BLACK FUTURES, WHITE FUTURES – RED & GREEN DESIGN: A BETTER WORLD THROUGH FUTURE DESIGN

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ABSTRACT:

Developed over 15 years from 1997, Future Design entered the university curriculum in 2007. Viewing design as a tool for planning-before-action, it adds a long-term goal of not only better products or better life, but also better futures to conventional design methods. Forecasting Possible, assessing Probable and backcasting Preferable Futures the methodology combines design with advanced strategic management. Tools for an expanded design method divided into a new Thinking Part, combined with a conventional Doing Part include the 7-E-Values for Future Design: envisioning **E**ndeavour, defining **E**nterprise, guiding **E**thos, **E**mpowering transformation, **E**nabling people, **E**ngaging emotion and **E**xecuting excellence. Classroom tools described are **Black and White Futures**, corresponding to worse and better future scenarios, and **Green, Amber and Red Design,** which respectively describe technology that can go forward into the future, policies that should be initiated, and culture which should stop, in order for humanity to achieve a neutral, future footprint.

1. FUTURE DESIGN: INTRODUCTION

1.1 BACKGROUND

For 30 years, I have been a professional, practicing architect and designer, working 20 years in Denmark and 10 in Taiwan. My work ranges from Eco-Cycle Building though Space, Retail and Exhibition Design, Product Design, Packaging, Communication and Branding to National Strategies for Design, Business and Industry.

In the decade from 1997, when I gave my first speech titled "Designing Today in the Light of Tomorrow" at the NID in Ahmedabad, India until 2007 I developed the theory, models, methodology and contents of a new design discipline I have called "Future Design".

Although design always shapes the future by aiming to provide people with the better products, services and experiences they will need or desire in the near future and thereby implicitly engineers not only socioeconomic changes but also future culture, the discipline of Future Design explicitly sets out to shape better futures.

Beyond considering the balance of the normal factors of **efficiency** (social economy), **esthetics** (cultural ecology) centered around **excellence** (design execution) which I called the doing part of design, the fundamental premise of Future Design is designing with respect for a both harmonious and sustainable relationship between the Earth, Life and Humanity.

In order to achieve this, designers need first to see the ambition of design as not only improving products, but also how they improve the lives of people. This moves the point of point of departure from the economy of technology, culture and manufacture of products to an ecology of **enablement** (operational services), **engagement** (tactical experiences) and **empowerment** (strategic transformation) of people.

Then they need to develop a far deeper understanding not only of the conditions governing the human environment, but to actively study of the universal laws of science that govern the natural environment (meta-context). Gaining greater insight leads intuitively to a reformulation of the nature of the human **endeavor** and the design **enterprise** i.e. the vision and mission of design from which we can extrapolate a revised, more rigorous set of core values to guide design creativity.

Figure 1: Ethos is the core value of this 7 E-Value guideline to Inclusive and Sustainable Design for the 2010's showing the lower realm of well-executed design for manufacture that enables and engages 'consumers' and the higher level of design that empowers 'people' as the outcome of meaningful human endeavor and enterprise.

This in turn leads to the formulation of a new frame of reference of design **ethics** (idealistic, abstract principles, strategies) and the definition of a guideline for their application in action as expressed in a creative **ethos** (pragmatic, actual practice, viabilities). This I called the thinking part of design, and combining the two sets resulted in the first set of **7 E-Values for Future Design** (Fig. 1): An Ethos that Enables, Engages and Empowers People to live better lives and Guides the Endeavor, Enterprise and Execution of Design for a better future. This is a cascade model of "thinking before doing" in the creative process. It also clearly delineates the often difficult-to-explain difference between design with, and without a concept.

1.2 EDUCATION CONCEPT

From 1999, I began writing about these ideas in design publications and speaking about them at international conferences. In 2002, I was invited to join the faculty at the College of Design at Chaoyang University of Technology, Taiwan, and from 2007, I included Future Design in my courses.

After convening the "1st International Conference and Colloquium of Future Design" in December 2008, I formally introduced the discipline into the curriculum of the Industrial Design Department. Building on Future Studies theory and method, the course combines Industrial, Communication and Environmental Design but takes them to the next level.

Figure 2: Transitioning from a Factor-driven Manufacturing Economy to a Knowledge-led Innovation Economy (referenced to the terms of World Economic Forum [WEF]).

This is achieved by evaluating design not only by **economic effect** in terms of the resulting profit for commerce and prosperity of communities (increasing physical capital), but the **transformational impact** (Fig. 2) the design can have on human culture and the way we relate to each other and our environment (augmenting intellectual capital).

1.3 FUTURE DESIGN COURSE

In order to give the students professional perspective, personal ambition and their projects direction, I teach the course as an introduction to every new class and to sophomores and master degree students alike.

The goal of the course is to educate young Industrial Designers with an idea of Design Futurism and encourage some to become Futures Designers who are specialized in designing products, services, experiences and environments that facilitate **Better Futures**. Inspiring students to think about, clarify and define their own ideas of the concepts "Better Futures", "A Better Life" "A Better World" and "Better Design" before using them as benchmarks to define, specify and design "Better Products" helps them to upgrade their competence toward a higher ambition for their lives and design career.

To help put their thinking into perspective, the class is divided into teams for the duration of the one-semester course. The first step is to research and think about the challenges to life that are expected to confront humanity in the course of their own lifetime. The teaching plan then takes them through a series of logical and manageable steps starting from developing an understanding of the mission and role of design as it will emerge in society within the span of their design career and ending with the design a concrete product, service or experience that might impact the lives of their own future children.
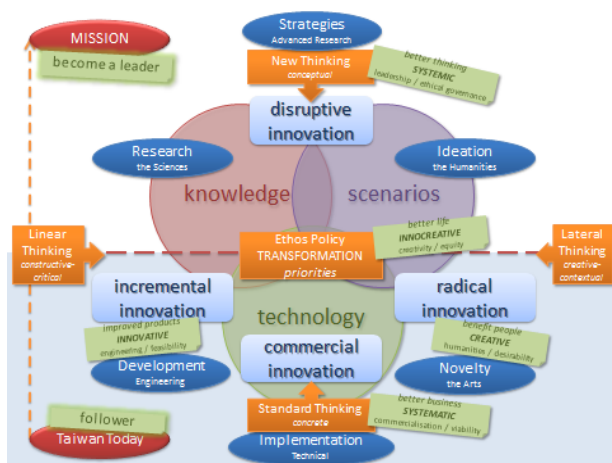

Figure 3: Map to the two levels of Design, Innovative-Creative and Strategic and coordinating transformation between concrete and conceptual, linear and lateral thinking.

The progression of sophistication in design thinking (Fig. 3) that will take place can be illustrated in four, easy-to-understand stages:

Design Innovation: Improving Products by Design that solves the functional problems or enhance the emotional engagement of hypothetical *consumers* i.e. both R&D-based *technical innovation* and marketing-led *cultural novelty* – the latter often mistaken for Cultural Creativity – through *Incremental Innovation.* This corresponds to the Operational Level of design.

Green Design: Better-Fit Products that reduce the negative impact of human activity on the environment through *Open Innovation.* This corresponds to the Tactical Level of design.

Sustainable Design: Better-Fit Strategies that will allow us to continue present expectations, attitudes and life styles into the future by adjusting our through *Radical Innovation*. This corresponds to the Strategic Level of design.

Future Design: Better Futures based on ideas that look back from probable futures to define what we need to do to attain preferable futures. These ideas depart from current values in education, commerce and industry and define design as solutions to real-life situations of *citizens* that a positive impact on the Future of Life on the Planet, facilitated through *Disruptive Innovation.* This connects the Visionary Level to the Mission of design.

2. DEFINING BETTER LIFE
2.1 BETTER FUTURES ON A BETTER EARTH
The first two sections of the class set the stage for Future Design. They are divided into four lessons stretching over about 6 weeks, depending on each class and its progress.
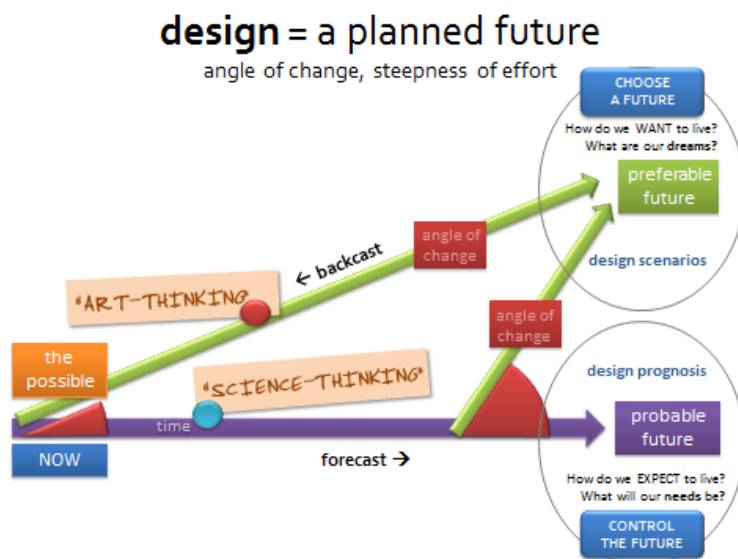

Figure 4: Future Design is the proactive planning of change instead of accommodating to imposed change. It defines and manages the angle of change between forecasted Probable Futures ('science thinking') and backcasted Preferable Futures ('art thinking'). Once a change strategy has been identified, early implementation reduces steepness of effort. Waiting too long precludes the reality of the change.

In Lesson 1 of the first section, each team produces and presents six **timelines** for the major changes that have happened in a) the first 20 years of their own lives, and in the world. Then, they forecast b) the changes they expect in their own lives and in the world in the coming 40 years until 2050

and c) the changes they hope for in the same period, in their own lives and the world. This leads them to an understanding of the connection between past patterns, strategies and decision-making today, and future prospects.

The Lesson 2, **Imagination** (Fig. 4), is to research future prognosis and vision in media from internet, movies, books, magazines etc. to discover a) different perspectives when we look at today from the way people imagined it would be in the past and b) different trends and narratives in the way we view possible, probable and preferable futures, today. This leads them to an understanding that even though the future looks daunting it depends on individual attitudes and actions (Fig. 5). This prepares them for a later understanding of the role of design in shaping futures and the division of the design process into a thinking part and a doing part.
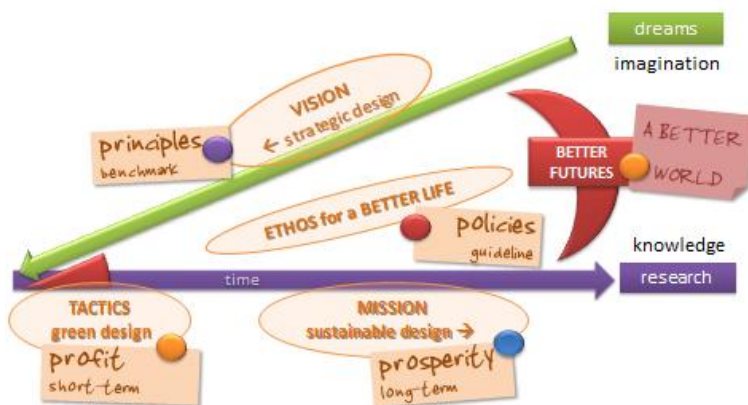

Figure 5: Working toward 'Better Life in a Better World'. Working with imagination allows designers to formulate strategic visions for future development. While major shifts may be disruptive, any shift from a research-based future prognosis toward dream-based scenarios will be a move toward a 'better future'. Managing this kind of radical innovation enables design and manufacture to upgrade from immediate market tactics to sustainable mission and guided by a clear ethos.

2.2 BLACK AND WHITE FUTURES

These two sections now allow the students to recognize and manage different types of **future scenarios** portrayed in for example movies and books, not as stories but as lessons or cautionary tales. They learn to view movies as cultural narratives and to recognize the symbologies they utilize, signaling their category and moral already in the trailer and movie poster.

Black is used as the setting for bad Possible Futures where people act in pessimistic, dramatic and difficult situations and grey-toned colors for hopeful outcomes as in drama and action movies familiar to students such as Alien, i-Robot, AI, Jurassic Park, The Matrix, Transformers or Star Trek. In Black Futures (Fig. 6), images emerge from black backgrounds and are idealized with azure blue, combined with garish red, yellow or green contrast colors.

Black Futures

critical, dream breakers
rational, no hope generation
PROBABLE FUTURES
predictable and grey

Figure 6: The United Nations (UN) Millennium Reports and mass media present us with depressing or often terrifying future prospects. Many contemporary movies present the protagonists in dramatic situations that require a personal choice to enable an outcome acceptable to our present-day ethos. Grouping pessimistic future scenarios together as Black Futures helps students to analyze the lesson they are formulated to teach us and take consequences through positive, proactive action by design.

White is used for idealized Preferable Futures where people move in pristine environments such as The Future, Looper and Soul Searcher and bright, primary colors are used to convey optimistic human emotion as in romance, comedy movies such as P.S. I Love You, Back to the Future, The Notebook, children's movies such as Alvin or Imagine That, but especially in advertising such as Corning's A Day Made of Glass, Microsoft's Vision of the Future or LG Art Ductless Air Conditioning System. White Futures (Fig. 7) are also idealized with azure blue, but a clear rainbow of colors is used to highlight the white.

They then study **representations of design** in the media, design magazines, award yearbooks and design websites to discover similarly idealized graphic

images of products in pristine, white environments without including people in the scene at all, especially in renderings. Through discussion, they realize that the ideal of good design has not only become completely divorced from human reality but, as it is taught today, rarely has a mission to seriously solve our present problems, let alone improve our future prospects. To encourage the reunion of people and products and a move away from styling toward improving people's lives I teach them how to base their designs on scenario building with cartoon storyboards that show how the user engages with, is empowered through or enabled by the product in every image.

White Futures

enthusiastic, dream builders
belief, hope & imagination
PREFERABLE FUTURES
pure ... and with the whole rainbow in between

Figure 7: Like the presentation of design in museums, magazines and websites, and their own computer-generated 3D design renderings, White Futures are 'untouched by human hand', pristine, fragile and divorced from the 'nitty-gritty' of real and vibrant life of the objectified so-called 'end-user' or 'consumer'.

The lesson ends with the formulation of a manifesto resolution for their own ideal design career: what they would like to achieve in the 40-year timeline from now until 2050, and how (vision and mission).

2.3 A KNOWLEDGE-BASE FOR A NEW PARADIGM

In Section 2, Lesson 1, **Knowledge**, the students will research easily available studies, reports, statistics and books of current, documented material about the future. They discover that we have never known so much about the future as we do today because computers now allow us correlate huge quantities of data to build and test models, change parameters and

create multiple future scenarios with greater certainty than was ever imagined before.

They browse the United Nation's many State-of-the-Future Reports and study the Millennium Project to deepen the superficial understanding they already have of the **2050 Global Challenges** promulgated and popularized through mass media. Finally, they begin to describe the effects and impact that inevitable demographic and climate change, unavoidable depletion of global material and fossil energy resources, increased degradation of the natural environment etc. will have on their own lives and the conditions for the lives of their eventual, future children.

The Future
we have never known so much about the future
as we do today

Figure 8: The revolution of computers is model-building, testing hypotheses and changing variables to fine-tune new concepts before enacting them in the real world. The revolution of the internet is the sourcing, sharing and verification of information and its interconnection to build knowledge. For the first time in history, with the help of ICT technology we can now act wisely and proactively not only on a foundation of individual courage in the face of situations, but on a basis of not only a shared but a credible understanding of the real issues.

It also illustrates to the students the true, **metasystemic importance of technology** by demonstrating that for example while Moore's Law doubles computational intelligence every 18 months, radically improving our connective, integrative and predictive powers, human intelligence remains constant and stable and is increasingly overburdened and ever-subject to Murphy's Law of fallibility. They now discuss not only the positive and negative effects of, for example ICT on everyday life, but learn to realize it's vital importance as a tool to augment our own, innate incapacity when confronted with meta problems (Fig. 8).

This conundrum has fostered the concept of **Design Simplexity**, the design of simple interfaces between an ever-increasing complexity of technology on the one hand and ever-growing overload of informational complexity of life, that is now needed to help people with their ever-increasing inability to deal directly with either. This helps them to gain a deeper understand of the role of science, the double-edged blade of technological progress and its prudent application to life through design.

This kind of debate also helps them to attain a higher level of understanding of the knowledge and skills they will need to develop and unceasingly renew, and the imagination and passion they will need to continuously nurture as Future Designers (Fig. 9). It becomes clear to them that without these competences their generation will be unable to formulate **proactive strategies** and develop solutions for a global community that might reach 9 billion and a world that is at least 2^0C hotter than today, before they are 60 and this inspires them to seek new knowledge and wider insight by themselves.

Hope

how is it possible to **dream** ...
when we **know** so much?

Figure 9: The dilemma of too much knowledge is a lack of imagination, and the consequential huge leap of faith it takes to believe in human creativity. The conundrum of the exponential growth of knowledge is the corresponding, converse discovery of human ignorance. Maybe the greatest gift of youth is that they 'happily rush in where angels fear to tread' and the greatest challenge of design education is thus to give them the confidence to do so in today's disillusioned environment.

The fourth and final lesson of Section 2, is to connect the first three by thinking about a) what are a Better Life, b) a Better World and c) a Better Product? This section helps them to develop new personal attitudes and

consider the actions they can take in their future profession, to discuss ideal **Design Ethics** and formulate an equitable **Design Ethos** to guide their creative practice.

To reframe the students' understanding of the meaning and importance of design as well as the relevance, aspirations, and value of their own contributions to global and local agendas as designers, we then return to the UN Millennium Project and related initiatives and study the local (Taiwanese) government's "Vision of Governance".
Together, these give them a **global benchmark for design** and a **local frame of reference**. Through discussion, they realize that instead of trying, project by project to affect the local system for **profit** as individual designers or companies, the real measure of Future Design is to aspire for global and **systemic impact** by working across borders in interdisciplinary and multicultural teams to surpass the limitations of precepts, norms and conventions for future **prosperity**.

In all, these perspectives and guidelines help them to infuse their studies with meaning and give it relevance, inspire their efforts and give their work direction and finally to define success criteria and assess the cost, value, effect, affect and total impact of their design proposals.

2.4 RED AND GREEN DESIGN

Now that the students have developed a solid understanding of the issues, the guidelines and benchmarks and see good design in terms of positive impact, they can formulate a new paradigm.

They now look at what we can do better, defined as **Green Design** that has smaller NEGATIVE impact and can go forward into the future, and negative things that we can stop doing, defined as **Red Design** that must stop now - and would have a greater, POSITIVE impact (Table 1).

A "Next Step" Design Method

GREEN DESIGN	Can Go FORWARD!	RED DESIGN	Should Stop NOW!
INCREMENTAL INNOVATION	solutions that are environmentally better fit than what we have been doing up till now	DISRUPTIVE INNOVATION	things we do that we could stop doing if we changed our habits and expectations
UTILITY INNOVATION	technical solutions	CULTURAL-CREATIVE	cultural solutions
METHOD	develop technology to make products with a **smaller impact** than existing ones	METHOD	identifies and engineers changes in human behaviour that would **reduce or remove impact**

Table 1: Green and Red Design are mutually converse concepts, the one technology-based and the other culture-based. While Green Design improves processes and reduces negative environmental impact it still sustains, even increasing manufacturing and the industrial complex. A good example is that because people have been told that LED lamps reduce energy consumption, they now use many more and the overall use of light – indeed city illumination - and thus the total use of electricity has increased in relation to that used by incandescent lamps 20 years ago. Red Design approaches the problem from the opposite point of departure and reviews and modifies our consumption itself.

Whereas **Green and Environmental Design** look at what we are doing today to see what we *CAN* do to do it better, and **Sustainable Design** looks forward from today (statistical forecasting) to see how we *COULD* continue our present models and way of life into the future in a balance with Nature. **Future Design** on the other hand adds a new dimension as a strategic tool that looks back from tomorrow (scenario backcasting) to see what we *SHOULD* do to implement the recommendations that all the reports from international organizations and corporations say we *MUST* enact for the survival of "life as we know it" before and beyond 2050. However, whether or not we face these challenges, it would change neither the goals nor the methodology of Future Design as a concept.

2.5 EVALUATING FUTURE IMPACT: NEGATIVE, REDUCED AND POSITIVE IMPACT

Green Design is operational, Incremental Innovation to provide solutions that reduce the inevitable negative impact of human activity and technology on Nature. It is seen from the point of view of Shareholders in conventional

business and is measured in *Triple Bottom Line accounting* [TBL] at the Operational Level of business.

The next step, 'Green Design rev.1.5', is Environmental Design, CoCreative or Open Innovation that focuses on what we can do to reduce the impact of human life on the Environment. It is measured from the perspective of Stakeholders as *Corporate Social Responsibility* [CSR] at the Tactical Level of business.

Sustainable Design is tactical, Radical Innovation design of strategies & systems that can uphold the life-style we have today, tomorrow (future expectations). It is measured seen from the view point of future ROI in terms of *Socially Responsible Investment* [SRI] at the Mission Level of business.

Future Design is strategic, Disruptive Innovation that reduces the impact of human activity on the Future by changing our Culture to fit better to Nature and with time even to have a positive impact on natural diversity, biodegradation, demographics etc. as well as human happiness and plurality. It is evaluated according to the economic concept of *Environmentally Sustainable Governance* [ESG] at the Vision Level of business.

Combining Technical and Cultural Design methods for more effective and holistic results the students finally debate which crucial questions should be asked before developing new solutions.
These might include:
What is a better life?
What is an acceptable future?
Which future should we choose?
How could be achieve it?
What would the cost to the future be?
How should we proceed responsibly?
Does the problemrequire a new product, or changed attitudes?
Which aspect of the project requires the development of "Green Signal" technology, and which "Red Signal" communication?
How can we control the realisation of future processes? etc.

LESS IS BETTER: TOWARD A 無為 (WU WEI) OF DESIGN

Table 2: The contrast between Green and Red Design reveals that the resources needed to reduce the negative impact of improved technological products is manifestly greater than those needed to increase positively impact of improved cultural mores. The investment of human and material resources in producing technologies with only marginally lower environmental impact and even smaller practical impact because of slow and limited adoption are enormous. Communicating new cultural models such as encouraging so-called 'Green Lifestyles' costs almost nothing in comparison and has huge and, when successful can have almost immediate effect. Changing ourselves to fit our environment has greater ultimate impact as well as a positive effect on our life quality than our feeble attempts at changing our environment, and destroying its delicate ecologies through our clumsy manipulations in the process.

The lesson of Black and White Futures teaches students to look not only into the past for experience to improve life but also into the future to find dreams of a better life in order to formulate strategies that guide the evolution of society toward a sustainable future. The surprising methodology of Green and Red Design (Table 2) suggests that NOT designing new products, but changing peoples' attitudes, expectations and habits through Communication Design can achieve a far greater positive impact, more rapidly, more effectively and at a fraction of the cost of natural, human and financial resources.

The combination of Green and Red Design (Table 3) will ideally work together in Future Design to produce an environmentally neutral footprint, corresponding to the sun-colored amber light of the traffic signal that regulates our future path. In this model, necessary Green Design, developed on the basis of improved technology helps to reduce the negative

environmental impact for the functions upon which our lives and society depends. Red Design on the other hand helps us to stop bad habits while Amber Design helps us to create a culture that has a positive environmental impact to counteract the effects of our massive presence on the Earth through supranational, biocentric development policies.

	GREEN → INCREMENTAL INNOVATION		RED → DISRUPTIVE INNOVATION		
PRIORITIES	POSSIBLE OPTIONS		PREFERABLE VALUES		POTENTIAL
	Better Tech	+	Better Behaviour	=	Better Future
	Science		Arts		
BETTER LIFE	Engineering		Culture		
	Better-fit Products		Better-fit Attitudes		
ETHOS	ECONOMY & EFFICIENCY		ECOLOGY & ESTHETICS		EQUITY
	profit		prosperity		

Table 3: An overview of the principles and outcome of Green and Red Design process.

Although this method is strictly speaking not "Wu Wei", because design is in itself self-determination as opposed to determined, the class brings students to a realization of the vital importance of well-considered and timely action in order for humanity to reinstate and retain a natural harmony between the nature of the Earth and human nature. It also brings them an acute awareness that the way they use their design ability is as important as designing itself and that that deciding not to design, can itself be an important design.

4. DESSIMINATION

4.1 THE THINKING PART AND THE DOING PART: TEAMWORK & DEBATE

The focus of this class is not "teacher-teaching" but student learning. Through teamwork, discussion and debate they learn much from each other. The role of the teacher is more as a mentor to the class and guide to the process.

Working in multidisciplinary teams, the Future Design Classes connect Green, Red and Amber Design to define Equitable Transformation from Black to White Futures using Disruptive, Radical, Co-creative, Open and conventional Commercial and Incremental Innovation methods to generate and test concepts. They then apply Design Method to develop concrete Possible Products, Services and Experiences that can help shift the direction of the expected future toward intended Better Futures.

The teaching method is for each team of four to make a PowerPoint presentation of their findings every week and for the whole class to feedback and debate the interesting points in order to reach a common understanding of the issues and conclusions before moving to the next step.

To conclude the semester, every class identifies a metasystemic technical problem or life situation and develops a real-life solution in collaboration with a suitable co-creation team. After a one-month project combining first Future Design method and practical Design skills, the project is presented for constructive input and critique from their user group.

Students are very excited by Future Design as the method empowers them to influence life and change the world around them. Gaining an understanding of the meaning and concept of design also engages them and motivates them to seek the enabling tools and skills they need to communicate their concrete design ideas – of their own volition and by themselves.

4.2 CONNECTING TO FUTURE STUDIES
Futurologists on the other hand are excited by the dialogue and concrete contribution Future Design can make to their field by developing creative but also practical, equitable, feasible, desirable and viable solutions to the problems and scenarios uncovered by their more theoretical research.

4.3 FUTURE DESIGN AND SOCIETY
The focus of designers on supporting commerce and industry, and the following continuous degradation of human enterprise through the advent of

built-in obsolescence and following consume-and-throw-away-ism since the demise of Bauhaus has meant that the discipline has lacked social-political engagement with society.

Future Design has a place in governance, bringing designers together in collaboration with other strategic disciplines such as policymaking, think-tanks, civic action groups, strategic management etc. from which the profession has been too long absent.

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