

Speculative Design as a Key Practice of Life Center Design

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Abstract

Life center design is one of the updated terms in Industrial design field it's an evolution of the term User center design after the negative environmental effects which world faced such as the epidemics and climate changes. So it was necessary for life to be a center of design process instead of user, and one of its practices is speculative design.

In this work we studied methodologies and techniques of speculative design and how by its practice and linking it with (LCD) concept, the design can faces many expected environmental conditions, also studying the positive and negative which may product design faces, to realize the negative environmental changes that the world faces putting Life in the center of design process.

He found that by expanding the study of critical design and science fiction through speculative design and linking it to environmental expected scenarios by a different technique whether educational or apply its methodology in design thinking and process it can contribute to solve long-term future challenges by innovative way, to create products that Don't exist or developing products that actually exist in future, because we can't work to improve what we can't imagine.

Finally, (LCD) has become a necessity, and awareness of it and its application through innovative practices of design in education and industry has become a goal in design, the development of the designer's thinking style and future vision of the product with an environmental perspective and product impact will help to avoid negative environmental impacts.

Keywords

Speculative design,
Life center design,
design scenario,
critical design

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Introduction

Incorporating an environmental orientation into design is a crucial directive, requiring transformation and unwavering commitment. This imperative is essential for proactively responding to environmental dynamics, drawing from historical design practices, and fostering a nuanced understanding of design's inherent interconnectedness. This study focuses on investigating the symbiotic relationship between the environment and design, emphasizing practical applications. Through contemplative design, the orientation aims to anticipate future design implications, comprehend their ramifications, and integrate these considerations into the current design

process. As a result, designers gain the ability to envision a product's prospective impact, scrutinize its effects, and actively mitigate any adverse environmental consequences.

Abbreviations:

Life center design (LCD), Speculative design (SD)

Statement of the Problem:

The study aims to investigate the transformation of product design from a user-centered approach to a life-centered one, employing speculative design methodologies. The transition involves expanding the scope of design considerations beyond immediate user needs to encompass broader ecological, socio-economic, and happiness factors throughout the

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product's life cycle.

Aims:

By combining critical design and science fiction through speculative design, the researcher found that linking these approaches to anticipated environmental scenarios, whether through education or practical application in the design process, is crucial for addressing long-term challenges through innovation. Stressing the centrality of the environment in the design process is vital. Additionally, this approach not only tackles current issues but also stimulates the creation of new products or the evolution of existing ones into future iterations. The underlying principle is that improvements cannot be pursued without a clear vision.

Methodology:

Collecting Data & analysis

– The concept of (Life Center Design)

“Life-Centered Design is a design philosophy and approach that goes beyond human needs. In recent years, more designers, design researchers, activists, and professionals who practice any form of design (thinking) have started to question whether what we love doing the most (designing) is good for the planet, life on earth, or humanity. Among others in my field, I believe how we use design today damages our world. Fortunately, our skills and mindsets can benefit all life on earth. From these insights, Life-Centered Design was born.”Jeroen Spoelstra

Life-centered design expands human-centered design to include consideration for nature and vulnerable humans.

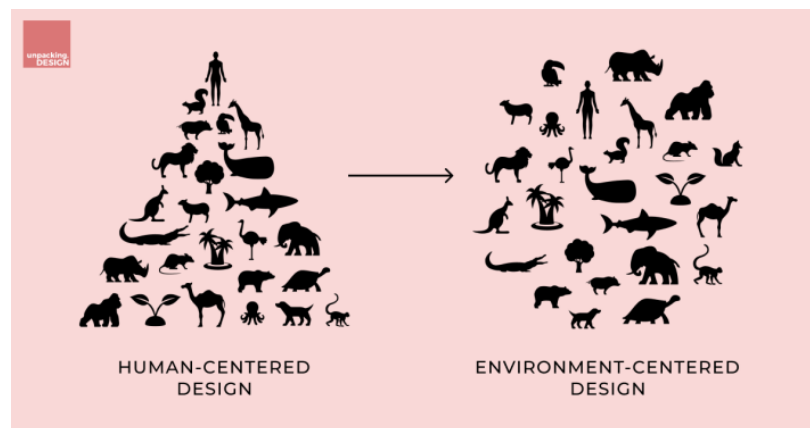


Figure (1)

The Sustainable UX (2024) Human Centered Design vs Environmental Centered Design. Available at: <https://thesustainableux.com/what-is-environment-centered-design-vs-human-centered-design/>

That is by merging practices such as circular design, biomimicry, systems thinking, and futuring, and aligning designers with global goals of sustainability.

1- Principles of Life Centered Design:

1-1- Life Centered Design is designed with the full picture in mind.

Human-Centered Design (HCD) has emerged as the standard for designing solutions that impartially address consumer needs. However, an HCD approach that neglects the ecological, socio-economic, and happiness costs associated with the entire life cycle, including production, distribution, and disposal, cannot be deemed genuinely human-centered. True human-centered design necessitates an

acknowledgment of the potential contributions to pollution, landfill mass, and the exploitation of cheap labor.

Life-Centered Design, on the other hand, integrates these considerations into its core methodology. When designing for the entire life cycle of a shopping bag, for example, solving the challenge for a more sustainable product alone may not suffice. Failure to address the economic incentives favoring single-use grocery bags or the deeper motivations fueling our throwaway culture represents a systemic lapse. In such instances, returning to the drawing board becomes imperative to address the broader issues at play.

Design, in the contemporary context,

transcends a sole focus on the end product or service. While an emphasis on the user experience remains crucial, a more comprehensive approach is warranted. Design must extend its purview to encompass scalable systems, necessitating a shift towards designing the business models of products and services. This evolution should include a consideration of ecological impact and economic externalities, such as happiness and ecosystem degradation. Consequently, the paradigm of

design needs to adapt to incorporate a holistic perspective that goes beyond immediate outputs and addresses the intricate interplay of various factors in our complex socio-economic and ecological landscape.

So (LCD) Include studying a lot of design knowledge and strategies as follow in Figure (2) –

(Borthwick, M., Tomitsch, M., & Gaughwin, M. 2022)



Figure (2) - Life Center design (LCD) Strategies

1-2- Life Centered Design is about the future, just as much as it is about now.

Design that is Life-Centered is not merely a solution for current needs; it also carries the responsibility for the impacts it has on people and the planet in the future. It must also provide solutions for its disposal or repurposing (e.g., how a product is

disassembled and processed; where the parts go and how they are destroyed/reused/repurposed, how coatings/paints/dyes off-gas, and what effects the processes required to create and destroy each unit will have on life's ability to thrive on Earth — all of these factors must be considered as part of the design as follow in Figure (3) . (Lutz, D. 2022)

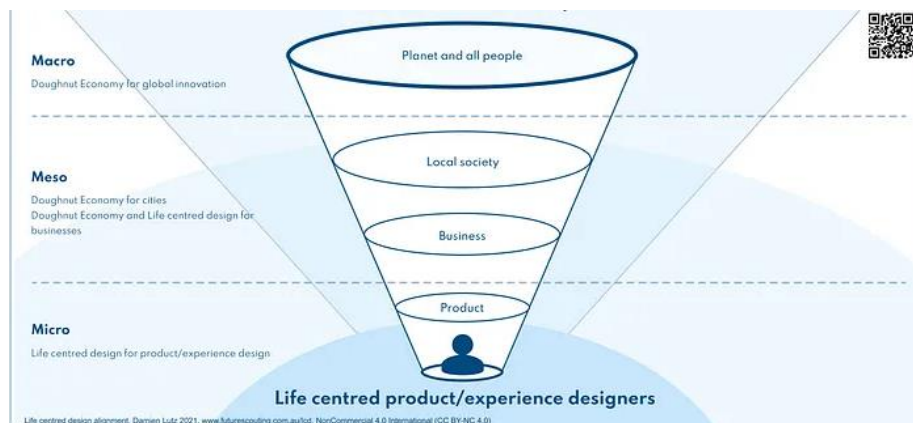


Figure (3) - Life Center design (LCD) Global goals

1-3- Life Centered Design is for all, not just for those who can “afford it”.

While form, function, and aesthetics are essential to great design, so too is its intent regarding reach and scalability. Design that serves only the 1% and caters solely to the financial elite does not truly embody a human-centered approach, as it risks widening the

disparity for the remaining 99% of the population. Designers have a responsibility to create solutions that are inclusive and empower individuals, countries, and cultures outside the affluent capitalist narrative, enabling them to actively participate. Rather than perpetuating exclusion, Life-Centered Design can drive progress and strengthen markets and

demographics crucial for a sustainable future. This shift ensures that design efforts contribute to broader goals of inclusivity and resilience across diverse socio-economic contexts.

1-4- Life Centered Design's bottom line is necessity, not cost.

Deliberately designing products to be subpar, less aesthetically pleasing, or less functional just to penetrate the mass market or target lower-income segments is a misallocation of time, talent, and effort. Developing inferior products with lower-quality materials and processes to capture market share undermines the essence of problem-solving. Our current economic model often rewards companies for cost-cutting measures. The practice of designing in one country, manufacturing in another, painting in yet another, and marketing in yet another is deemed economically viable due to cost considerations, even if it impacts vital natural systems such as underground aquifers, topsoil biodiversity, and bees. These critical components are frequently dismissed as externalities in our economic model—an approach that is counterproductive and unsustainable. Life-Centered Design calls for the creation of high-quality products, leveraging one's full abilities, and ensuring their accessibility to as many people as possible, thereby fostering a more sustainable and inclusive approach to design.

1-5- Life Centered Design is designed to last, not to fail.

Life-Centered Design does not aspire to be merely fashionable; rather, it endeavors to be timeless. In a realm dominated by rapid consumerism, where the average lifespan of products like an iPhone is less than four years, the tendency to generate excess waste has become ingrained. Unlike a rinse-and-repeat approach that merely serves as a placeholder until the next iteration, Life-Centered Design deliberately aims to produce artifacts whose form, function, and performance are imbued with a level of thoughtfulness that ensures their enduring relevance. The goal is to create items that stand the test of time, remaining useful and meaningful for many years into the future, counteracting the disposable culture that has become prevalent in contemporary consumer markets.

1-6- Life Centered Design is thorough down to the last detail.

When individuals engage with a designed object, they are undergoing an experience. Frequently, the success or failure of these experiences hinges on small details that go unnoticed when executed correctly but can become significant challenges when handled incorrectly. In Life-Centered Design, every nuance, every interaction, and every tactile sensation is meticulously considered out of respect for the user. Each element is thoroughly thought out to assist the user in accomplishing their intended task. This approach reflects a commitment to user-centricity, ensuring that the design not only meets functional requirements but also enhances the overall user experience through thoughtful attention to detail.

1-7- Life Centered Design is symbiotic with nature.

Presently, our society operates in a manner almost entirely contrary to Life-Centered Design. It has given rise to a culture centered around single-use items, where the lifespan of objects and the consequences of their disposal are relegated to an afterthought in pursuit of profit. In stark contrast, Life-Centered Design poses the question: how can design emulate the principles of nature to craft products and services that harmonize with the ecosystems we inhabit, rather than imposing additional burdens upon them? This approach seeks to align human-made systems with the sustainable and regenerative qualities observed in natural ecosystems, fostering a more holistic and responsible relationship between design, human activities, and the environment.

1-8- Life Centered Design is intelligent.

We now live in an era where products and systems can communicate with each other, solve problems autonomously, and learn from aggregate data and their own mistakes. Life Centered Design is a part of an ecosystem of things. It asks, how might we empower our products and services to maintain themselves, and help us make better decisions for a sustainable future, Life Centered Design considers not just the end user, but all users and parties involved in its production, use, and

disposal.

2 – Speculative design

“Speculative Design is a Critical Design practice that comprises or is in relation to a series of similar practices known under the following names: Critical design, design fiction, future design, anti-design, radical design, interrogative design, discursive design, adversarial design, futurescape, design art, etc.”

— Mitrović (I. Mitrović & M. Golub, Eds.). Department for Visual Communications Design, Arts Academy, University of Split, 2015)

Speculative design is an approach to design that focuses on imagining future scenarios and possibilities. It can be used to explore social, political, technological, and ethical issues, and to generate new ideas and solutions.

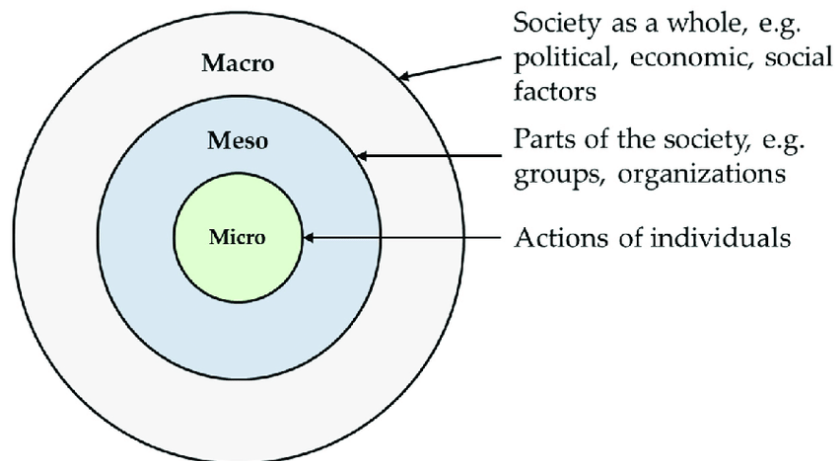


Figure (4) - Overview macro, meso, and micro level.

(SD) also is not only about predicting the future, but about exploring different ways that the future could be. By doing so, it can help us

to better understand the present and make better decisions about the future.

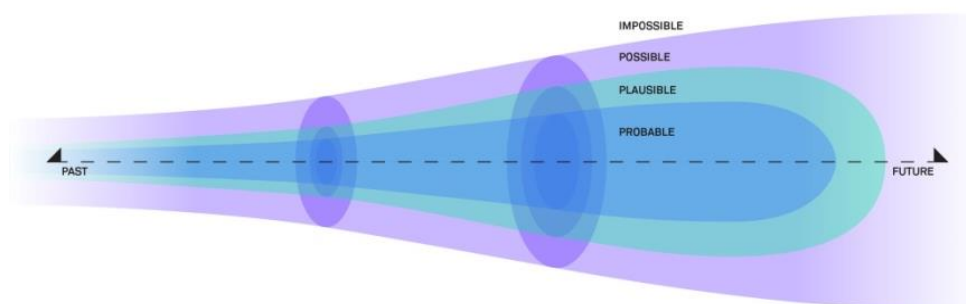


Figure (5) - Futures cone

The term “speculative design” was popularized by Anthony Dunne and Fiona Raby as a subsidiary of critical design. The aim is not to present commercially-driven design proposals but to design proposals that identify and debate crucial issues that might happen in the future.

“[Speculative design] thrives on imagination and aims to open up new perspectives on what are sometimes called wicked problems, to create spaces for discussion and debate about alternative ways of being, and to inspire and encourage people’s imaginations to flow freely.

Design speculations can act as a catalyst for collectively redefining our relationship to reality.”

According to Dunne and Raby, designers shouldn’t just address issues of today, but also take a look into the future and ask, “How can we address future challenges with design?”

(Anthony Dunne, Fiona Raby, *Speculative Everything*, MIT Press, 2013)

That concept be more clear through Dunne & Raby list which added dimension B of design aspects to the dimension A . (Dunne, A. and

Raby, F. 2013)

A	B
affirmative	Critical
problem solving	problem finding
Provides answers	Ask questions
Design for production	Design for debate
Design as solution	Design as medium
In the service of industry	In the service of society
Fictional functions	Functional fiction
For how the world is	For how the world could be
Change the world for suit us	Change us to suit the world
Science fiction	Social fiction
future	Parallel world
The “real” real	The “unreal” real
narratives of production	narratives of consumption
application	implications
fun	humor
innovation	provocation
concept design	conceptual design
consumer	citizen
Make us buy	Make us think
Ergonomics	Rhetoric
user friendliness	ethics
Process	Authorship

Table (1) -. Dunne, A. and Raby (A-B) Dimention

2-1 Speculative Design samples study

To understand the approach and realm of speculative design, let’s look into a speculative design case study — A masters research project dealing with the design of a learning experience about the speculative future of jobs for the next generation.

In the past, jobs didn’t change much. Jobs such as police officers or teachers have existed our

whole life. But in the near future, jobs will change faster.

A report from the World Economic Forum tells us that by one estimate, 65% of children entering primary school today will ultimately end up working in completely new job types that don’t yet exist. The jobs market of 2026 will likely look quite different from today’s career landscape, so the next generation must be focused and prepared for this future career situation.

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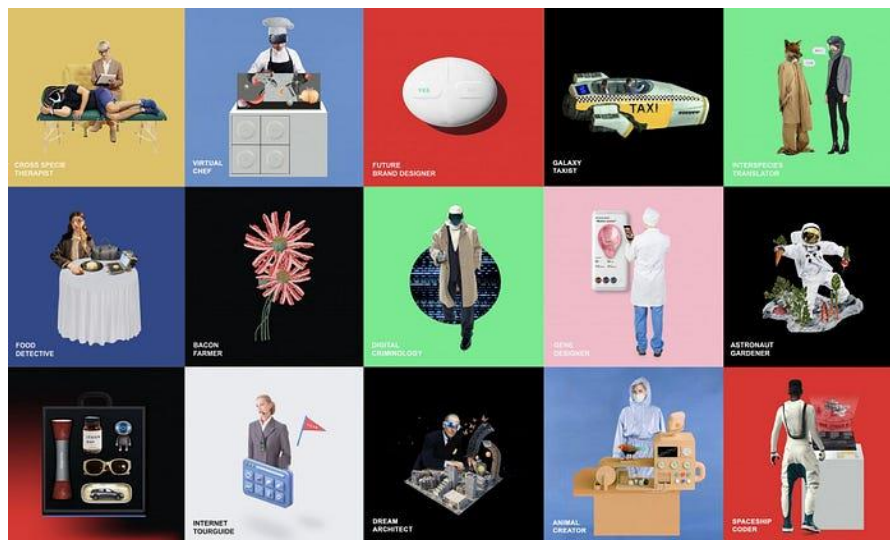


Figure (6) - Future Job Imagination

Study and Develop speculative scenarios that highlight how the product's design could evolve to address ecological impact, economic externalities, and user happiness throughout its life cycle, and involve creating imaginative and provocative visions of possible futures. This process helps explore potential implications and consequences of emerging technologies, societal changes, or other factors.

Hence, the relationship lies in the significance

of the interconnection between speculative design, as one of the methods for predicting the future, and the anticipated impact on the environment resulting from the design and utilization of products. It explores how designers can employ this method throughout the product design process to preemptively mitigate various negative environmental impacts before they manifest. This relationship can be illustrated in the following Figure



Figure (7) - from expected scenarios to product

Speculative design is a creative and exploratory process. It's about pushing boundaries and questioning assumptions to inspire conversations about potential futures >

"We observe a clear manifestation of this relationship within artificial intelligence applications, where inquiries regarding the configuration of a product under specific circumstances are feasible. These applications embark on research endeavors to forecast the morphology of said product, albeit presupposing its form without adhering to standards ensuring its quality, efficacy, and user-environment interaction positivity under those conditions. Consequently, we are prompted to ponder a series of inquiries

stemming from research delving into the nexus between life-centric design and contemplative design.

- 1- What are the prospective adverse environmental alterations impending upon the environment in the short-to-long-term future?
- 2- How can designers preempt environmental advancements and scrutinize their repercussions on product design?
- 3- Can there exist unequivocal design criteria in the future, addressing long-term environmental challenges and scenarios?

- 4- Can designs incorporate specific specifications to withstand plausible adverse environmental impacts while safeguarding both themselves and users?
- 5- To what extent can designers extrapolate future scenarios onto extant product designs?
- 6- How pliable is the product's configuration in the distant future?

These inquiries underscore that developmental discourse transcends designers merely factoring in environmental considerations to offset deleterious environmental effects. Instead, it necessitates a more holistic approach, attuned to anticipating unforeseen impacts that users might encounter in the future. Notably, recent global vicissitudes, for which adequate preparedness was lacking, include:

The proliferation of respiratory pandemics (e.g., the Coronavirus pandemic), mandating multifaceted preparations in equipment, personal protective gear, and sterilization apparatuses. The global unpreparedness for this pandemic has precipitated substantial worldwide confusion and health crises.

Climatic shifts and their ramifications on infrastructure, significant temperature oscillations across diverse global regions, and

each nation's adaptability to climatic alterations, along with their adverse implications on all designed products."

3- scenarios building:

Scenarios are classified according to their purpose into environmental scenarios, exploratory scenarios, anticipatory scenarios, reference scenarios, political scenarios, qualitative scenarios, and quantitative scenarios. The environmental scenario is considered important for analyzing environmental issues and problems, with its key elements being:

- 1- Representation of the current situation.
- 2- Description of driving forces.
- 3- Description of changes (over time and steps).
- 4- Description of the future image.
- 5- Description of alternative paths for the future.

Through these elements, we can utilize [Context – Actor – tool/product – practice] in addressing all scenario elements to build a forecast of future events that may require preparation through product design or through the study of assumptions and usage practices, and the changes and advancements in materials and tools based on environmental innovations

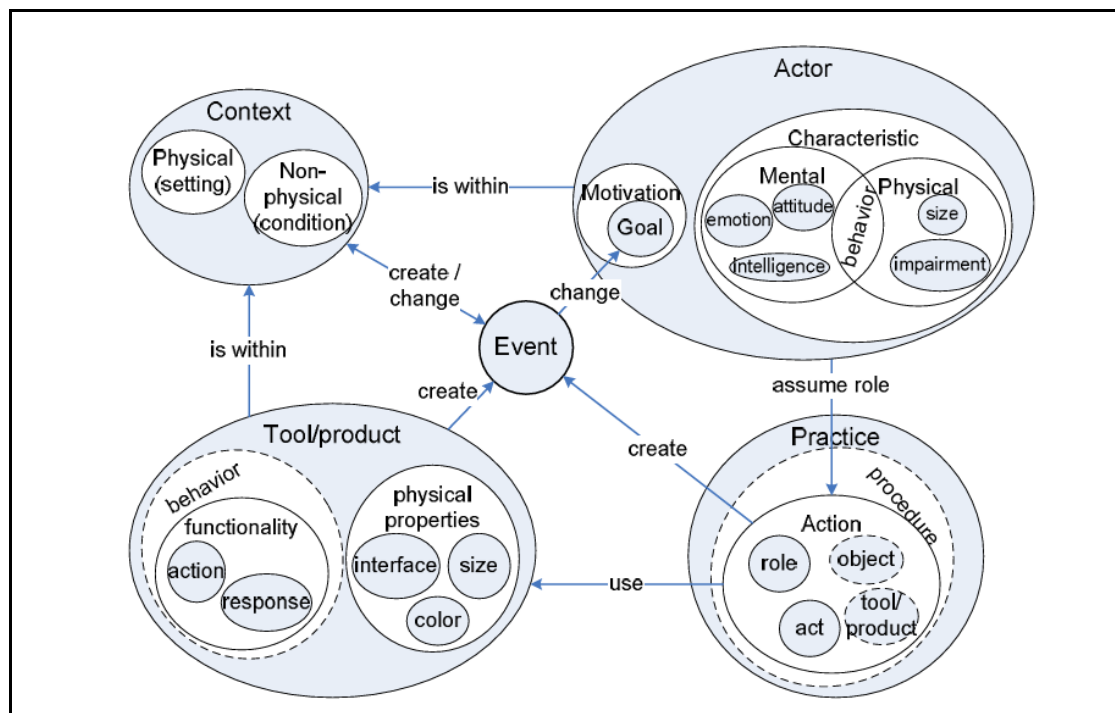


Figure (8) - Anggreini, N. (2010) Scenario elements.

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3-1 Speculative design scenarios building

Designing a scenario is considered one of the most important elements in applying speculative design to predict future events. The scenario relies on key elements (Persona - Setting - Process - Touch point - expected outcome). By applying Speculative design to the basic elements of the scenario, the expected scenario will show its impact on the physical

and social environment by altering actions, challenges, and decisions accordingly. Additionally, the nature of resources that may or may not be available is considered to produce outcomes expected to achieve results based on the setting. The following diagram shows how speculative design integrates into the basic construction of the scenario to influence it.

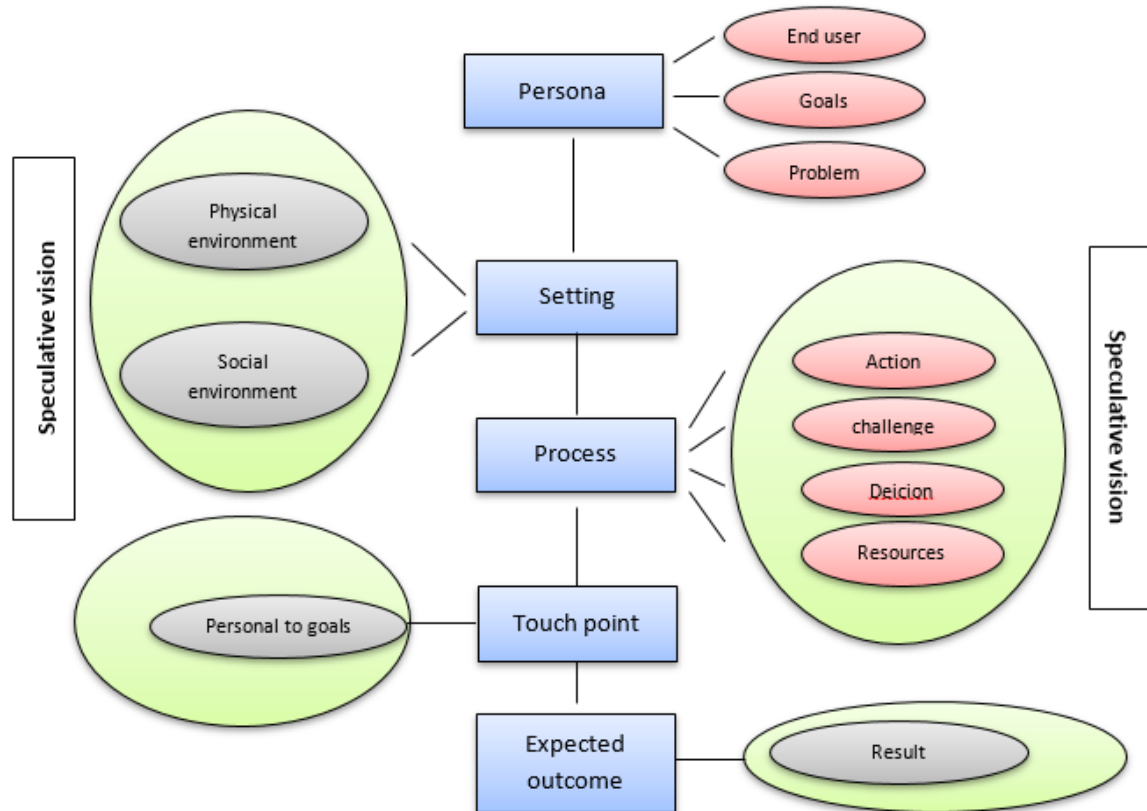


Figure (9) - Speculative design scenarios building

4- Case study for targeted design

Many designs have emerged recently due to the environmental developments faced by many countries because of the spread of epidemics and climate changes, the consequences of which have appeared in floods in some

countries. As a result, designers have resorted to inventing innovative housing systems that suit the potential situation, namely floating house systems. Below are designs for these houses.

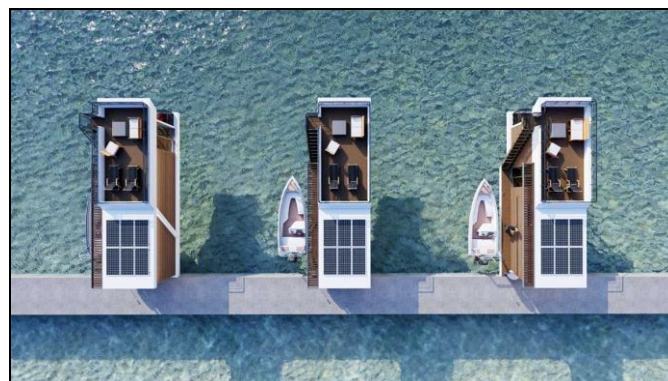


Figure (10) –Futuristic design house for torrential resistance

Many medical masks have also been designed for protection and sterilization with futuristic standards to combat the spread of respiratory epidemics transmitted by contact, providing comfort and daily functionality for their wearers, including The 'Hoito' face mask .. The concept of mask is a multipurpose facial covering for wearers who are in need of a way to stay safe when heading out of the house, while also accommodating for an existing condition that they may have. The mask works

by being positioned over the face and will go to work offering impressive air filtration functionalities thanks to a five-layer activated carbon and electrostatic filter. The accompanying software can be used to schedule times that medicine can be sprayed towards the wearer for those who have preexisting medical conditions to perform dosing in a contact-free manner.

<https://www.trendhunter.com/trends/face-mask-concept>



Figure (11) –Futuristic design mask for respiratory protection

These examples were designed for the future, but not based on a studied vision to closely anticipate the future and follow the standards and conditions of use, the user's condition, and their living nature at that time, without a vision for all the aspects expected to surround the design. Moreover, they did not place environmental requirements at the center of the design process in terms of materials and usage methods. Therefore, applying reflective design in the design of these products under the umbrella of the environment as the center of the design process leads, consequently, to more designs with an appropriate and suitable vision for this expected future.

Research result:

From the summary of the study and analysis, we find that integrating the vision of reflective design through designing scenarios that anticipate future events that the environment may face, such as the spread of diseases and epidemics or climate changes, leads to designing products with futuristic standards to confront environmental developments. If this is done through the principles and strategies of life-centered design, it directs the product design towards correct objectives and diverse designs with effective methods aiming for a more efficient and effective product. The following diagram illustrates the relationship between reflective design and life-centered design.

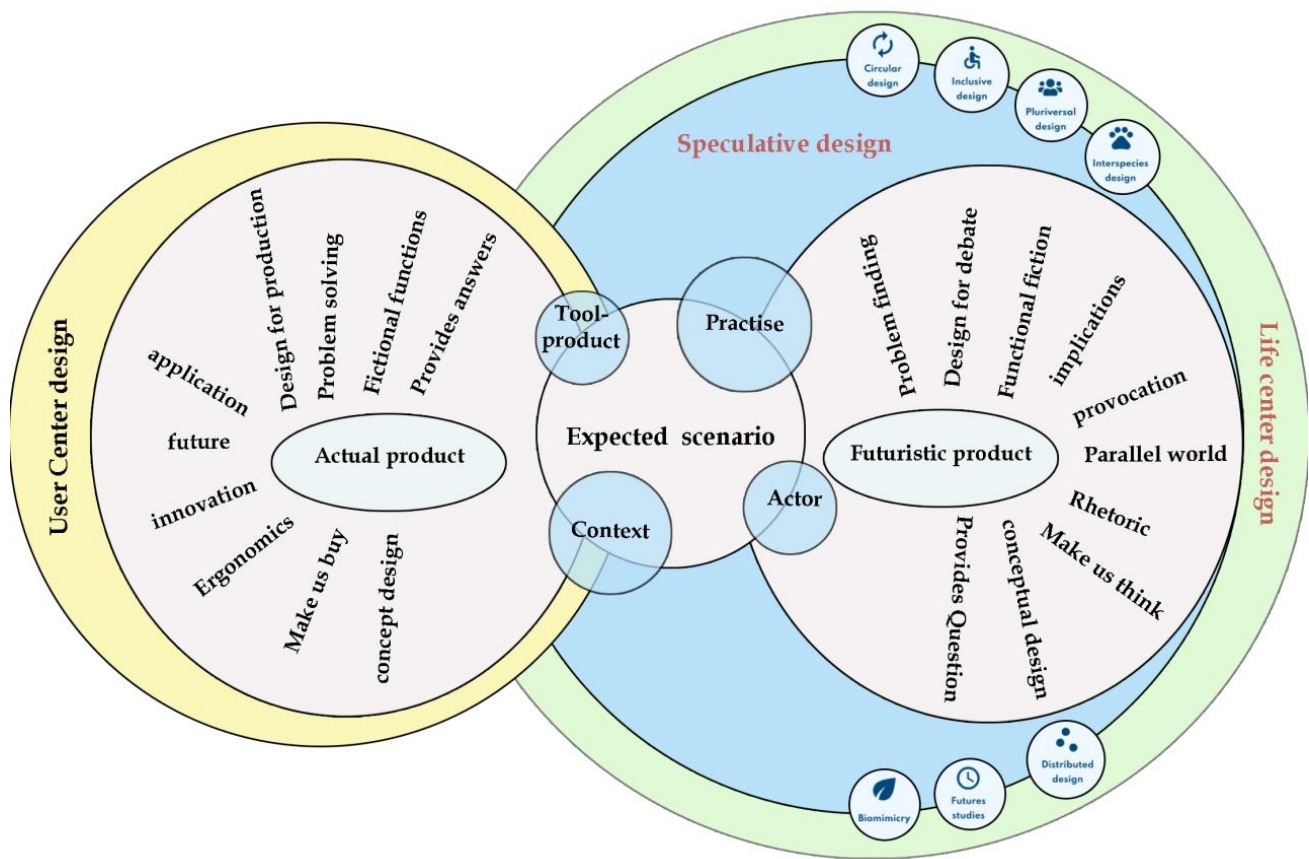


Figure (12) – Speculative design as a key practice of life center design

From the previous plan, there are essential elements for the current product design, which are designed based on the concept of the user as the center of design, such as ergonomics, application, problem solving, design for production, etc.

It appears that through the application of speculative design in the form of expected scenarios, which are based on essential scenario elements such as (Actor, Context, Practice, tool product) and with a future-oriented vision under the concept of life as the center of design through methods such as (Circular design, Inclusive design, biomimicry, etc.

We can achieve a future product that meets the appropriate future goals using various strategies make the life is the center of product

design.

1- Practicing Speculative design as a key practice of life center design.

Based on the relationship derived from practicing reflective design under the umbrella of life as a center for design in the creation of everyday products, various groups can utilize this experience as a practical approach in product design to generate innovative ideas that align with future challenges, such as:

1-1- Industrial and Product Designers:

Designers can use various strategies of life as a center for design through anticipated scenarios, as outlined in the following Figure (13)- design strategies for life, to generate diverse ideas for products with different and suitable characteristics.

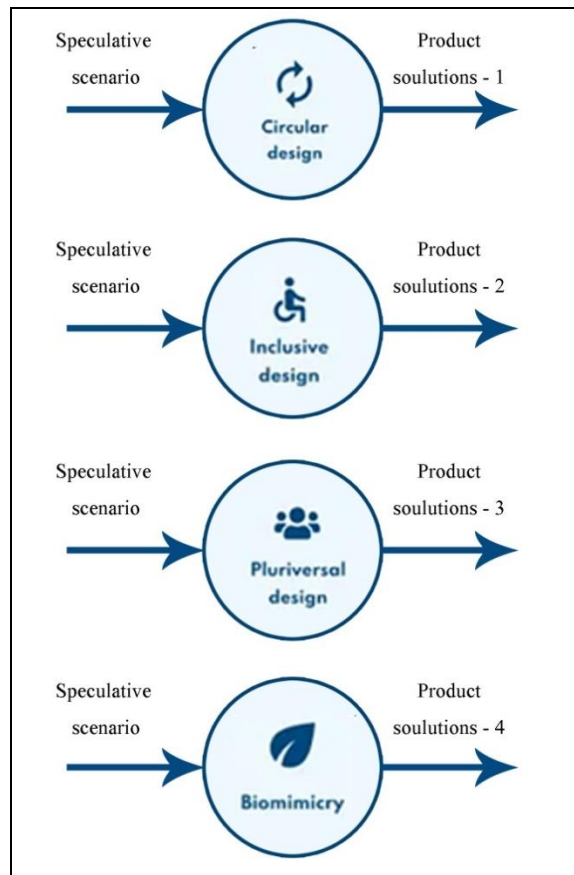


Figure (13) – LCD strategies through anticipated scenarios

They can also employ manufacturing, production, operation, and assembly methods that align with the concept and goal of the design process in this manner. This approach encourages designers to engage in the design process with a renewed mindset, effectively addressing anticipated challenges.

2 - Students and Design Learners:

Students and learners of industrial design and product design can practice speculative design through group workshops, brainstorming sessions, and collaborative learning. This approach leads to innovative solutions and product development that go beyond the traditional design development framework as in the following figure (14).

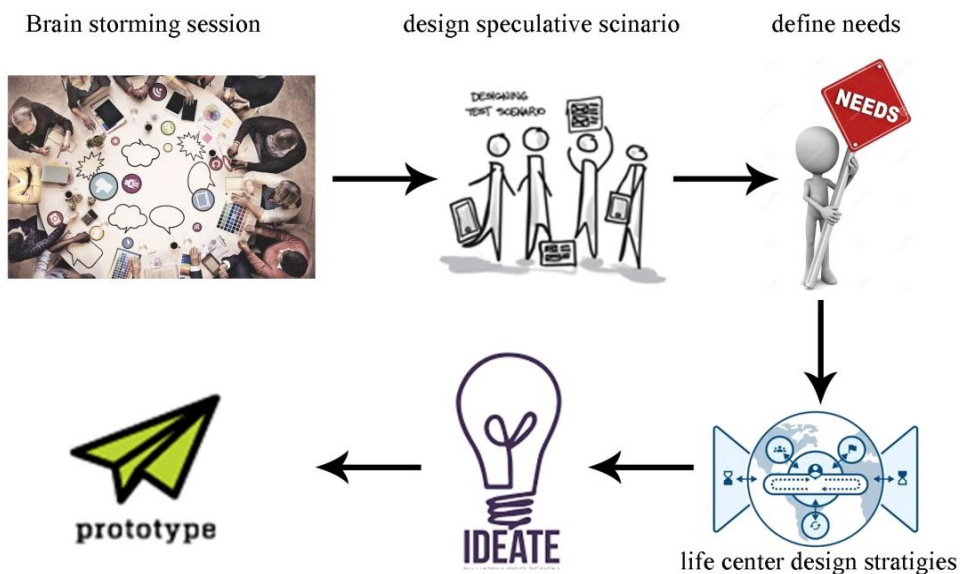


Figure (14) – LCD strategies through anticipated scenarios

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The research recommends the following for product designers and product design students:

- 1- Apply the concept of life as a center for design in product design instead of the user as a center for design to avoid negative environmental impacts.
- 2- Conduct brainstorming sessions to generate various anticipated future scenarios, involving both product designers and design students. Utilize different fields that support imagination as part of these brainstorming sessions to develop comprehensive reflective scenarios that can be built upon.
- 3- Study and research strategies for life as a center for design, and explore how applying these strategies to different scenarios can lead to diverse solutions for designing products that address future challenges.

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