 90% were doing (a) conceptual design, 73.3% were involving (f) project consultancy, 66.6% were dealing with (b) space and facilities planning and then 53.3% were doing (c) technical planning. For the rest such as contracting/sub-contracting, materials and products, lighting design & suppliers and others were below 50%. Most of the responded firms were involved with the key initial phases of design stages.

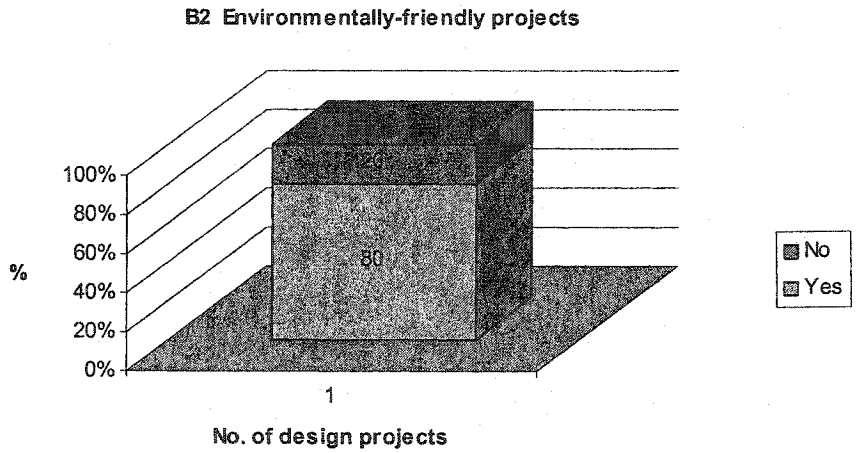


For Q5, the **average no of employees in 2000,** 60% of the design firms employed (a) 1-50, 16.6% were (b) 51-100, 10% were (c) 101-150, 6.6.% were (e) 201-250, 3.3 % were (d) 151-200 and (f) 251 or above respectively. On the whole, most of the responded design firms were categorized as small to medium-sized companies.

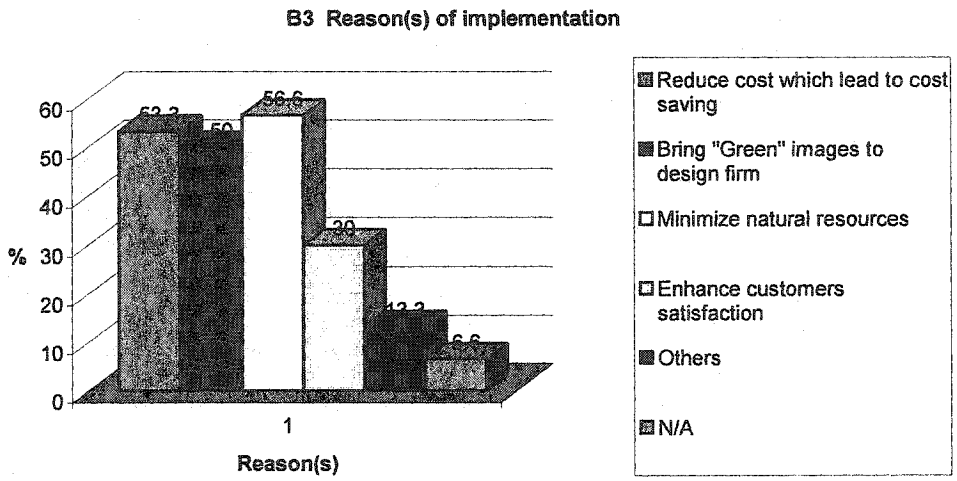
Under **Section B**, questions were related to **Design Factors**



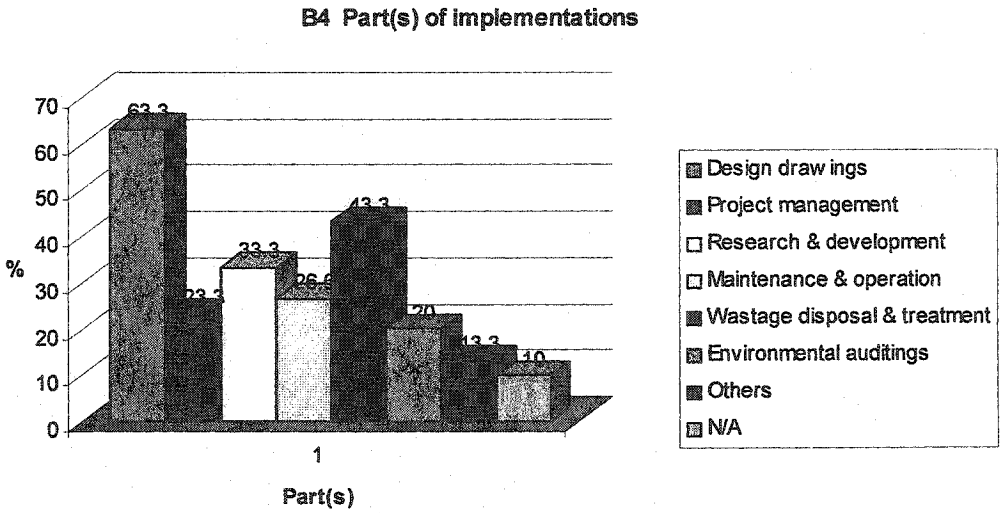
For Q1, the **3 mostly considered design factors** were (c) Function with 83.3%, (a) Budget and (d) Aesthetic were 70% respectively. As there are about 25% of the responded firms give more than 3 choices, so the findings were assessed according to their ticks. For (i) others, 2 firms specified that environmental concern were their factors concerned.



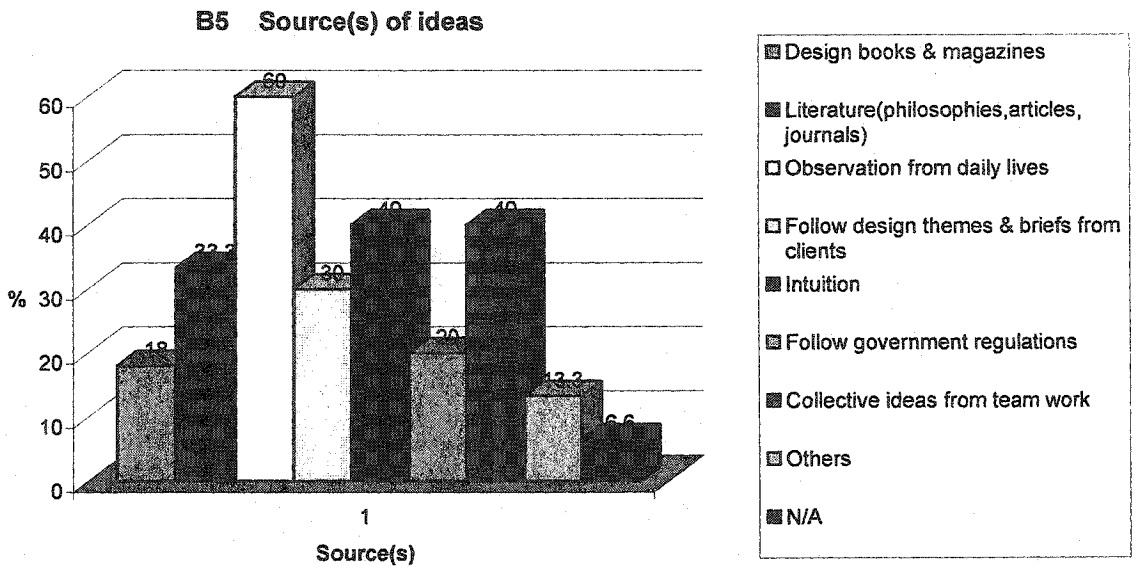
For Q2, 80% of the design firms indicated (a) Yes, they had involved with **environmentally-friendly projects** before while 20% indicated (b) No.



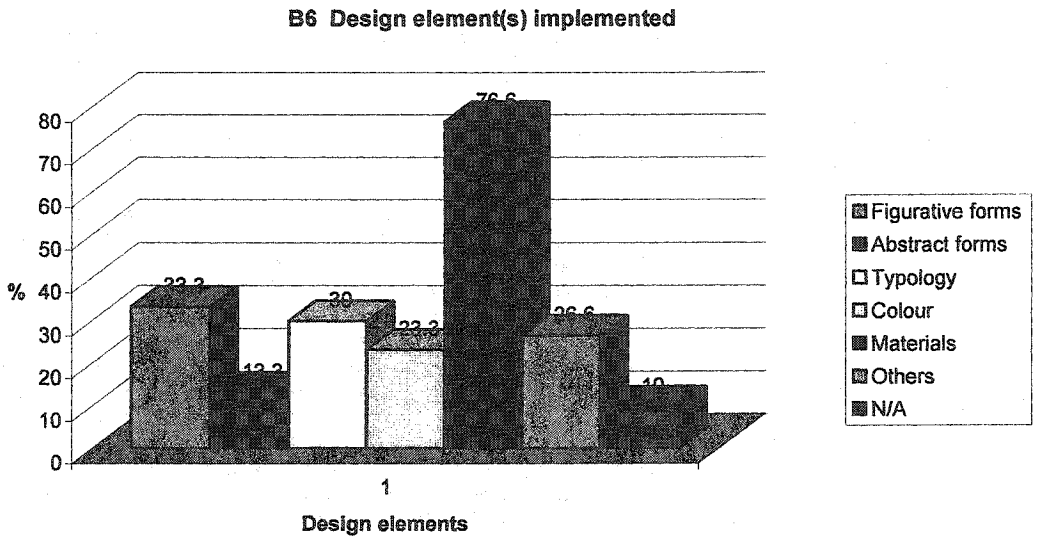
For Q3, the **major reason(s) of implementation**, 56.6% indicated (c) Minimize natural resources, 53.3% chose (a) Reduce cost which lead to cost saving and then 50% selected (b) Bring "Green" images to design firm. For the rest, their choices were 30% or below. Among these, 3 out of 30 specified that it was the environmental responsibility and concern under (e) others. As a result, the findings of conveying "Green" images can support the argument that it will bring effectiveness to environmentally-friendly design once they develop more.



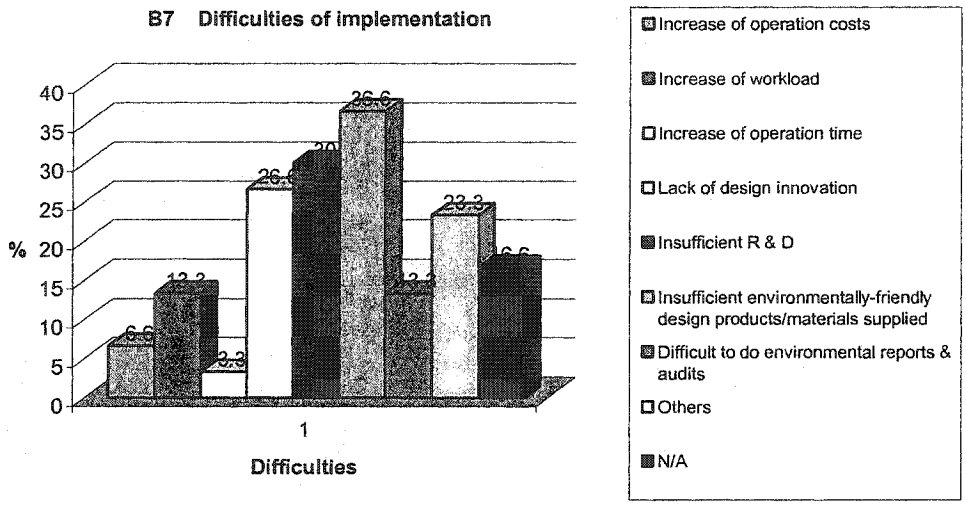
For Q4, regarding **part(s) of implementation**, 63.3% chose (a) Design drawings, 43.3% selected (e) Wastage disposal or treatment and then 33.3% were participated with (c) Research and Development.



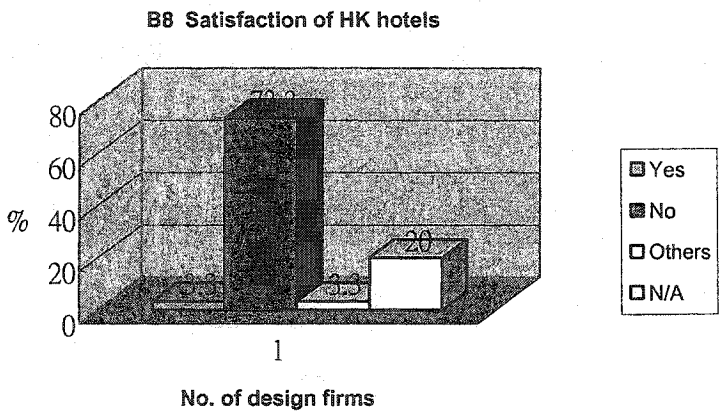
For Q5, the indications of their **source(s) of ideas** were 60% derived from (a) Design books & magazines and (c) Observation from daily lives respectively, then 40% were from (e) Intuition and (g) Collective ideas from team work. 33.3% were chosen from literature (philosophies, articles, journals), 30% were from (d) Follow design themes and briefs from clients.



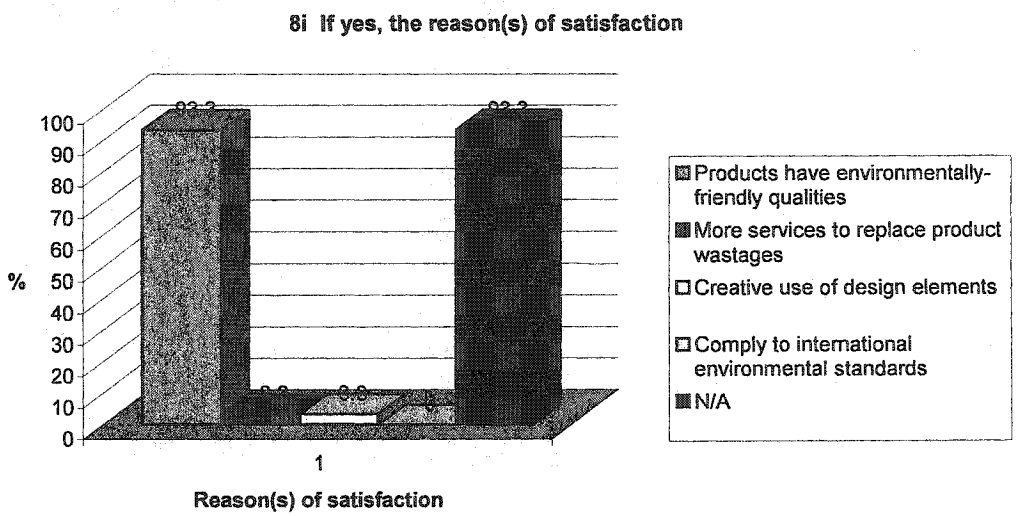
For Q6, the **choices of design element(s) implemented** shown 76.6% were (a) Materials, 33.3% were (a) Figurative forms and 30% were (d) Typology.



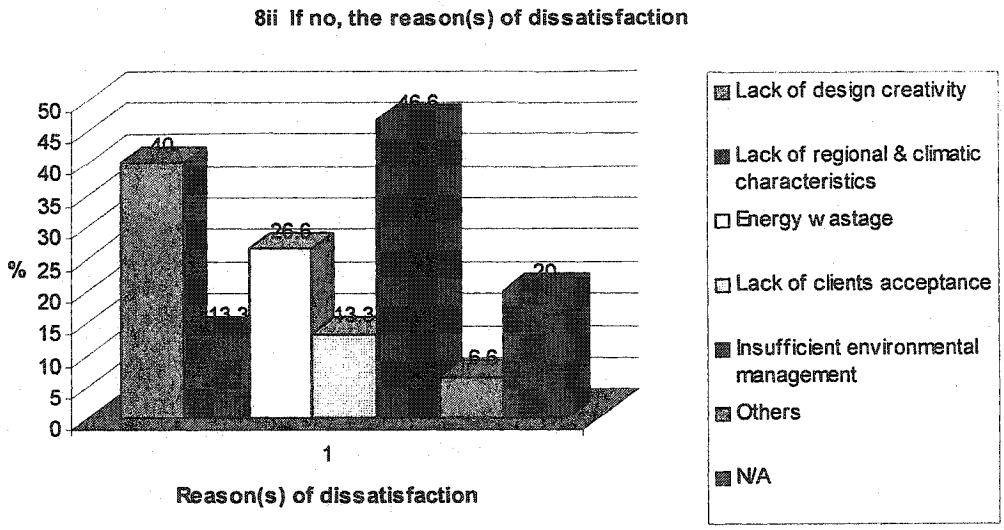
For Q7, for the **3 major difficulties of implementation**, 36.6% selected (f) Insufficient environmentally-friendly design products/materials supplied, 30% chose (e) Insufficient R&D and then 26.6% indicated (d) Lack of design innovation.



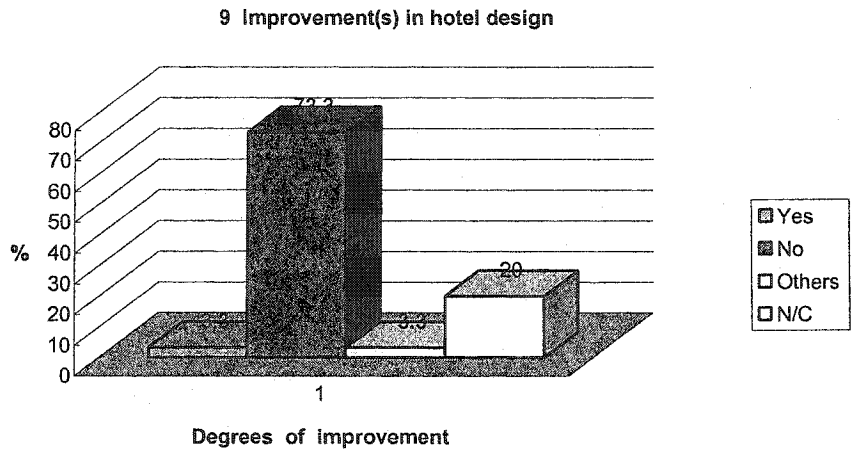
For Q8, during the first round, it is an open-ended question asking the opinions of the existing Hong Kong hotel projects. After collecting the opinions of the responded firms, their ideas could be divided into 2 types, positive and negative comments. So this was modified to a multiple-choice question for the second and third round. Regarding the % of **satisfaction of HK hotel design**, 3.3% for (a) Yes, 73.3% for (b) No, 3.3% for (c) Others and 20% were N/A. Some typical comments from the interviewees that there was no clear environmentally-friendly concept.



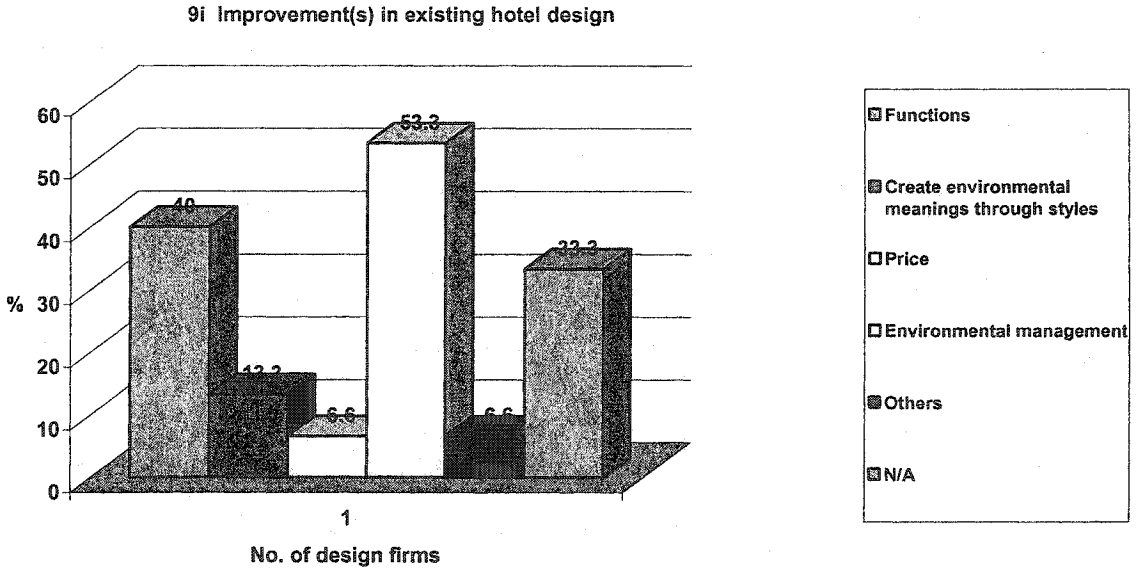
*For Q8i, following Q8, **which are the following(s) you are satisfied if yes**, 93.3% indicated (e) N/A.



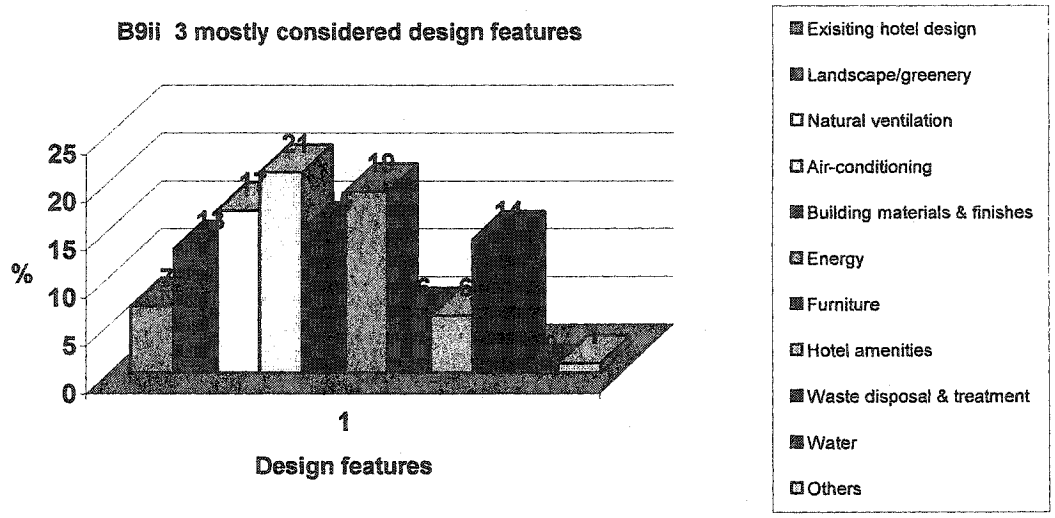
*For Q8ii, following Q8, **which are the following(s) you are dissatisfied,** 46.6% indicated (e) Insufficient environmental management, 40% shown (a) Lack of design creativity and then 26.6% chose (c) Energy wastage.



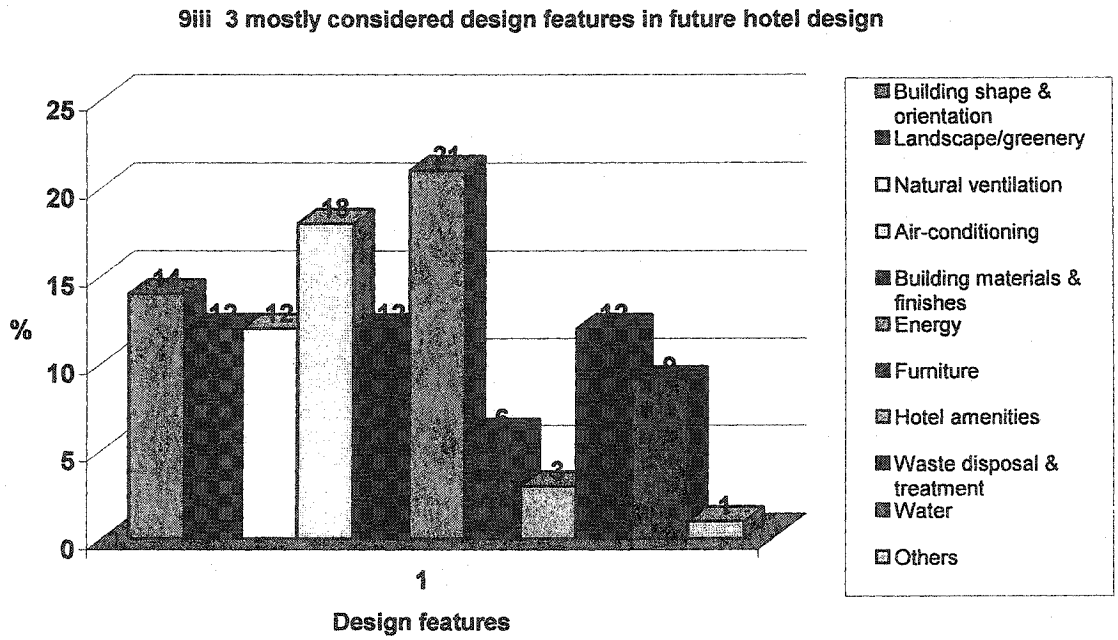
For Q9, regarding **improvement(s) in hotel design**, 3.3% indicated (a) Yes, 73.3% indicated (b) No, 3.3% indicated (c) Others and 20% indicated N/C. Some opinions derived from the interviewees expressed that ISO 14000 certification could be used as corporate identity, others indicated that more uses of natural materials were needed etc.



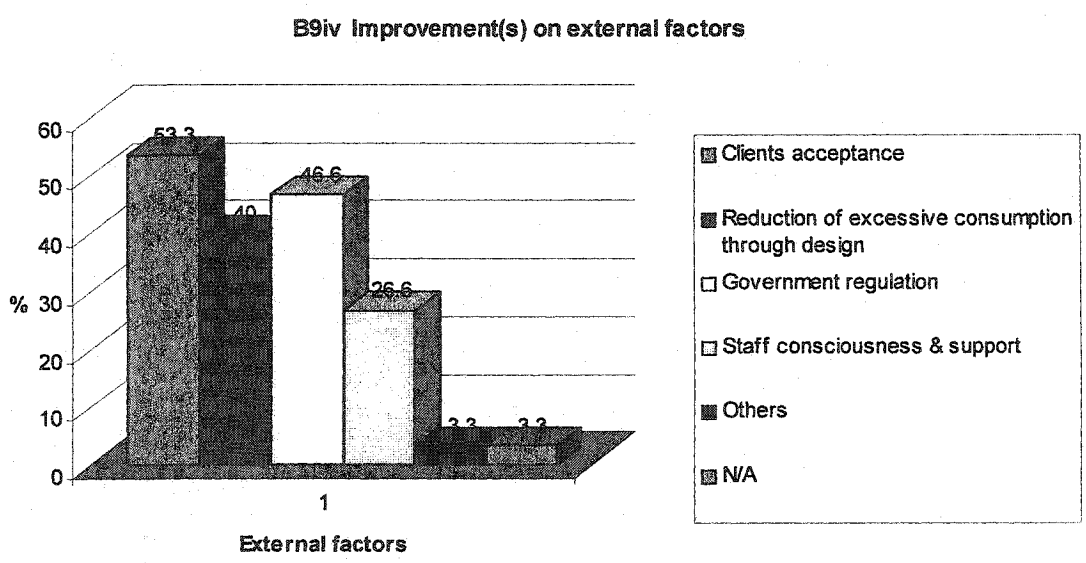
*For Q9i, **concerning improvement(s) in existing hotel design**, 53.3% indicated (d) Environmental management, 40% chose (a) Functions and 33.3% indicated N/A.



*For Q9ii, concerning the **3 most considered design features** (5 major areas selected within the hotel) **in existing hotel design left to be improved,** (d) Air-conditioning ranked first with 21 ticks, (f) Energy ranked second with 19, and © Natural ventilation ranked third with 17. For the rest, (e) Building material and finishes with 15, (i) Waste disposal and treatment with 14 and (b) Landscape/greenery with 13. These ranking of design features can support the development of product identity in the present.

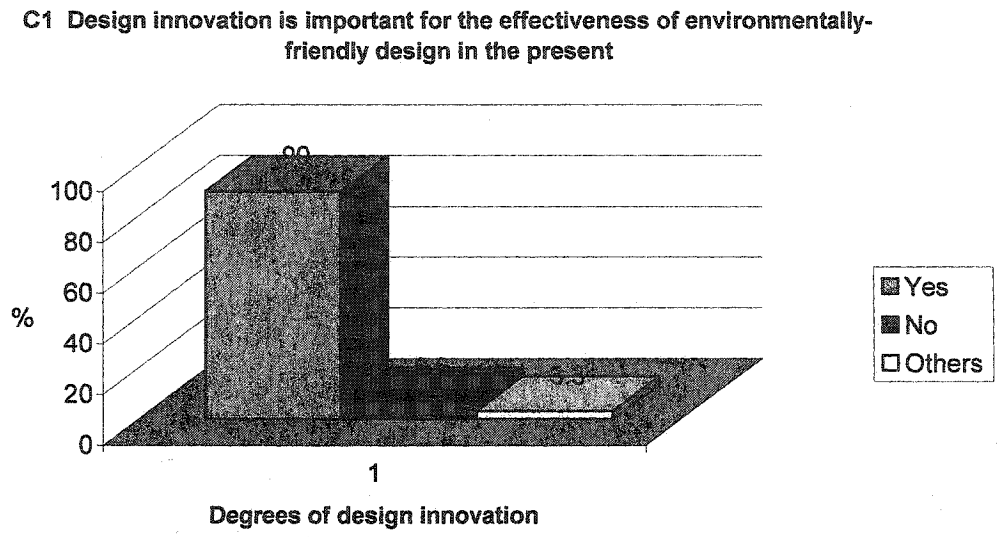


*For Q9iii, concerning the **3 mostly considered design features** (5 major areas selected within the hotel) **in future hotel design left to be improved,** (f) Energy ranked first with 21 ticks, (d) Air-conditioning ranked second with 18, and then Building shape and orientation ranked third with 14. For the rest, (b) Landscape/greenery, (c) Natural ventilation, (e) Building material and finishes and (i) Waste disposal and treatment all with 12 ticks respectively. These ranking of design features can support the development of product identity in the future.

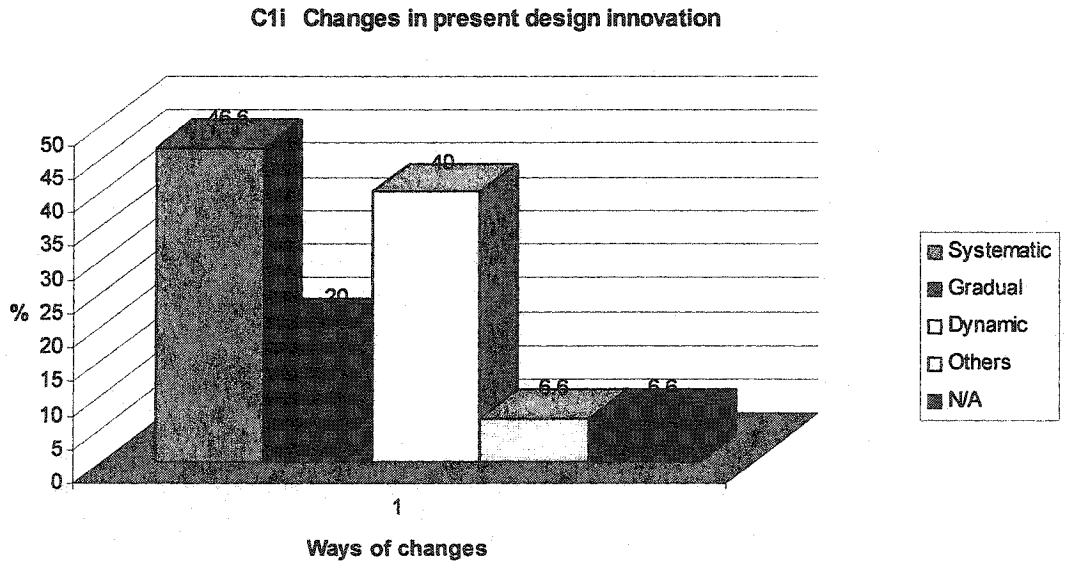


*For Q9iv, **regarding improvement(s) on external factors,** 53.3% indicated (a) Clients acceptance, 46.6% chose (c) Government regulation, 40% indicated (b) Reduction of excessive consumption through design. Lots of typical opinions expressed that it was important to seek clients acceptance as designers were service-providers to the society.

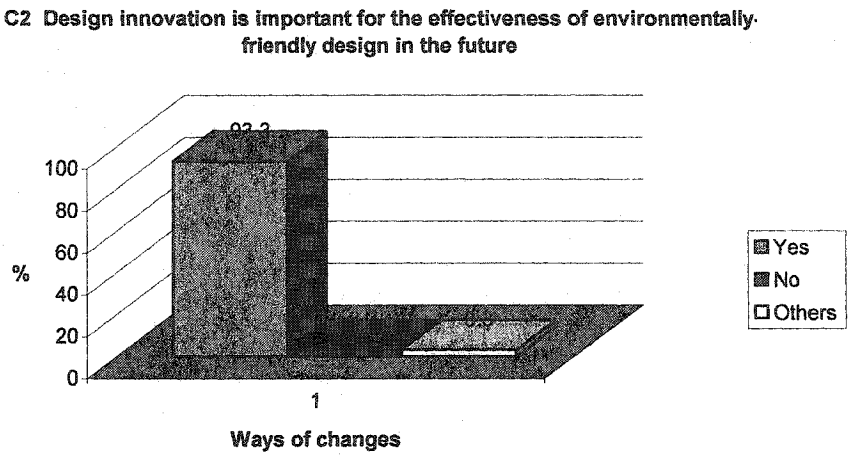
Under Section C, questions were about to **Design Innovation**



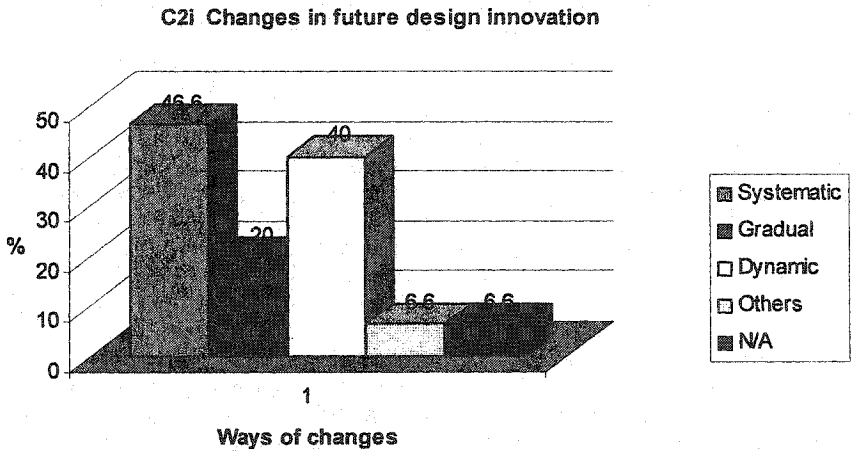
For Q1, regarding **whether design innovation is important for the effectiveness of environmentally-friendly design in the present,** 90% indicated (a) Yes while 6.6% indicated (b) No.



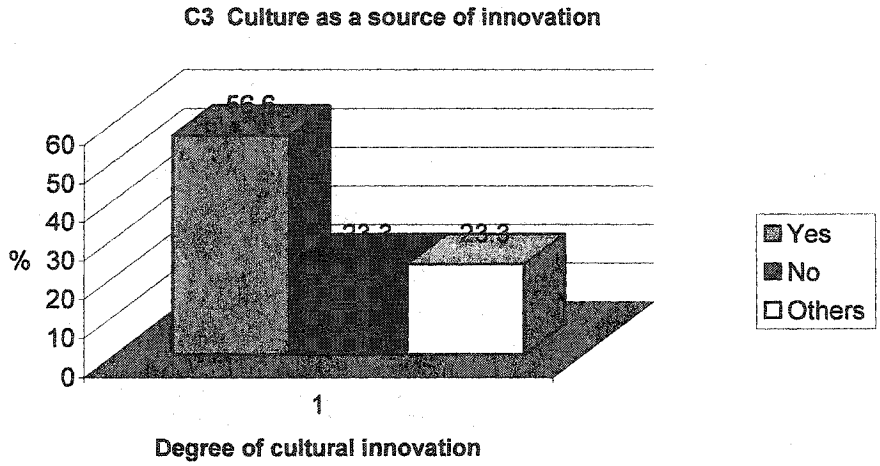
*For Q1i, concerning **changes in design innovation in the present,** 46.6% indicated (a) Systematic, 40% indicated (c) Dynamic.



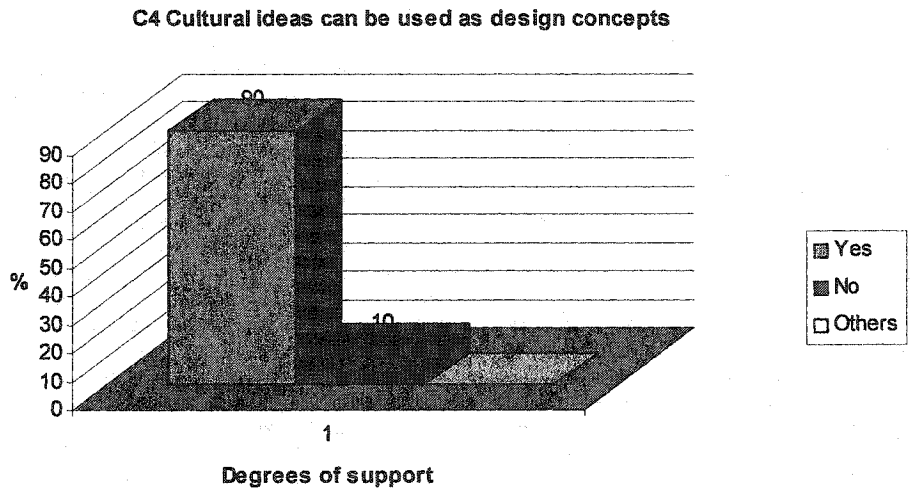
For Q2, regarding **whether design innovation is important for the effectiveness of environmentally-friendly design in the future,** 93.3% indicated (a) Yes while 3.3% indicated (b) No.



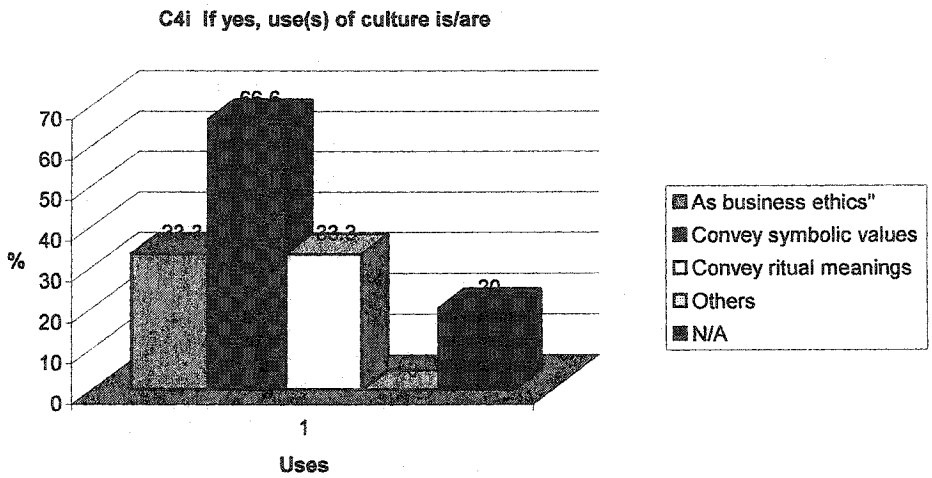
- For Q2i, concerning **changes in design innovation in the future,** 46.6% indicated (a) Systematic, 40% indicated (c) Dynamic.



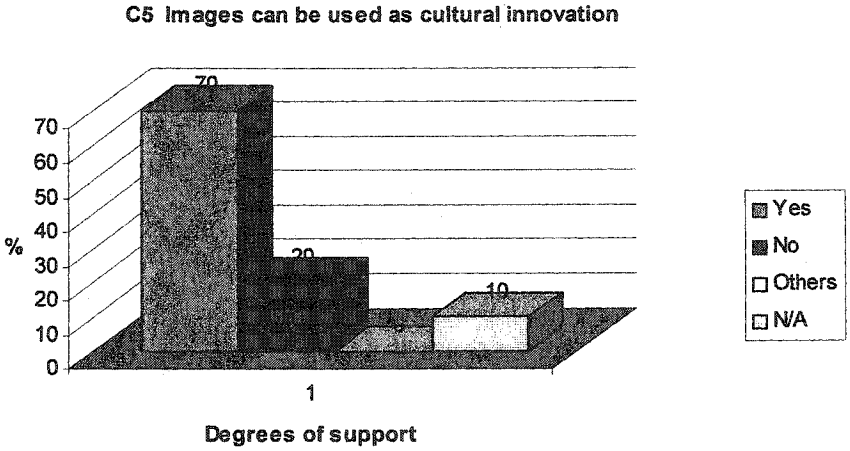
For Q3, regarding **culture as a source of innovation,** 56.6% shown (a) Yes while 23.3% shown (b) No.



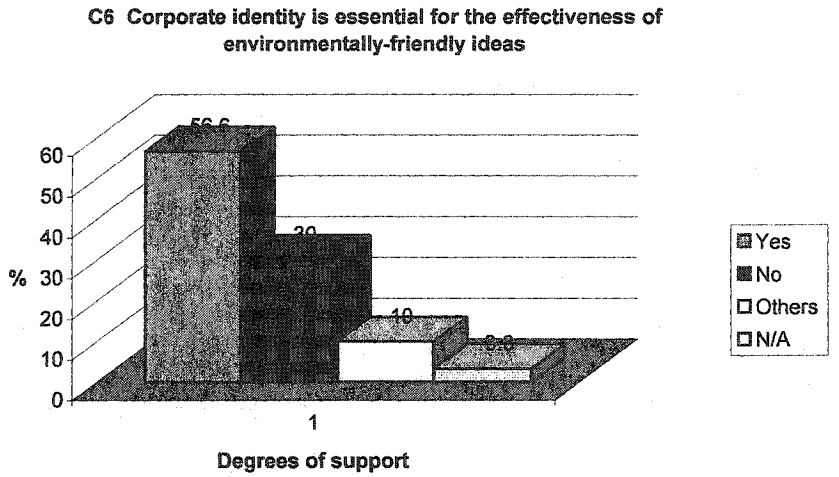
For Q4, as far as whether **cultural ideas can be used as design concepts,** 90% indicated (a) Yes while 10% indicated (b) No.



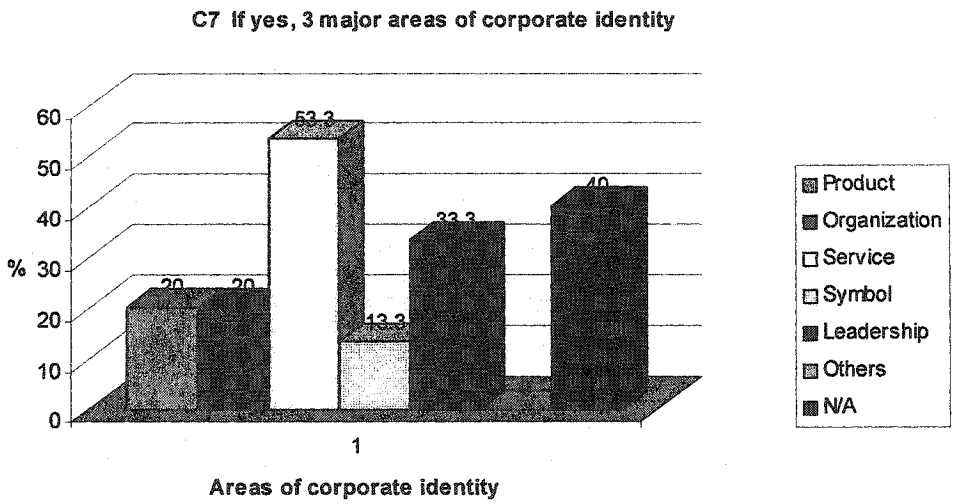
* For Q4i, if the choice is yes following Q4, 66.6% indicated culture can be used as (b) It can convey symbolic values, 33.3% indicated (a) Culture can be used as business ethics and © It can convey ritual meanings respectively.



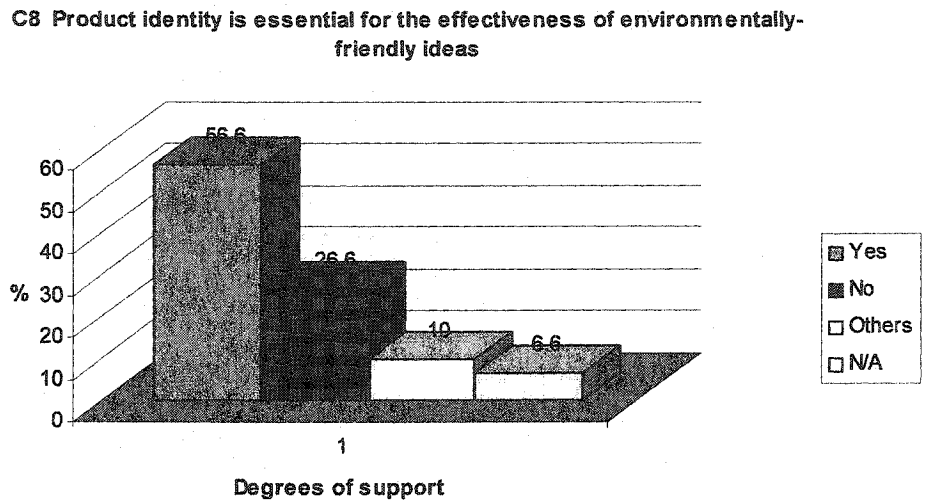
For Q5, regarding **images can be used as cultural innovation**, 70% indicated (a) Yes while 20% indicated (b) No, with 10% indicated N/A. Typical opinions from the interviewees indicated that images could be used as identity of design concept which were visually communicable as promotion. Images should be used effectively if they were not used superficially.



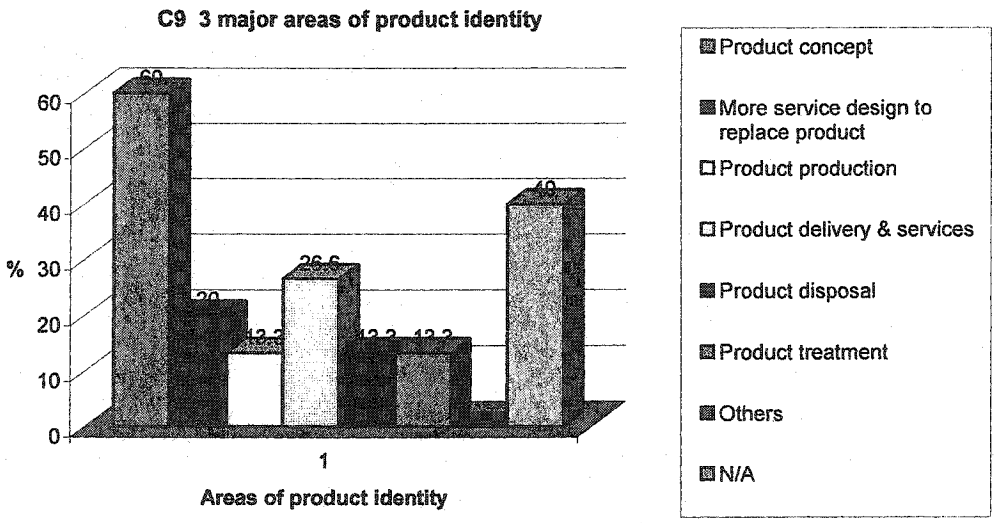
For Q6, concerning **corporate identity is essential for the effectiveness of environmentally-friendly ideas**, 50% indicated Yes, while 36.6% indicated (b) No, 10% indicated others and 3.3% were (d) N/A.



* For Q7, as far as the **3 major areas of corporate identity** is concerned, 53.3% indicated © Service, 33.3% indicated (e) Leadership, 20% indicated (a) Product and (b) Organization respectively.

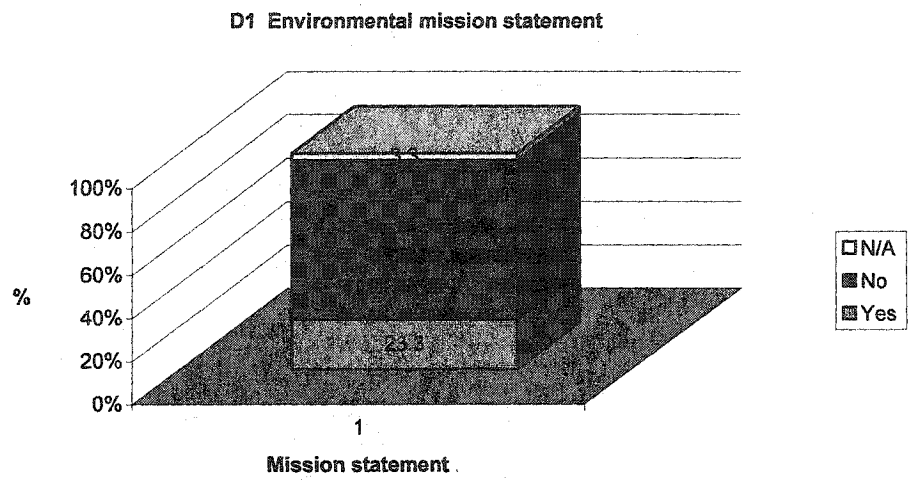


For Q8, concerning **product identity is essential for the effectiveness of environmentally-friendly ideas,** 46.6% indicated (a) Yes, 36.6% indicated (b) No, 10% chose (c) Others and 6.6% were (d) N/A.

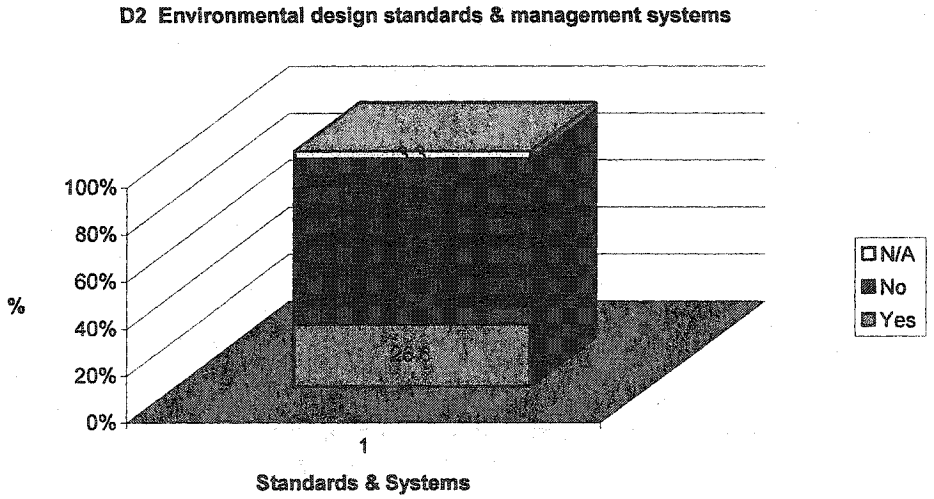


* For Q9, as far as the **3 major areas of product identity** is concerned, 60% chose (a) Product concept, 26.6% chose (d) Product delivery and services and 20% chose (b) More service design to replace product.

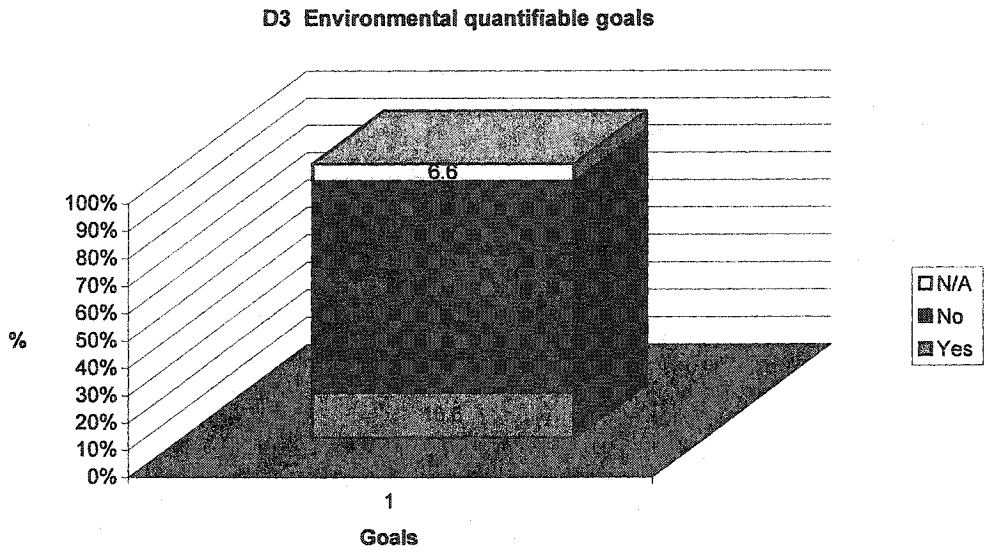
Under Section D, questions were concerned with **Design Management**



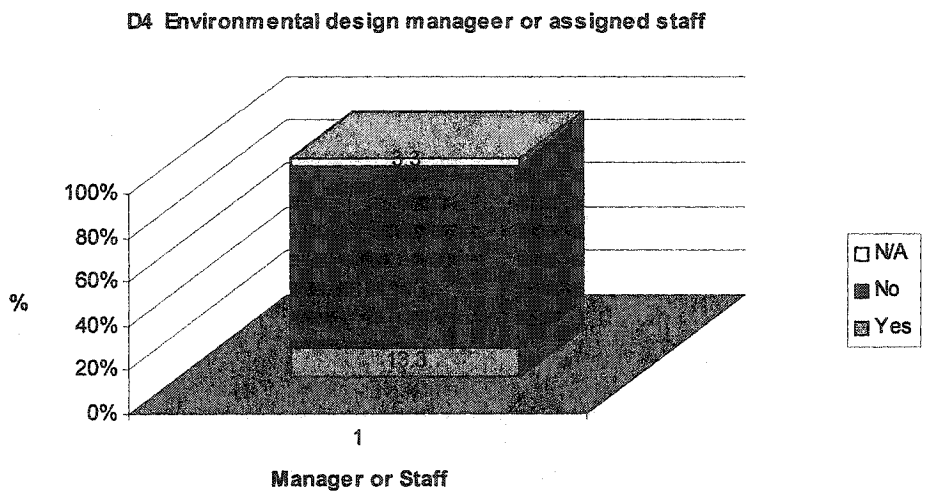
For Q1, 73.3% of the responded design firms indicated (b) No while 23.3% indicated (a) Yes whether there are any **environmental mission statement** within their companies. Typical opinions from the interviewees that for those who indicated Yes, most of their mission statements were informally documented, especially those small-sized design firms.



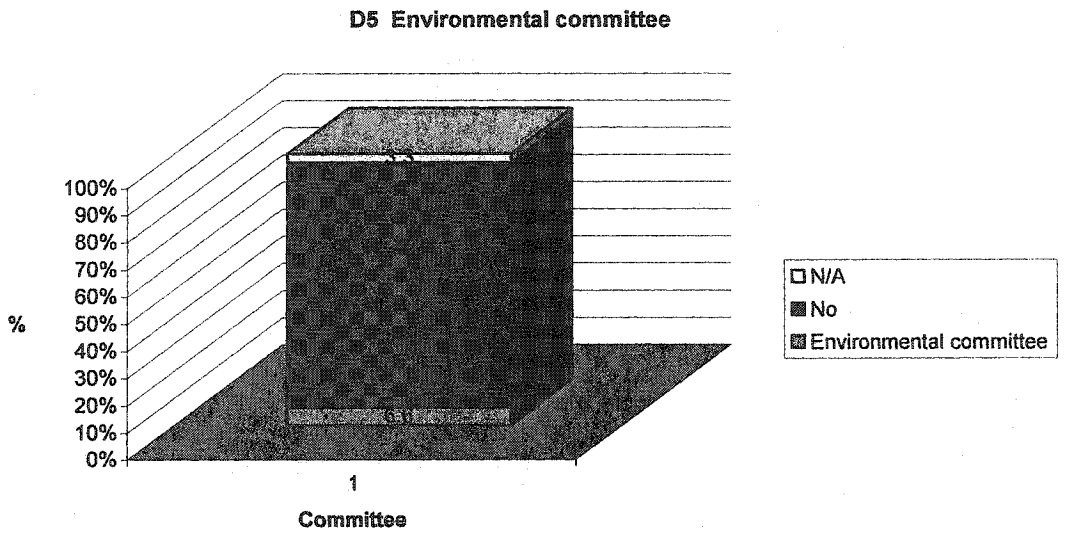
For Q2, 70% indicated (b) No while 26.6% indicated (a) Yes regarding any **environmental design standards and management systems.** Some typical findings can be drawn from the interviewees, all of the them were working in small-sized design firms. The smaller the firms, the easier to communicate their environmentally-friendly ideas to their staff. However, as the manpower is limited, most of them have to devote their extra time and workload to set up their management system, such as doing R&D, establishing their in-house library and resources. For the large-sized design firms, they adopted some well-documented systems, such as ISO 14000 and HKBEAM.



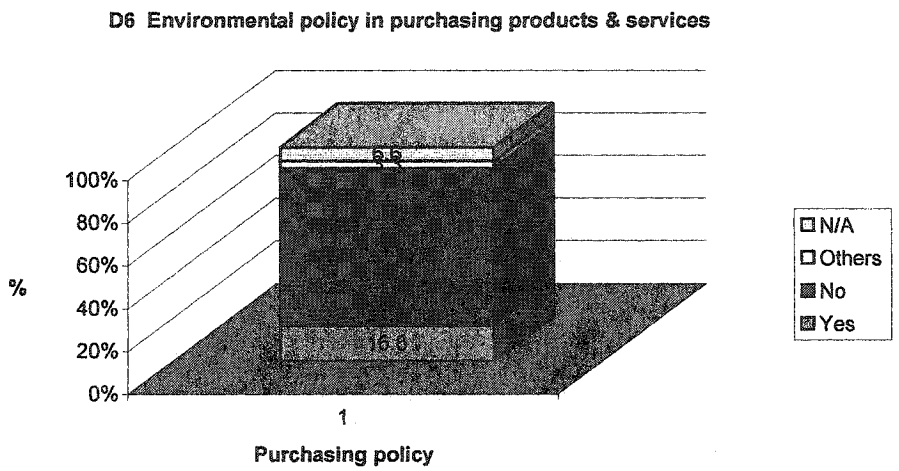
For Q3, 76.6% indicated there was no environmental quantifiable goals while 16.6% chose Yes.



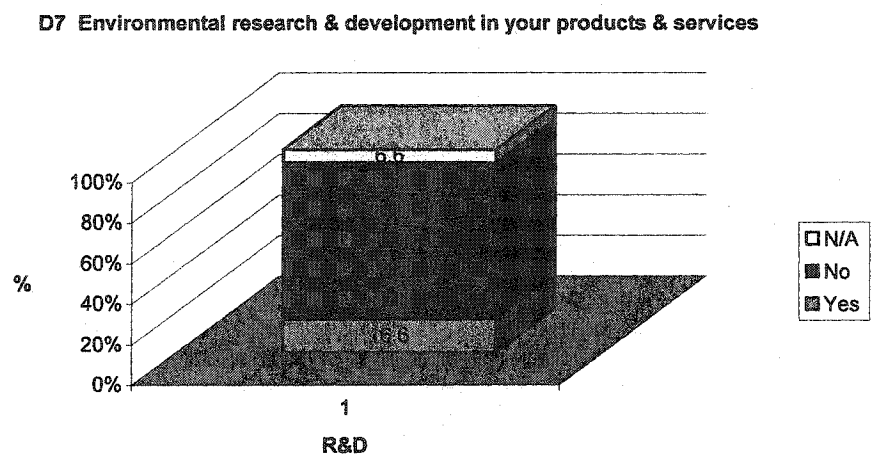
For Q4, 83.3% responded there was no environmental design manager or assigned staff while 13.3% chose Yes.



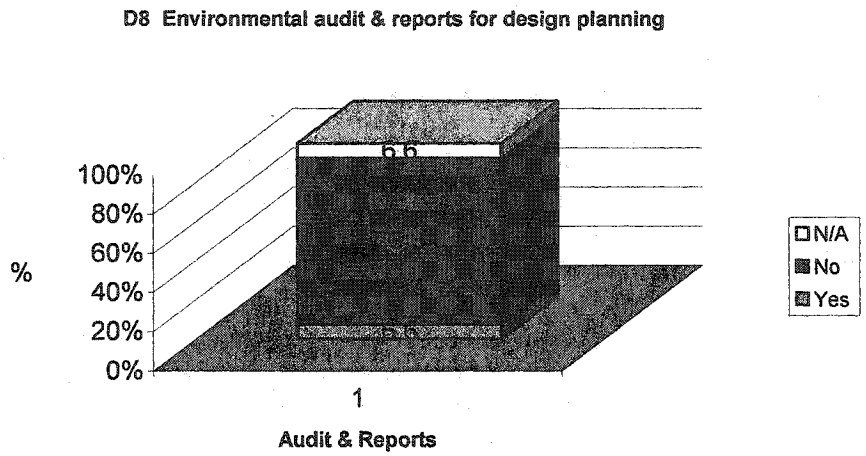
For Q5, 90% do not have any environmental committee within their firms while 6.6% chose Yes.



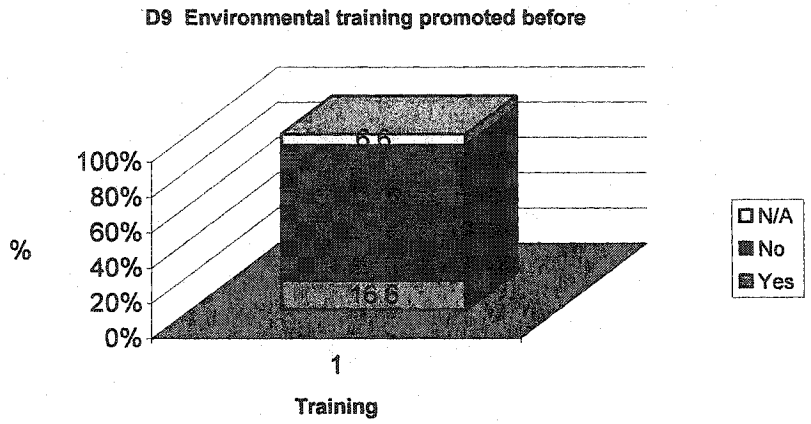
For Q6, 73.3% shown there was no environmental policy in purchasing products and services while 16.6% responded Yes.



For Q7, 76.6% replied no environmental research & development within their product and services while 16.6% chose Yes.



For Q8, 73.3% indicated no environmental audit & reports for design planning while 6.6% shown Yes.



For Q9, 76.6% chose no environmental training promoted before while 16.6% indicated Yes.

On the whole, most of the design firms that responded did not implement any in-house environmentally-friendly management systematically. For those who indicated having commitment, most of their practices were not well-documented and formally promoted. As environmentally-friendly design was just started lately in Hong Kong, the findings indicated that some design firms had showed their concern towards this issue by practising through their design projects; however, their identities in adopting environmentally-friendly design were still not yet concretely developed.

Appendix F Interview findings

Interview 1

Interview Date: 15/12/2000 (Fri..) 5:30 - 6:30 p.m. Ref no: 012(i)

Part A Company Profile
Interviewee's profile:

Mr. Leung is the director of a local design firm, which was established in 1991. His major design services included hospitality and corporate services. His average no. of staff in 2000 was less than 50.

Part B Design factors

2. Have you ever considered environmental-friendly design within your projects in the past 5 years?

   (a) Yes, there were 2 projects completed before. They were golf club houses in Discovery Bay as requested by clients' brief. Environmental-friendly designs included energy-saving, bigger window for getting natural lighting and natural ventilation, fans were installed rather than air-conditioning. On the whole, simple design was his major design style. Besides, his design firm completed some guest rooms in China, Middle East, Bangkok hotel projects.

7. There were problems in considering environmental-friendly projects, these included clients did not show interest in environmentally-friendly ideas. Furthermore, there was a shortage of Research and Development (R&D) and related information. What is more, since interior designers were just service-providers, they needed to fulfill the clients' satisfaction and requirements.

8. Within the existing Hong Kong hotel projects, what are your opinions in general? (from design concepts to disposal)

   (a) Lack of local identity in design characteristics
   (b) Design is too opulent
   (c) No actual resort hotel

9. Are there any improvement(s) regarding environmental-friendly hotel design?

   (a) Design should be less opulent
   (b) Natural material should be used more
   (c) Good workmanship is needed during renovation to save natural resources.

Part C Design Innovation

3. Some architects and scholars have put forward culture as a source of innovation, for example, Confucianism, Taoism and western philosophies, do you agree?

   (c) Anything surrounding us is a source of innovation, not just philosophies.

4. Do you agree that these ideas can be used as design concepts?

   (a) Yes, it can only be applied to some cases, not all.

5. Within cultural innovation, images are largely used in promoting massive consumption, do you agree images can be used in environmental-friendly design too?

   (a) Yes, (images) that become the identity of concept of the design.

6. Do you think a strong corporate identity is essential for the effectiveness of environmental-friendly ideas?

   (a) Yes, corporate identity should emphasize on quality of cleanliness and pleasant-looking in their hotel agenda.

8. Do you think a strong product identity is essential for the effectiveness of implementing these ideas?

   (b) No

Interview 2

Interview Date: 28/12/2000 (Thur.) 3:00-4:00p.m. Ref.no: 021

Interviewee' profile:

Part A Company Profile

Mr. Lo is the business director, Head of Design of a local design firm, branch of an overseas company. It was established between 1991 till now. His major design services included corporate, retail, exhibition & display services. His average no. of staff in 2000 was less than 50.

Part B Design factors

2. Have you ever considered environmental-friendly design within your projects in the past 5 years?

   (a) Yes, advertising campaign and posters of Friends of the Earth.

7. Problems in considering environmental-friendly projects included insufficient environmental-friendly design products/materials supplied, difficult to do environmental reports and audits, weak incentives of environmental shift due to insufficient education, eg. minimization of printing errors during colour-proofing can reduce material wastage to a great extent.

Part C Design Innovation

3. Some architects and scholars have put forward culture as a source of innovation, for example, Confucianism, Taoism and western philosophies, do you agree?

   (c) Yes, can be a part of innovation. There should be more options for choosing.

4. Do you agree that these ideas can be used as design concepts? (a) Yes

5. Within cultural innovation, images are largely used in promoting massive consumption, do you agree images can be used in environmental-friendly design too?

   (a) Yes, icons can be used as communication.

6. Do you think a strong corporate identity is essential for the effectiveness of environmental-friendly ideas?

   (a) Yes

7. If so, please suggest 3 major areas you will consider?

   (a) Brand as functions, as integrity and consisted of product values.

8. Do you think a strong product identity is essential for the effectiveness of implementing these ideas?

   (a) Yes

Part D Design Management

Among the 9 questions, he indicated "No" to all of them except Q4 he acted as the environmental manager of the firm and in Q7 he developed his research and development in products and services through his in-house library.

Interview 3

Interview Date: 14/12/2000 (Thurs.) 2:30 - 3:30 p.m. Ref no: 027

Interviewee's profile:

Part A Company Profile

Mr. Ng is the managing and creative director of a local design firm, which was established between 1991 till now. His major design services included corporate brand, promotion and graphic services. His average no. of staff in 2000 was less than 50.

Part B Design factors

2. Have you ever considered environmental-friendly design within your projects in the past 5 years?

   (a) Yes, there were 20 projects completed before in Hong Kong, mainly related to the promotion pamphlets and posters. Due to his own sense of environmental sense and impact of design works, he always spent more time and effort in developing more innovative ideas and producing better concept for promotion. He commented that even the green groups did not have strong sense of innovation towards their campaign.

7. Problems in considering environmental-friendly projects included low budget and lack of communication concept.

8. Within the existing Hong Kong hotel projects, what are your opinions in general? (from design concepts to disposal)

   There was no clear concept in environmental protection and no successful case in Hong Kong hotel design.

9. Are there any improvement(s) regarding environmental-friendly hotel design?

   Yes, some hotels have committed to apply for ISO14001.

Part C Design Innovation

3. Some architects and scholars have put forward culture as a source of innovation, for example, Confucianism, Taoism and western philosophies, do you agree?

   (a) Yes

4. Do you agree that these ideas can be used as design concepts? (a) yes

5. Within cultural innovation, images are largely used in promoting massive consumption, do you agree images can be used in environmental-friendly design too?

   (a) Yes, (images) better say as "visual communication".

6. Do you think a strong corporate identity is essential for the effectiveness of environmental-friendly ideas?

7. If so, please suggest 3 major areas you will consider?

   (a) To implement green concept in corporate mission as well as visual communication

   (b) More seminar is needed

   (c) Designers got to make more public speech on that.

8. Do you think a strong product identity is essential for the effectiveness of implementing these ideas? (a) Yes

9. If so, please suggest 3 major areas you will consider?
   (a) Base on a very strong design philosophy
   (b) Successful case study
   (c) Strong R & D in green product.

Part D Design management

Among the 9 questions, he indicated "No" to all except Q6 that he sometimes had environmental policy in purchasing his products and services.

Interview 4

Interview Date: 2/01/2001 (Tue.) 2:30 - 3:30 p.m. Ref no: 028

Interviewee's profile:

Part A Company Profile

Mr. Lau is the creative director of a partnership design firm, which was established between 1991 till now. His major design services included corporate, exhibition and display and industrial aspects. His average no. of staff in 2000 was less than 50.

Part B Design factors

2. Have you ever considered environmental-friendly design within your projects in the past 5 years?
   (a) Yes, within the design managment of his in-house service, he emphasized on paper recycling and colour accurancy in order to reduce material wastage. His environmental consciousness was developed and influenced by his lecturers and professors while he studied in Canada - influence from western education model putting knowledge and action together.

7. Problems in considering environmental-friendly projects included
   (a) Increase of operation costs
   (b) Increase of operation time
   (c) Insufficient environmental-friendly design products/materials supplied
   (d) Client unwillingness

8. Within the existing Hong Kong hotel projects, what are your opinions in general? (from design concepts to disposal)
   The aesthetic quality of environmental-friendliness were limited, especially in some mainland China hotels.

9. Are there any improvement(s) regarding environmental-friendly hotel design?

Yes, improvements can be made on design management such as corporate identity.

Part C Design Innovation

3. Some architects and scholars have put forward culture as a source of innovation, for example, Confucianism, Taoism and western philosophies, do you agree? (a) Yes

4. Do you agree that these ideas can be used as design concepts?

(a) Yes, the concept of " harmony with nature" is derived from Taoism. The whole environment should be maintained in balance and sustainability etc.

5. Within cultural innovation, images are largely used in promoting massive consumption, do you agree images can be used in environmental-friendly design too?

(a) Yes, images (can) communicate.

6. Do you think a strong corporate identity is essential for the effectiveness of environmental-friendly ideas? (a) Yes

7. If so, please suggest 3 major areas you will consider?

(a) Aesthetics and Imagery create "Identity" as environmental-friendliness

(b) Being actual user and practitioner of "Environmental-friendly" concepts

(c) Due to the weak edification in HK, disseminating/educating through practice.

8. Do you think a strong product identity is essential for the effectiveness of implementing these ideas?

(a) Yes

9. If so, please suggest 3 major areas you will consider?

(a) Overall aesthetic and material use

(b) Production/manufacturing technology are environmentally sound.

(b) Disseminating/educating through practice.

Part D Design management

Among the 9 questions, he gave "No" to all of them except Q1 he indicated he had some environmental mission statement, not formal but use as much as possible. Besides, in Q6 he took some environmental policy in such as recyclability, reusability etc. in purchasing his products and services. Then in Q7 he developed his research nd development products and services through his daily and basic reading through magazines and references.

Appendix G - Case example: Hotel Nikko

Background Information:

1.1 There are totally 461 guest rooms in Hotel Nikko.

1.2 The classification of Nikko is 5-star hotel.

Guest Profile:

2.1 For the past 3 years, the average occupancy of the hotel (1997-1999) were 84.7%, 81.0% and 87.2% respectively. The average duration of stay is about 2.7 days.

2.2 The major proportion of guests profile are corporate (45 %), leisure traveller/ group (55 %).

2.3 The nationalities of the guests in 1999: (please refer to the following table):

Japanese	60 %
U.S. & Canada	10 %
China	6.5 %
HK	6 %
Europe	7 %
S.E. Asia	5 %
Others	5.5 %

2.4 Construct of Identity

(a) Mission statement: Mr. Leclerq of Hotel Nikko Hongkong formulated his missions through the Environmental Management – Code of Practice. As stated in his Code of Practice, the Hotel Nikko Hongkong is committed to providing quality services for the guests, and strives to preserve the environment through incorporating the environmental code of practice in delivering their services.

(b) Environmental policies and management: Based on his Code of Practice, he sought continuous improvement by constantly reviewing their practices and procedures in complying with all local legislation and pollution control ordinances.

(c) Quantifiable goals: Environmentally-friendly design planning included energy-saving, water-saving and waste-minimization.

(d) Environmental manager

Miss Alison Lam, Human Resources Manager, has been assigned as

the environmental manager since 1998. She needed to coordinate all the department heads in Hotel Nikko for environmental issues, and organized environmentally-friendly activities with the public.

Meanwhile, Hotel Nikko served as a co-ordinator of joining 10 hotels in TST for recycling of PET bottles. This project was collaborating with Friends of the Earth.

She expressed that it really took time for co-ordination as she had to fulfill the duties of serving as Human Resources Manager and Environmental Manager at the same time.

Another planning was about the co-ordination between Hotel Nikko and Green Island Cement on recycling of glass bottles. Afterwards, another issue of Health and Safety would be followed. Besides, some more ad hoc issues about interior finishes such as paint, lighting and air-freshner would be considered later.

(e) Environmental committee
A specialized committee has been formally established for achieving the ISO 14000 certification since 1998.

(f) Environmental purchasing policy and materials
Hotel Nikko has issued letters to all its suppliers in English, Chinese and Japanese asking for the supply and production of green products. Presently, his sourcing products and services would conform to their 6R policy on Waste Minimization -Reduce, Reuse, Replace, Repair, Refill, Recycle.

(g) Environmental research and development (R & D): Mr. Leclercq was aware that his operating budget could not allow for extravagances such as calling in expert consultants. His "coup de maitre" was to seek the support of the educational establishments on a regular basis. Given that most of the technical needs were not so highly complex, both the hotel staff and students had learned from one another, frequent cooperation had been established between the Building Services Department of the Hong Kong Polytechnic University and the hotel.

(h) Environmental auditing

Regarding environmental auditing, there were both in-house and consultancy being employed. The former one is performed once every quarter. (The most recent one will be on 26-27 Jan., 2000). For outside consultancy, Lloyds will conduct environmental auditing once every 6 months.

Hotel Nikko has tried to reduce conflicts and difficulties by using a win win strategy, by offering itself as a case study-EMS was in collaborating with the academic bodies such as PolyU in providing expertise and knowledge. The whole funding was supported by the Industrial Support Fund.

(i) Environmental training & seminars/ community sharing: Besides regular trainings provided, Mr. Leclercq realized all activities had the potential to improve environmental quality, therefore gaining the support of the parties involved was vital. For instance, they raised the interests of the stakeholders by explaining the hotel's environmental philosophy and seeking their co-operation in improving their own attitude towards environmental concerns. They also encouraged and influenced their suppliers to take part in the environmental protection initiatives. Also, they regularly shared their experience of environmental initiatives with the industry and the community.

2.5 Images

The stronger their organizational identities, the stronger would be their images. Hotel Nikko promoted its images of being a green hotelier, including its corporate and product identity (see Fig. 7.1).

Year	Environmental Actions and Events
1993	Best Performance of the Year Award 1993
1994	Best Performance of the Year Award 1994
1995	Green Hotelier of the Year of IHA Award
1995	Best Performance of the Year Award 1995
1995	The Challenge Best Success Award from Nikko Hotels International
1996 Sept., 26	Energy-saving and water-saving of Shell Better Environment Awards Scheme with the issue of A Guide to Energy & Water Conservation in Hotels
1996	Green Innovator Award which was endorsed by FoE
1996	Used X'mas Card Collection Activity
1996 Sept	Environmental Auditing Report was conducted by FoE
1998 Aug	Waste Minimization of disposable bottle toiletries in Hotel Nikko conducted by FoE and PolyUPA
1999M	ISO 14001 Environmental Management System Certification. It is the highest award of the Hotel quality management.
2000	The Best Retail Award

Fig. 7.1 Environmental Events and Awards of Hotel Nikko

Source: *Adapted from Hotel Nikko Website*
Http://www.hotelnikko.com.hk/english/awards.htm

Appendix H – Case Example: Headland Hotel of Cathay Pacific Airways Ltd.

Existing cases of new hotel design:

(Ref: Cathay Pacific Environmental Office (2000). *Cathay Pacific Airways Limited – Environmental Report 1998 & 1999.* HK: Cathay Pacific Environmental Office)

Aims: Despite environmental concern has started since the last 2 decades, there have not been any successful examples researched so far. Several reasons would explain why Cathay Pacific Airways was chosen as a case study. It (CX) was one of the key international service industries in Hong Kong, with distinct achievement and commitment in environmentally-friendly design and management. These results could be served as a benchmark on the construct of organizational identities and images. Its progress could illustrate how strategies and targets could be achieved systematically on the environmentally-friendly design in Hong Kong.

Background Information:

Construct of Organizational Identities:

- At the beginning, Cathay Pacific's environmentally-friendly practices were mainly related to environmental management. Long before the implementation of Environmental Management System in the early 1990s, they initiated the reduction of energy consumption, recycling reusable materials as their daily operations, their long-term strategy and corporate culture.
- In order to consolidate their identities as environmentally-responsible citizens, they formulated their mission statement in Nov 1992. This statement basically covered: (a) In-house training as CX will ensure that their staff acquire the education in environmental matters; (b) Establishment of waste minimization and energy conservation systems; (c) The development of environmentally-friendly technologies within CX; (d) Public participation in environmental issues; (e) Serving as an environmental leader in the community.
- In order to monitor and improve continuously, CX incorporated a company-wide Environmental Management System (EMS). It was a system of policies and operating processes in identifying, managing and exploring the environmental impact of its activities. By documenting all the environmental phases, these facilitate the assessment of environmental performance. With their environmental achievements assessed, CX awarded ISO 14000 certification in 1997, and since then it has won a number of awards for environmental management – including the inaugural Eco-Business Grand Award, Hong Kong's leading "green" award in 1999. CX has set up its environmental goals for assessing its targets. Here are some examples (see Fig.7.2) :

Product and service identity:

Headland Hotel at Cathay Pacific City was a two-wing staff hotel. With all the experiences achieving ISO 14000 certification, the airline committed to implement an Environmental Management System to monitor the building, design and operation of Cathy Pacific City. This was one of the few environmentally-friendly building recommended by HKIA as the benchmark locally. Here were some design features being used (see Fig. 7.3):

Environmental Issue	Objective	Targets
Environmental Management System	To introduce EMS to other Cathay-associated companies.	Help Headland hotel and HAECO to get ISO 14000 Certification in 2000-2001.
Training for CX & public	To enhance environmental awareness of all CX staff & public.	Review and update an environmental programme for different levels of staff and organize more talks for CX, business partners and public.
Noise	Reduce noise pollution.	Monitor the operational measures. Place an order to purchase 4 new aircrafts for 2000.
Fuel consumption and emission	Reduce fuel consumption & emissions.	Boeing 777's landing with reduced flaps. Study possible fuel reduction by adapting engine maintenance. Existing Euro 1 & 2 standard engine buse will be retrofitted with catalyst converters trap particulates. Purchase Euro 3 standard engine and ultra low sulphur free fuel in 2003. Continue the emission monitoring programme.
Energy	To optimize CX energy and resource consumption.	Lower electricity consumption in 1999. Explore the possibilities for increasing the fuel efficiency of aircraft, vehicle fleet and power consumption in CX City.
Waste	To minimize waste produced from CX Operations.	Research possibilities for the separated collection & recycling of food scape from aircraft and catering waste. Avoidance of waste generation during production & design. 5% improvement in recycling of all inflight waste.
Wastewater	To reduce chemical detergent pollution in discharge water.	Further development of 3 more bio-products such as bio-grease remover.
Indoor Air Quality (IAQ)	To monitor & upgrade IAQ on board & on ground.	Follow up the recommendations of over/air on/carpet/ cabin. Cleaning in cabin air quality report in 1998. Ensure CX office was within the limit of level 1 of Hong Kong Indoor Air Quality Objective.
Community	To improve communication with the public on environmental issues. To support worthwhile environmental initiatives within the community.	Further promoted the concept of environmental protection to our supplier, contractor, customers, academics, professionals etc. Further shared our environmental experience in public talks, local and international conference. Sponsor community events focused on environmental protection.

Fig. 7.2 Environmental Programme of Cathay Pacific Airlines for 2000/2001
Source: Adapted from Cathay Pacific Environmental Office. (2000).

Design features	
Air-conditioning	Installation of temperature sensors could eliminate energy wastage due to excessive cooling. Double filters (at 85% efficiency) were installed in all Air Handling Units. The VariCel media collected dirt particles throughout the entire thickness of the media and substantially increased the control of particulate level.
Energy	The use of sensors and electronic ballast in lighting. Extended hours of lighting could be promptly provided upon requests on phone through PABX system. Maximization of daylight through light wells and atrium in reducing energy consumption. For unwanted solar heat gains, the windows of the Cathay City were double-glazed and equipped with sensor controlled motorized shading.
Building materials and finishes	All furniture, carpets and fabrics were formaldehyde-free and all timber involved was obtained from suitable sources only. Only water-based and environmentally-friendly paints were used. Radon free reconstituted marble would minimize the emission of radon gas.
Waste treatment & disposal	Extensive recyclable recollection programme consisted of introducing waste separation bins in each lift lobby. They were installed for recycling of waste paper, aluminium cans and plastic containers (PET).
Water/Laundry	Water discharged from the swimming pool was reused in less particular areas, such as carpark cleaning. Ozone was used instead of chlorine gas to disinfect the pool water, which was suitable for watering lawn. Low flush toilet and urinal cisterns, water saving shower hoses were installed in all toilets and bathrooms. Bio-odour remover was used in kitchen and toilet.
Amenities	All bathrooms were installed with permanent shampoo and soap liquid dispensers.
Pest/fly Control	Water-based & biodegradable chemicals were chosen for outdoor sprays.
Fire extinguishers	Only ozone-friendly fire extinguishing substances were used.

Fig. 7.3 Environmentally-friendly design features of Headland Hotel
Source: Adapted from Cathay Pacific Environmental Office. (2000).

- CX had set up its environmental committee with an assigned environmental manager, Mr. Fred Luk.
- CX had an environmental policy in purchasing their products and services.
- CX had many environmental research and development in their products and services.
- Regular in-house environmental audit and reports were conducted. For example, environmental site audits and reports have been conducted for Headland Hotel, Hong Kong Aircraft Engineering Company, Cathay Pacific Catering Services, Vogue Laundry Services Ltd. Etc. Besides, CX also audited its suppliers and contractors for their environmental assessment annually.
- CX has organized their environmental training and seminars frequently.

Images:

- Corporate identity: Green logo colour to represent environmentally-friendly design.

Summary:

So this example can support the research question of the thesis as follows: that all the environmentally-friendly design in HK needs systematic planning. For the existing design and facilities, the practices started out basically from environmental management, waste minimization for cost-saving. Then for the new design projects, CX gradually moved over to new and holistic environmentally-friendly designs after the commissioning of the new airport at Chek Lap Kok.

Key Performance Indicators					
	1995	1996	1997	1998	1999
Electricity Saved (in HK$)	$4.5 millions	$3.5 millions	$2.6 millions	$2.2 millions	$3.5 millions
Electrcity saved over the previous Year (%,kWh)	-	10%	14.5%	10%	13%
Paper & Stationery consumption saved (HK$)	-	-	$4.2 millions	$2.5 millions	$472,000
Waste oils recycled (litres)	-	149,000	136,800	106,000*	-*
Waste paper recycled (tones)	57	59	179	154	187
Printer cartridges recycled (pcs.)	1000	1200	648	905	1103
Aluminium recycled (tonnes)	-	-	-	-	247
Food waste recycled (tonnes)	-	-	-	-	762
Menu card cover reused (HK$)	-	-	-	-	Over $10 millions
Wooden stirrer saved (no.)	142,000	66,000	86,000	470,000 (↓70%)	204,000 (↓100%)
Disposable plastic cups saved (no.)	408,000	168,000	147,000	1 million (↓66%)	504,00 (↓100%)
Fuel consumption (litres for 100-passenger kilometer)	-	-	-	4.4	4
Staff environmental training	1000	2360	1960	1202	2798
No. of participants in green events	1855	51925	42300	40016	4058

Fig. 7.4 Key Environmental Performance Indicators of Cathay Pacific Airlines from 1995-1999

Source:* *Cathay Pacific Environmental Office (2000)

* The actual amount of waste oil recycled is more than the reported figure here as the waste oil recycled from their vehicle operation had been handled by an outside contractor since 1st April 1998. The contractor was unable to the supply relevant statistical figures at the time research was being conducted.

References

Aaker, David. (1996). *Building Strong Brands*. NY: The Free Press.

Albert & Whetten. (1985). Organizational Identity. In L.L. Cummings & B.M. Staw (Eds.), *Research in organizational behaviour, Vol.7.* Greenwich, CT: JAI, pp. 263-295.

Alexander, Christopher. (1964). *Notes on the Synthesis of Form.* US: Harvard University Press.

Allinson, Robert E. ed. (1991). *Understanding the Chinese Mind - The Philosophical Roots.* HK : Hong Kong Oxford University Press.

Altman & Werner ed. (1985). *Home Environments.* NY & London: Plenum Press.

Archer, L.B. (1965). *Systematic Method for Designers*. London: The Design Council.

Archer, L.B. (1979). "Whatever Became of Design Methodology?" *Design Studies* 1(1), p.17-18.

Archer, L.B. (1981). *A View of the Nature of Design Research.* In R. Jacques and J. Powell (ed.) Design: Science: Method. Guildford, UK, Westbury House.

Baudrillard, J. (1975). *The Mirror of Production.* St. Louis: Telos Press.

Baudrillard, J. (1981). *For a Critique of the Political Economy of the Sign.* St. Louis: Telos Press.

Bayazit, Nigan. (1993). "*Interrelations Between Design Education, Design Practice, Design Research, Design Knowledge.*" In Blandow & Dyrenfurth ed. (1994). Technology Education in School and Industry-Emerging Didactics for Human Resource Development. Berlin: Springer-Verlag, pp. 226-249.

Beard, Colin. (1999). Conference Paper of *"Design–reframing negativity"*. In International Conference of European Academy of Design. UK: Sheffield Hallam University.

Berking, C. trans. (1999). *Sociology of Giving.* London: Sage Publications Ltd.

Bond, Michael H. ed. (1986). *The Psychology of the Chinese People.* Hong Kong: Oxford University Press.

Bond, Michael H. ed. (1996). *The Handbook of Chinese Psychology*. HK: Oxford University Press.

British Travel Agents Association. (1992). *Hotels.* England: November.

Broadbent, G. and. Ward, A. (1969). *Design Methods in Architecture.* London: Lund Humphries.

Broadbent, G. (1973). *Design in Architecture.* UK: John Wiley & Sons Ltd.

Broadbent, G. (1979). "The Development of Design Methods." *Design Methods and Theories* 13(1): 41-45.

Bruun, Ole & Kalland, Arne. ed. (1995). *Asian Perceptions of Nature.* Great Britain: Curzon Press Ltd.

Bramwell, Anna. (1989). *Ecology in the Twentieth Century - A History.* New Haven: Yale University Press.

Brown, Renner & Halweil. (1999). *Vital Signs 1999.* NY & London: W.W. Norton & Company.

Building Services Department. (1996). *Manual for Environmental Protection and Energy Conservation.* HK: The Hong Kong Polytechnic University.

Building Services Department. (1996). *A Guide to Energy & Water Conservation in Hotels: A Practical guide for management, employees & engineering staff.* HK: The Hong Kong Polytechnic University.

Building Services Department. (2000). Newsletter and CD-Rom titled at *Keeping Hong Kong's Hotel Industry Competitive – Environmental Management Systems for Hotels.* HK: The Hong Kong Polytechnic University.

Burall, Paul and Elkington, John. (1986). *The Green Designer.* London: Design Council.

Button, John. (1988). *A Dictionary of Green Ideas: Vocabulary for a Sane and Sustainable Future.* London: Routledge.

Carson, P. and Moulden, J., (1991). *Green is Gold: Business Talking to Business About the Environmental Revolution.* Harperusiness, Toronto.

Cater, Erlet and Lowman, Gwen ed. (1994). *Ecotourism - A Sustainable Option?* UK: John & Wiley & Sons Ltd.

Cathay Pacific Environmental Office. (2000). *Cathay Pacific Airways Limited – Environmental Report 1998 & 1999.* HK: Cathay Pacific Environmental Office.

Census and Statistics Department. (1981-94). *Hong Kong Energy Statistics.* HK: Census and Statistics.

Chan, Cecilia & Hills, Peter ed. (1997). *Community Mobilization and the Environment in Hong Kong.* HK: The University of Hong Kong.

Chan, Harry ed. (1998). *Pace Interior, June & July 1998 Vol.1.* HK: Pace Publishing Limited.

Charter, Martin and James, Peter. *Eco-Innovation Workshop paper.* England: The Centre for Sustainable Design, 1997 Jan 15.

Chell, Elizabeth. (1993). *The Psychology of Behaviour in Organizations.* London: The Macmillan Press Ltd.

Cheng, Chung-ying. (1991). *New Dimensions of Confucian and Neo-Confucian Philosophy.* NY: State University of New York Press.

Cheng, Chun-ying. (1993). "The Formulation of a modern Chinese Management Model: the proposal and the application of C Theories". In Fok T.F. *Eastern Culture and Modern Corporate Management.* HK: Buddist Publishing Co., p.49.

Christian, Norberg-Schulz. (1985). *The Concept of Dwelling.* NY: Rizzoli.

Christian, Norberg-Schulz. (1980). *Genius Loci: Towards A Phenomenology of Architecture.* NY: Rizzoli International Publications, Inc.

Cheng Yi ed. Cleary, Thomas trans. (1995). *The Tao of Organization – The I Ching for Group Dynamics*. Boston & London: Shambhala.

Cheng, Wai-mun. (1994). "Implementation of Environmental Education through the Teaching of S4-S5 Biology, Geography and History in Hong Kong Secondary Schools", unpublished M.Ed. thesis. Hong Kong: University of Hong Kong, Faculty of Education. In Palmer, Joy A. (1998). *Environmental Education in the 21st Century: Theory, Practice, Progress and Promise.* London & New York: Routledge, 1998, p.191.

Choi, Pauline. (1993). "Environmental Protection in Hong Kong: An Historical Account." In Chan, Cecilia & Hills, Peter ed. *Limited Gains: Grassroots Mobilization and the Environment in Hong Kong.* HK: The University of Hong Kong, pp.29-31.

Chua Beng-Huat ed. (2000). *Consumption in Asia – Lifestyles and Identities*. NY: Routledge.

Clarke J.J. (1997). *Oriental Enlightenment: The Encounter Between Asian and Western Thought.* London & New York: Routledge.

Clegg S.R. & Redding S.G. eds. (1990). *Capitalism in Contrasting Cultures.* Germany: Walter de Gruyter & Co., p.38.

Conner, F. (1999). "Building a better world" In *Cornell Hotel and Restaurant Administration Quarterly*., Vol.40, Issue 2, Apr. UK: Elsevier Science Inc., pp. 96.

Cook, Harry E. (1997). *Product Management – Value, Quality, Cost, Price, Profit and Organization.* London: Chapman & Hall.

Cooper, David E. & Palmer, Joy A. ed. (1992). *The Environment in Question: Ethics and Global Issues.* London & New York: Routledge.

Creswell, J.W. (1994). *Research Design – Qualitative & Quantitative Approaches*. US: Sage Publications, Inc.

Cross, A. (1980). "The Recent History of Post-industrial Design Methods" In N. Hamilton (ed.) *Design and Industry.* London: The Design Council.

Cross, A. (1984). "Towards an Understanding of the Intrinsic Values of Design Education." *Design Studies* 5 (1): 31-39.

Cross, A. (1984). *Developments in Design Methodology.* UK: John Wiley & Sons Ltd.

Cross, A. (1990). "The Nature and Nurture of Design Ability." *Design Studies* 11(3), pp.127-140.

Daly, H.E. (1991). "Elements of Environmental Macroeconomics," in Costanza, R. ed. *Ecological Economics*: The Science and Management of Sustainability. NY: Columbia University Press, 1991.

Daly, D. & Cobb, J. (1989). *For the Common Good.* Boston: Beacon Press.

Davis-Cooper, Rachel. (1995). *The Design Agenda: a guide to successful design management.* UK: John Wiley & Sons Ltd.

Dewberry, E. (1996). "Ecodesign Strategies", In *EcoDesign IV, no.1.* UK.

Dewberry, E & Goggin, P. (1994). "Ecodesign & Beyond: Steps towards "Sustainability" UK: Open University and Nottingham Trent University. Nov., pp.7-8.

De Vries et.al. eds. (1993). *Design Methodology and Relationships with Science: Introduction.* Netherlands: Kluwer Academic Publishers, p.14.

De Vaus, D.A. (1993). *Surveys in Social Research, 3rd ed.* London: UCL Press.

Dickens, Peter. (1996). *Reconstructing Nature: Alienation, Emancipation and the Division of Labour.* London and NY: Routledge.

Dreyfus, H. and Hall, H. ed. (1992). *Heidegger: A Critical Reader.* Oxford & Cambridge: Blackwell.

Ecodesign Foundation *NewsLines.* (1991). 1, Sept, 4.

Engel & Engel ed. (1990). *Towards an Ecological World view: Ethics of environment and development.* US: The University of Arizona Press.

Enz, C.A. & Siquaw, J.A. (1999). "Best hotel Environmental practices" In *Cornell Hotel and Restaurant Administration Quarterly,* Vol. 40, Issue 5, Oct. UK:, Elsevier Science, Inc., pp.72-77.

Environmental Protection Department. (1993) *Environment Hong Kong 1993 – A Review of 1992.* HK: EPD.

Environment Protection Department. (1993-97). *Environment Hong Kong 1993-1997.* HK : EPD.

Environmental Protection Department. (2002). *Monitoring of Solid Waste in Hong Kong – Waste Statistics for 2001.* Hong Kong: EPD.

Farmer, John. (1996). *Green Shift: Towards a Green Sensibility in Architecture.* UK: Butterworth-Heinemann.

Fink, Arlene. (1995). *The Survey Handbook.* US: Sage Publications, Inc.
Foltz. Bruce V. (1995). *Inhabiting The Earth : Heidegger, Environmental Ethics, and the Metaphysics of Nature.* New Jersey : Humanities Press.

Friends of the Earth. (1990-97). *One Earth.* HK: Friends of the Earth (Charity) Ltd.

Friends of the Earth. (1992). "Environmental areas in which local hotels are making an effort", *One Earth, Vol.16.* HK: Friends of the Earth, p.125.

Friends of the Earth. (1996). *Hotel Nikko Hongkong Environmental Audit Report.* Hong Kong, Friends of the Earth, September.

Friends of the Earth and The Hong Kong Polytechnic University Postgraduate Association. (1998). *The Feasibility Study of waste Minimization for Hotel Industry in Hong Kong – Replacing Disposable Toiletries with Eco-Friendly Designs.* HK: FoE and PolyUPA.

Friends of the Earth. (1999). *One Earth.* HK: Friends of the Earth.

Fry, Tony ed. (1991). *Ecodesign Foundation Newslines 1.* Sydney: Ecodesign Foundation, Sept.

Fry, Tony. (1992). *Green Desires – Ecology, design and products.* Sydney: EcoDesign Foundation Inc.

Fry, Tony. (1994). *Remaking: Ecology, Design, Philosophy.* Sydney: Envirobook, pp.9,11-12.

Fry, Tony. (1995). "Sacred Design 1- A Re-creational Theory". In Buchanan, Richard. *Discovering Design.* London: The University of Chicago Press.

Fry, Tony. (1997). "The Placement, Displacement and Replacement of Design". In *Form/Work No.1 Oct.* Sydney: The University of Technology, pp.53-63.

Fry, Tony. (1997). Newsletter of "Hong Kong: Design in the Hot Seat", July 16.

Fry, Tony. (2000). Seminar paper of "A Tool of Changes" organized by Design Innovation of the Hong Kong Productivity Council 2000. Australia: Sydney.

Gare, Arran E. (1995). *Postmodernism and the Environmental Crisis.* London and NY: Routledge.

Go, F.M. & Pine, Ray. (1995). *Globalization Strategy In The Hotel Industry.* London & NY: Routledge, p.327.

Goldsmith E. (1988). *The Ecologist 188, no.415:118,* and *The Way: An Ecological World View*, 2nd ed.

Government Information Services. (1990). *Energy Conservation within the hotel industry: Hotels – Guidelines for Energy Efficiency.* HK: Energy Efficiency Advisory Committee.

Guy, S. & Farmer, G. Ch.6 "Contested Constructions – The Competing logics of green buildings and ethics." In Fox, W. ed. (2000) *Ethics and the Built Environment.* London & NY: Routledge, p.76.

Haden (1998). "Diverse approach lead to more focused course" in *Pace.* HK: Pace Publishing Ltd.

Hayward, Tim. (1994). *Ecological Thought: An Introduction.* Cambridge: Polity Press.

Heidegger, Martin and Hofstadter, Albert trans. (1971). *Poetry, Language, Thought.* NY: Harper & Row, Publishers.

Heller, Chaia. (1999). *Ecology of Everyday Life – Rethinking the Desire for Nature.* Montreal/NY/London: Black Rose Books.

Henderson, Justin. (1994). *"The Hotel As Global Designs."* Grattaroti, R.M. *Hotel Design - International Portfolio of the Finest Contemporary Designs.* US: Rockport Publishers, Inc., pp.4-5.

Hickson D.J. ed. (1997). *Exploring Management Across The World.* England: Penguin Books.

Hileman, B. (1982). "The Global 2000 Report to the President" *Environmental Science and Technology* 16:151A-155A.

Hills, Peter ed. (1991). *Energy Efficiency: Hong Kong's Challenge for the '90s.* HK: HKIE, 1991.

Hills, Peter (1998). Draft Speech At Conference – "Planning for a Sustainable Hong Kong". HK: Feb.

Hong Kong Hotels Association. (1994). *Annual Report 1993/94.* HK: HKHA, p.13.

Hong Kong Polytechnic. (1993). *Graduates' Year Book 93- Power of the Greens.* HK Polytechnic: Department of Hotel & Tourism Management.

HKHA. (1998). *Hong Kong Hotels Directory.* HK: HKHA.

HKIE. (1991). *Energy Efficiency Symposium Proceedings: An Economic and Environmental Imperative.* HK: HKIE.

HKTA. (1995). *A Statistical Review of Tourism 1995,* Hong Kong.

HKTA. (1996). *Hong Kong Tourism Association.* HK: HK Government Publication.

Hofstede, G. & Bond, M.H. (1988). "Confucius and Economic Growth: new insights into Culture's Consequences". In *Organizational Dynamics, Spring.* US: pp.5-21.

Hofstede, G. (1991). *Cultures and Organizations – Software of the Mind.* England: McGraw-Hill International Ltd.

Hong Kong Museum of History & WWF. (1991). *Towards a sustainable world.* HK: Urban Council, p.7.

Hong Kong Standard. (1997). HK: July 16.

Hopfenbeck, Waldemar. (1992). *The Green Management Revolution - lessons in Environmental Excellence.* UK: Prentice Hall International Ltd.

Hsin, Robert. (1996). Guidelines and Principles for Sustainable Community Design. (Master's Thesis submitted). US: the School of Architecture, July 1.

Hugget, Richard. (1995). Conference paper of "Nature's Design: The Ecologist's View," at the University of Mancester in October. London: Green Books, 1996; *De-Industrializing Society.* London: *The Ecologist,* 1988.

Iwanowski, K. & Rushmore, C. (1994). "Introducing the Eco-Friendly Hotel" In *The Cornell and Restaurent Administration Quarterly, Vol. 35, Issue 1, Feb.* UK: Elsevier Science Inc., pp. 34-38.

Janicaud, D. and Gendre, M. trans. (1995). *Heidegger: From Metaphysics To Thought.* Albany: State University of New York Press.

Jones, J.C. (1970). *Design Methods.* UK: John Wiley & Sons Ltd.

Jones, J.C. (1977). "How My Thoughts About Design methods Have Changed During the Years." *Design Methods and Theories* 11(1), pp. 48-62.

Kane, R. (1992). *Hong Kong at its Best.* Lincolnwood, Ill.: Passport Books, p.44.

Kirkpatrick, Janice. (1994). "City culture pays". In Myerson, Jeremy ed. *Design Renaissance.* Open Eye Publishing, pp. 70-84.

Klocker, Ingo. (1980). Die Produkt-Form and menschliches Verhalten. Eine Untersuchung von psycho-physiologischen Ursachen and Wirkungen, Elementen und Kriterien der Gestaltung von Geraten, Maschinen, Anlagen und Fahrzeugen. (Diss.) Technische Universitat Hannover, 1980.

Kroeber and Kluckhohn. (1952). "*Culture: A Critical Review of Concepts and Definitions,*" Peabody Museum Papers, vol.47, no.1. Cambridge, Mass.: Harvard University, p.181.

Lam, Joseph. (1992). *Energy-efficient building strategy in HK should involve all.* In Dawson, Layla ed. "The Environment & Less Damaging Design" Pace, Vol. 38. HK: Pace Publishing Ltd., pp.84-94.

Lam, J.C. (1993-4). *Energy Conservation Audits in the Hotel Industry.* HK: Hong Kong City Polytechnic Building Energy Conservation Unit.

Lam Wo Hei. (1997). Ch.2 "Project Management For The Architect". In *Wong Wah Sang ed. Professional Practice for Architects in Hong Kong.* HK: Pace Publishing Limited, pp.75.

Lash, Scott & Urry, John. (1994). *Economies of Signs & Space.* London: Sage Publications.

Lau Siu-Kai & Kuan Hsin-Chi. (1988). *The Ethos of the Hong Kong Chinese.* HK: The Chinese University Press.

Lau Siu Kai et al. (1995). *Indicators of Social Development – Hong Kong 1993.* CUHK: Hong Kong Institute of Asia-Pacific Studies.

Lau Siu Kai ed. (2000). *Social Development and Political Change in Hong Kong.* CUHK: The Chinese University Press.

Lele, M. (1991). "Sustainable Development: A Critical Review," in *World Development* Vol. 19, No.6.

Leung, Benjamin K.P. (1996). *Perspectives on Hong Kong Society.* Hong Kong: Oxford University Press.

Levy-Leboyer et al. (1996). 'Determinants of pro-environmental behaviour: a five country comparison', *European Psychologist* 1:123-9.

Lewis, Digby ed. (1997). *Hinge Vol. 38.* HK: Hinge Marketing Ltd, Sept. pp.27 & 34.

Lovelock, Christopher. (1994). *Product Plus: How Product + Service = Competitive Advantage.* Singapore: McGraw-Hill Book Co.

Macann, Christopher ed. (1996). *Critical Heidegger.* London & NY: Routledge.

Mackenzie, Dorothy. (1991). *Green Design - Design for the Environment.* London : Laurence King Ltd.

Madge, Pauline. (1997). "Ecological Design: A New Critique" In *Design Issues, Volume 13, Number 2 Summer.* US: MIT Press.

Manzini, Ezio. (1992). "Promethus of the Everyday: The Ecology Of the Artificial and the Designer's Responsibility." In Buchanan & Margolin ed. *Discovering Design-Explorations in Design Studies.* Chicago and London: The University of Chicago Press, 1995.

Manzini, Ezio. (1994). "Design, Environment and Social Quality: From '*existenzminimum*' to quality maximum". In *Design Issues, 10, no.1, Spring.* US: MIT Press.

Marshall, Peter. (1992). *Nature's Web: An Exploration of Ecological Thinking.* Great Britain: Simon & Schuster Ltd.

Martinsons M.G., So K.K., Tin, Cathy and Wong, Donna. (1997). "Hong Kong and China: Emerging Markets for Environmental Products and Technologies". In *Long Range Planning*, Vol.30, No.2., Elsevier Science Ltd., Pergamon, April, pp.227-290.

Marzano, Stefano. (1994). "Chocolate for Breakfast". In Myerson, Jeremy ed. *Design Renaissance.* England: Open Eye Publishing, pp.13-21.

McCracken, Grant. (1996). *The Long Interview- Qualitiative Research Methods Series 13.* Newbury Park. London: Sage Publishers.

McInerney, Francis & White, Sean. (1995). *The Total Quality Corporation.* NY : Truman Talley Books/Dutton.

Miller, D. ed. (1995). *Acknowledging Consumption.* NY & London: Routledge.

Milton, Kay. (1996). *Environmentalism and Cultural Theory.* UK: Routledge.

Minai, Asghar Talaye. (1984). *Architecture as Environmental Communication.* Berlin: Mouton Publishers.

Minichiello et al. (1995). *In-Depth Interviewing.* Sydney: Longman.

Mitcham, Carl. (1995). "Ethics into Design". In Buchanan, Richard and Margolin,Victor ed. *Discovering Design: Explorations in Design Studies.* US: The University of Chicago Press.

Moore J.W. (1986). *The Changing Environment.* NY: Springer-Verlag New York Inc., pp.1-2.

Mulhall, Stephen. (1996). *Heidegger and Being and Time.* London & NY: Routledge.

Naess, Arne. (1973). "The Shallow and the Deep, Long-range Ecology Movement. A Summary," *Inquiry* 16

Naess, Arne. (1973). Special issue of *The Ecologist* on Deep Ecology: "Rethinking Man and Nature: Towards and Ecological World View" 188, no. 415.

Ng, G.T.L. (1991). *New Environmental Paradigm Survey: 1991.* HK: Hong Kong Environmental Centre.

Ng, Pui-Yee. (1995). "The Effectiveness of the "Green" image of Hong Kong hotels-issues of environmental concern and energy conservation". (MA in Design 94-95 unpublished thesis at the Hong Kong Polytechnic University).

O'Riordan, T. (1976). *Environmentalism.* London: Pion Ltd.

O'Riordan, T. (1988). 'The Politics of Sustainability', in Turner, R. (ed.) *Sustainable Environmental Management: Principles and Practice.* London: Belhaven.

Olins, W. (1989). *Corporate Identity.* London: Thames & Hudson.

Palmer, J. (1998). *Environmental Education in the 21st Century – Theory, Practice, Process and Promise.* London & NY: Routledge.

Palmquist, Stephen. (1992). *The Tree of Philosophy.* HK: Philosophy Press.

Papanek, Victor. (1970). *Design for the Real World: Human Ecology and Social Change.* UK: Thames & Hudson.

Papanek, Victor. (1994). "The coming of a new aesthetic: eco-logic, etho-logic, bio-logic" In Myerson, Jeremy ed. *Design Renaissance.* England: Open Eye Publishing, pp. 29-34.

Papanek, Victor. (1995). *The Green Imperative.* UK: Thames and Hudson.

Patton, M.Q. (1990). *Qualitative Evaluation And Research Methods, 2nd ed.* London: Sage Publications, Inc.

Pearce, D., Markandya, A., Barbier, E. (1989). *Blueprint for a Green Economy.* London: Earthscan Publications.

Pepper, David. (1996). *Modern Environmentalism: An Introduction.* London & New York : Routledge.

Pizzacaro, Silvia. (1994). "Theoretical Approaches to Industrial Ecology, Status and Perspectives," of international seminar "The Scenario of Sustainability: The Systemic Context" Milan, April.

Planning, Environment and Land Branch. (1993). *The Hong Kong Environment-A Green Challenge for the Community.* HK: Government Secretariat.

Porter, M. & van der Linde. (1996). "Ch.6 Green and Competitive: Ending The Stalement." In Welford R. & Starkey R. ed. *Business and the Environment.* UK: Earthscan.

Redclift and Benton ed. (1994). *Social Theory and the Environment.* London and N.Y.: Routledge, pp.55-56.

Rees, W.E. (1998). "Ch.6 Reducing the Ecological Footprint of Consumption" In Westra and Werhane ed. *The Business of Consumption.* Oxford: Rowman & Littlefield Publishers, Inc., p.118

Rittel, H. (1973). "The State of the Art in Design Methods." In Design Research and Methods (Design Methods and Theories) 7(2), pp.143-147.

Robinson, Mike. (1999) "Collaboration and Cultural Consent: Refocusing Sustainable Tourism" In *Journal of Sustainable Tourism, Vol.7, No. 3&4.* UK: Butterworth & Co. (Publishers) Ltd., pp.379-397.

Romeril, Michael. (1989) "Tourism and the Environment – Accord or Discord?" In *Journal of Sustainable Tourism, Sept.* UK: Butterworth & Co. (Publishers) Ltd. pp.204-208.

Roszak, Theodore. (1995). Ch 2 "Designing for a Safer Future." In Papanek, Victor ed. *The Green Imperative.* UK: Thames and Hudson, pp.29-48.

Rowe, P. (1987). *Design Thinking.* Cambridge & MA: MIT Press.

Rubin, R.B., Rubin, A.M. and Piele, L.J. (1996). *Communication Research: Strategies and Sources,* 4th ed. US: Wadsworth.

Seale, Clive ed. (1998). *Researching Society and Culture.* London: Sage Publications.

Sharplesy, Richard. (2000) "Tourism and Sustainable Development: Exploring the Theoretical Divide" In *Journal of Sustainable Tourism, Feb. Vol.8, no.1.* UK: Butterworth & Co. (Publishers) Ltd., pp.1-19.

Sigmund A. Wagner. (1997). *Understanding Green Consumer Behaviour – a qualitative cognitive approach.* Routledge: London and New York.

Simmons, I. G. (1993). *Interpreting Nature: Cultural Constructions of the Environment.* London: Routledge.

Smith & Bond. (1998). *Social Psychology Across Cultures.* Great Britain: Prentice Hall Europe.

South China Morning Post. (1994). HK: SCMP, Nov 11.

Steiner, Dieter & Nauser, Markus ed. (1993). *Human Ecology-Fragments of Anti-Fragmentary Views of the world..* UK : Routledge.

Stewart, Sheila and Johns, Nick. (1996). "Total Quality: an approach to managing productivity in the hotel industry". In Johns, Nick ed. *Productivity Management in Hospitality and Tourism.* London & NY : Cassell.

Sutton, J. (1998). "One Hotel-Two Systems: The Duality of Empowerment Strategies in A Hong Kong Hotel". In *Monash Quality Conference Paper.* HK: Department of Hotel & Tourism Management, Departmental Research Series, #5.

Sylvan, R. & Bennett, D. (1994). *The Greening of Ethics.* US : The University of Arizona Press.

Tahkokallio & Vihma. (1994). *Design – Pleasure or Responsibility?* Finland: the University of Art and Design Helsinki UIAH.

The Chartered Society of Designers, Hong Kong Designers Association, Hong Kong Fashion Designers Association, Hong Kong Polytechnic University, Interior Design Association. (1997). *Survey On Status Of The Hong Kong Design Profession.* HK: Hong Kong Designers Association.

Tong & Zhang (1993). *Hotel Architectural Design.* (Luguan Jianzhu Sheji). PRC: China Architectural Industrial Publisher, pp.44-45.

Trice H.M. & Beyer J.M. (1993). *The Cultures of Organizations.* NJ: Prentice Hall, Inc., p.77.

Truman, M. "Ch. 4 Innovation by design" In Zairi, M. (1999). *Best Practice – Process Innovation Management.* Oxford: Butterworth Heinemann.

Tse, Joseph ed. (1991). *Towards A Sustainable World.* Hong Kong: Urban Council, pp.233-235.

Turner, R. (ed.) (1988). Sustainable Environmental Management: Principles and Practice. London: Belhaven.

Tutty L.M. et. al. (1996). *Qualitative Research for Social Worker.* Boston: Allyn and Bacon.

Umberto Eco. (1997). "Function and Sign: The Semiotics of Architecture" In Leach, Neil ed. *Rethinking Architecture - A Reader in Cultural Theory.* London & New York: Routledge, pp.182-202.

Umiker-Sebeok, Jean ed. (1987). *Marketing and Semiotics- New Directions in the Study of Signs for Sale.* Berlin: Walter de Gruyter.

United Nations Development Program. (1998). *Human Development Report 1998.* NY & Oxford: Oxford University Press.

Upton, Dell. (1998). *Architecture in the United States.* Oxford & New York: Oxford University Press.

Van Toen, Carlene. (1998). Conference Paper of *"Agenda 21 for the Travel & Tourism Industry: Towards Environmentally Sustainable Development: An Overview of Key Issues Related to Sustainable Tourism Development"* In The Seventh Annual Business & Industry Environment Conference and Exhibition. HK: Centre of Environmental Technology Limited, Sept. pp.1-2.

van Weenen, Bakker and de Keijser. (1991). *Eco-design: An Exploration of the Environment.* Milieukunde: Universiteit van Amsterdam.

Veal A.J. (1992). *Research Methods for Leisure And Tourism.* London: Longman Group UK Limited.

Vihma, Susann. (1992). *Objects and Images – Studies in Design and Advertising.* Finland: the University of Industrial Arts Helsinki UIAH.

Vihma, Susann. (1995). *Design – Pleasure or Responsibility?* Finland: the University of Industrial Arts Helsinki UIAH.

Vihma, Susann. (1995). *Products As Representations – A semiotic and aesthetic study of design products.* Finland: the University of Industrial Arts Helsinki UIAH.

Waldrop, M.M. (1992). *Complexity: The Emerging Science at the edge of Order & Chaos.* New York: Viking.

Wall, Derek. (1994). *Green History: A Reader in environmental literature, philosophy and politics.* London & New York : Routledge.

Wallschlaeger, C. & Busic-Snyder, C. (1992). *Basic Visual Concepts and Principles for Artists, Architects, and Designers*. US: Wm. C. Brown Publishers, pp. 14, 80, 372.

Weinshall, Theodore ed. (1993). *Societal Culture and Management*. Berlin: Walter de Gruyter, pp. 262.

Whetten & Godfrey ed. (1998). *Identity in Organizations*. UK: Sage Publications, Inc.

Willig, J.T.ed. (1994). *Environmental TQM*. New York: McGraw-Hill, 2nd ed Inc.

Willis, Annie-Marie. (1991). "Echoes of EcoDesign 1". In *EcoDesign Foundation Newsletter*. Sydney: EcoDesign Foundation, Dec.

Winker, E.R. & Coombs, J.R. (1993). *Applied Ethics – A Reader*. US: Blackwell Publishers Ltd.

Wong, K.K. and Yan, W.L. (1995). *Survey Report of the Attitudes and Behaviour of Secondary School Teachers and Students in Hong Kong in 1995*. Hong Kong: Baptist University.

Wong, Peter. (1998). Draft Speech At Conference – "Planning for a Sustainable Hong Kong" titled at *"A Sustainable Hong Kong – Nobody Must Lose"*. HK: Feb., p.6.

Wong Wah Sang. (1997). *Professional Practice for Architects in HK*. HK: Pace Publishing Ltd.

Wong Wah Sang ed. (1998). *HKIA Journal, Issue 14, 1st Quarter*. HK: HKIA, pp.8-13.

World Commission on Environment and Development. (1987). *Our Common Future*. Oxford: OUP.

Wright, W.J. (1991). "The Angus Reid Report: the environment and 'green' products in recessionary times, in Rhind, I. ed." *The Canadian Green Marketing Albert,*1 (1), pp.4-7.

Yencken ed. (2000). *Environment, Education and Society in the Asia-Pacific – Local traditions and global discourses*. London & NY: Routledge.

Yeung, P.M. (1993). 'Geography teaching and environmental consciousness among Hong Kong secondary school students', unpublished Master of Philosophy thesis, University of Hong Kong.

Websites:

Census & Statistics Department in Hong Kong (2002).
Http://www.info.gov.hk/censtadtd/eng/hkstat/hkinf

Centre of Environmental Technology (1998).
Http://www.cet.com.hk/hkaward/hkawd

EcoDesign Foundation Webpage.
Http://www.edf.edu.au

Environmental Protection Department (2002).
Http://www.epd.gov.hk/epd/english/environmentinhk/waste/data/files/msw2001.pdf

Friends of the Earth (1997). Friends of the Earth Environmental Fact Sheet
Http://www.foe.org.hk

Friends of the Earth (1999). *Friends of the Earth Press Release*
Http://www.foe.org.hk/pr/0199/pr280199el.html

Hong Kong Institute of Architects
Http://www.hkia.org

Hong Kong Interior Design Association
Http://www.hkida.org

Hong Kong Hotels Association
Http://www.hkta.org/hkha

Hong Kong Hotel Nikko
Http://www.hotelnikko.com.hk/english/awards.htm

Hong Kong Tourist Association
Http://www.hkta.org

International Hotel and Restaurant Association
Http://www.ih-ra.com

Scandic hotel ecodesign practice
Http://www.scandic-hotels.com/br/30/30index.html

United Nations Environmental Planning Report – Global Perspective (2000)
Http://www.grid.unep.ch/geo2000/ove/002.htm

United Nations Environment Programme (1999).
Http://www.unep.org/unep/eia/geo2000/english/index.htm

United Nations Environment Programme Industry and Environment
Http://www.unepie.org/home.html

Magazines

John, K.D. (1994). *Asian Hotel And Catering Times*. HK: July, pp. 44-47.

Mackie, A. (1994). *Asian Hotel And Catering Times*. HK: July, pp.19-28.

Manuals & Initiatives

Asia Pacific Hotels Environment Initiative Member Hotels Best Practice (1993).

International Hotels Association ed. (1991). *The 1991 Environmental Award – A Guide to Saving Energy for the Hotel Industry.* London: American Express Travel Related International.

International Hotels Environment Initiative. (1993) *Environmental Management for Hotels*. UK: Butterworth-Heinemann Ltd.

中文參考書:

張祥龍著 (1996)。《海德格爾思想與中國天道》。北京：三聯書店。

海德格爾著，郜元寶譯 (2000)。《人，詩意地安居》。廣西師範大學出版社。

陳榮華著 (1992)。《海德格哲學：思考與存有》。輔仁大學出版社。

陳坤宏著 (1993)。《消費文化理論》。臺北市：揚智文化。

項退結著 (1989)。《海德格》。臺北：東大圖書公司。

星野克美等(黃恆正譯) (1988)。《符號社會的消費》。臺北：遠流。

劉天齊主編 (1996)。《環境保護》。北京：化學工業出版社，頁 31。

何強編 著 (1994)。《環境學導論》。北京：清華大學出版社，頁 66。

香港酒店業管理培訓中心編 (1998)。《現代酒店經營管理培訓教程上集》。中國大百科全書出版社，頁 33-44。