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**Abstracted Realism:
Lures for
Post-Speculative Design
Methodologies**

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in partial fulfilment of the requirements for the degree of
Master of Science in Interactive Digital Media

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Finally, Carlos, whom I miss dearly,

Rest in peace.

Abstract

Purpose:

To explore speculative design methodologies and highlight undiscussed theories which could benefit designers who are interested in posthuman design for the development of posthuman design methodologies.

Design/methodology/approach:

Qualitative analysis of existing material

Design Frameworks

Post Humanism

Highlights:

A framework for the abandonment of human centred design and the focus on the wider network of human and non-human agents.

Originality/value:

A methodological framework proposal for designers

Keywords:

Speculative Design, Future Forecasting, Future narratives, Posthumanism.

Paper Type:

Research Paper

Summary:

This research paper explores Speculative and Futurist Theories and creates new methodological approaches for designers working within the posthuman epoch. It will discuss speculative design as a methodology and how abstracting from its methodologies can help to further the groundwork for the field to evolve and discuss how it can be juxtaposed with posthuman ideologies to support this. Focuses on possible ways of working with abstracted realities and futurist lures; how can designers prototype using these abstract ideas. We are helping to establish suitable methods for designing in collaborative design with any human and non-human agents for speculative design.

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Forward

According to Alexandra Daisy Ginsberg, 'design can set agendas, and not necessarily be in service, but be used to find ways to explore our world and how we want it to be.' (Balagtas, 2019) Since the initial introduction of tools or ancient technologies, humans have been faced with what Buchanan (1992) refers to as *wicked problems*,

Wicked problems suggests that there is a fundamental indeterminacy in all but the most trivial design problems where as Rittel suggest the 'wickedness' has already been taken out to yield determinate or analytic problems. To understand what this means, it is important to recognize that indeterminacy is quite different from undetermined. Indeterminacy implies that there are no definitive conditions or limits to design problems (pp. 15-16)

Every day our planet and humanity go through a constant transformation sociologically, technologically and economically. Increasingly, people begin to question the path we lead to achieve our fully evolved selves. We are constantly experiencing shifts in our humanistic minds. We are alleviating our concerns through design solutions. In my opinion, designers seek to revolutionise instead of developing designs through ethical means. Furthermore, When beginning to think of the term human-centred, in the present age, can we question the human-centeredness of our civilisation and the notion of the 'human'? The point here is within design, what does human mean? As Haraway (1985) states in *The Cyborg*

Manifesto:

A cyborg is a cybernetic organism, a hybrid of machine and organism, a creature of social reality as well as a creature of fiction. Social reality is lived social relations, our most important political construction, a world-changing fiction. (p. 6)

In this text, Haraway (1985) speculates about the human in comparison to a cyborg, stating that there is an 'argument for pleasure in the confusion of boundaries and for responsibility in their construction.'... It is also an effort to contribute to socialist-feminist culture and theory in a postmodernist, non-naturalist mode and in the utopian tradition of imagining a world without gender, which is perhaps a world without genesis, but maybe also a world without end. (Haraway, 1985, p. 7).

Not only does Haraway(1985) abstract the gender roles but also she abstracts humans as a species altogether. This idea of feminism, which is well known, is often misunderstood and in this text I use this term as used by Haraway (1985) herself, which is the way I see it summarised as a fully equal society regardless of age, gender, social status, social class, race and even species. Since her early research studies, Haraway (1985) has speculated about ethics and the notion of abstraction. This is a speculative research technique similar to that of Alex Wilkie, Martin Savransky and Marsha Rosengarten (2017) in their book *Speculative Research: The Lure of Possible Futures* which I will be extracting key methodologies from later in this text.

In sum, the term human-centred is quickly becoming a dated ideology because people are beginning to become aware of their transformative ecological environments and the socio-technical systems surrounding them. Specifically, this paper reviews posthuman theories from various scholars such as Whitehead, Haraway and others so that we can open this discussion about this shift in human ideologies and necessary pivot towards new methodologies and practices within the world of design.

We can use these posthuman theories to consider how speculative models impact and highlight problems in the future of design thinking and assist in ensuring designs are sustainable and unbiased in every layer of this large ecological sphere. This paper is intended for anyone looking for a guide in designing a methodological approach for the practice of speculative design thinking, specifically, to support the practice of post-speculative design thinking for the post speculative-designer.

1 INTRODUCTION

1.1 AIMS, OBJECTIVES & RATIONALE

The aim is to develop a methodology that designers can use to design potential futures.

The post-speculative research method draws on the idea that lures can draw out unbiased futures which values design by humans as well as non-human agents equally via visualisation. The methodology proposed is intended to be used for speculation on potential futures, which we can use to design alternatives to traditionally humanist concepts. This paper will cover the following topics:

- A selection of posthuman theories that can help to push this concept of lures to extract notions of possible futures for design thinking.
- The discussion of the need for a new post-speculative methodology design and how it can assist designers in attaining visions of possible futures through lures.
- A multidisciplinary catalyst that can penetrate several fields and be used collaboratively with designers to solve various problems affecting everything within the post-anthropomorphic paradigm.

Chapter 2 will discuss speculative design as a methodology and how abstracting from its methodologies can help to further the groundwork for the field to evolve and discuss how it can be juxtaposed with posthuman ideologies to support this.

Chapter 3 will focus on the themes and gaps around future forecasting for design purposes - and how we can use these to visualise futuristic problems and solutions through the means of using existing frameworks that are under-utilised for speculative design.

Chapter 4 focuses on possible ways of working with abstracted realities and futurist lures, and how designers can prototype using these abstract ideas.

We can rationalise this through the following:

- Speculation itself is not a method but a way of constraining thoughts and ideas.
- The importance of alternatives to humanist design methods to begin working together with other agents within our more extensive network, designing with them rather than around them, makes the design process more open to collaborative multi-species methodologies.
- Post-Speculative design can be an emerging methodology.
- Designers have yet to connect the dots between posthumanism, speculative design and other existing methodologies such as future forecasting to prompt social, ecological and economic problems.
- Designers can preemptively design, so that the futures are designed with balance, where human and non-human agents hold equal value.
- There are many methods, not mentioned in Dunne and Raby's (2013) book, which are very useful for opening up a posthuman frame of mind - which can help ethically and sustainably design frameworks for specific future-focused realities.

These points are all supported by the experience I have gained within the field as a designer actively trying to speculate on futuristic concepts and the discussions in the book *Speculative Everything* by Anthony Dunne and Fiona Raby (2013). They discuss speculative design as a tool to speculate about possible futures. In the book, Anthony Dunne and Fiona Raby (2013) explain:

Design research and prototyping are not to spot trends but to open a debate about the kinds of futures people want. What the authors are interested is the idea of possible futures and using them as tools to better understand the present and to discuss the kind of future people want, and, of course, ones people do not want. (p. 7)

But what about the other? Or object sentience in general? These are the new questions of the posthuman age. Although Dunne and Raby were always thinking ahead, they were thinking with the human in mind. Nevertheless, these days, we are starting to see a shift in thought and what is deemed essential.

1.2 LITERATURE REVIEW

This research seeks to recognise the gaps of our current speculative methodologies and expose the demands and expectations we should make as humans without a social hierarchy for an equitable future. This literature review will assess the topics discussed through a few relevant texts that discuss abstraction theories and the juxtaposition of speculative design.

The groundwork of abstract realism establishes that we are discussing false realities through other multi-disciplinary fields. However, in turn, we are using these as prototypes to model and visualise our futures needs within the network itself.

First is a paper entitled: *Ontological Design* by Anne-Marie Willis (2006), as an example of posthuman theory and the possibility of posthuman design as a design thinking theory. Ontological design is significant because it merges the idea of consciousness with design. As stated by Willis (2006):

Ontology means 'of or belonging to the understanding of being.' Put extremely simply, ontic refers to what is; ontology refers to enquiry of what is, while ontological refers to the condition or behaviour of what is (p. 81).

This idea of ontology is vital because it integrates this idea of the lure with inquisition.

However, this is not a short process; rapid prototyping is not helpful in these situations. Nevertheless, they can be a starting point. Speculative designers, we are not just designing potential futures; we are designing potential conditions. Here is the main reason why an abstracted approach to design is such a powerful way to evaluate ourselves and make sure that we are assessing everything adequately, in other words, reviewing the overall picture against our egos as humans.

Furthermore, Willis also details how we can use ontological designing to characterise the relationship between human beings and life worlds. We can categorise this into several key ideas:

Willis (2006) states that:

- Design is 'far more pervasive and profound than is generally recognised by designers, cultural theorists, philosophers, or laypersons.'
- Design is fundamental to being human — we design, that is to say, we deliberate, plan and scheme in ways which prefigure our actions and makings — in turn we are designed by our designing and by that which we have designed (i.e., through our interactions with the structural and material specificities of our environments).

Finally, this adds up to a double movement — we design our world, while our world acts back on us and designs us (Willis, 2006, p. 80).

As designers, we tend to seek comfort in our ways of working, but this is possibly detrimental to potential futures. While looking at the current problems humanity faces, our wicked problems could be the ones we are designing through this ignorance of this ontological cause and effect. With responsibility as agents of a more extensive network, we need to recognise the problems ahead of time and design them pre-emptively. With the conscious idea that we are not alone, our connection to everything has adverse effects on the whole network; it all has equal value and going against that idea is throwing our futures off balance.

Unfortunately, speculative design has declined in practice in recent years, and the concept of design thinking is firmly taking hold, as discussed in the book *Speculative Everything* by Dunne and Raby (2013):

We believe several key changes have happened since the high point of radical design in the 1970s that make imaginative, social, and political speculation today more difficult and less likely. (p. 11)

Not only is speculative design unpopular in practice currently, but its focus, as mentioned previously, limited to the kind of futures people desire. Although misaligned with the

proposed points, the concepts behind what Dunne and Raby were trying to embody through their methods can still be harnessed in a posthuman society.

As Dunne and Raby (2013) summarised:

What we are interested in, though, is the idea of possible futures and using them as tools to better understand the present and to discuss the kind of future people want, and, of course, ones people do not want. (p. 7)

Designing with the mentality that may be human-centred is overrated. Perhaps the idea of just creating for ourselves is selfish? Maybe this is the most rational perspective we could have imagined. These are all ideas that designers are currently discussing within humanities, and sometimes even in design.

However, design has a huge problem. This capitalistic trend of profit-driven design can create and cause more harm than good. The hyper-commercialisation of design still lingers today, driven by wealth and leaving designers on the sidelines instead of taking the reigns to champion the change they desire to see in the world.

As Dunne and Raby (2013) state:

During the 1980s design became hyper-commercialised to such an extent that alternative roles for design were lost. Socially oriented designers such as Victor Papanek who were celebrated in the 1970s were no longer regarded as interesting; they were seen as out of sync with design's potential to generate wealth and to provide a layer of designer gloss to every aspect of our daily lives. (p. 12)

Leaving no place for socially-oriented design, we have now harboured our society to become this materialist wasteland of pollution, poverty, greed and violence. Leaving an endless string of consequences entangled within one another perpetually, too complex to unravel. Much of today's dreaming around technology has shaped our aggressive priorities for a short-term, market-led view of the world based on standardised consumer dreams and desires.

Dunne and Raby (2013) also discussed the ideology of change within their methodology, talking about the malleability of the field stating:

We believe that by speculating more, at all levels of society, and exploring alternative scenarios, reality will become more malleable and, although the future cannot be predicted, we can help set in place today factors that will increase the probability of more desirable futures happening. (p. 12)

This is an idea that is further alluded to within *Speculative Research: The Lures of Possible Futures* by Alex Wilkie et al. (2017) This book is a great guide to designing methodological approaches. However, the methodology behind designing research questions is not elaborated on, which would help widen speculation within the field of design thinking.

According to Wilkie et al (2017):

Speculative Research responds to the pressing need to not only account for the role of calculative logics and rationalities in managing societal futures, but to develop alternative approaches and sensibilities that take futures seriously as possibilities that demand new habits and practices of attention, invention and experimentation (p. 26)

As a society, we must consider our interactions and rethink our place in this ecosystem. Either innovation is disruptive, or perhaps we did not think ahead? Our design methods could lead to choices that could snowball and have a long-lasting impact. As stated by Wilkie et al. (2017), we can develop sensible alternatives by taking speculation and experimentation seriously.

Keeping all this in mind, we can use ontological ideologies as speculative lenses helping us visualise what comes next without bias. These will help us formulate models for possible solutions to evaluate what would be of benefit to the extensive network.

Frequently mentioned in *Speculative Research: The Lures of Possible Futures* by Alex Wilkie et al. (2017) was the idea of lures to draw out ideas for the execution of post-speculative design thinking. They discuss a few steps of how they depart about this within the book, which will be further unpacked later within this paper, but in general, their book states that according to Whitehead (1978) as cited by Wilkie et al. (2017):

Unlike other future-oriented modes of thought, the aim of speculative practices is not that of evoking an abstract, normative future that could finally be rid of all compromises, of everything that inheres in the present from which a concrete form of experimentation with possibles might seek to depart. Speculative propositions, Whitehead (1978: 256. emphasis added) suggested, are 'tales that perhaps might be told about particular actualities'. (p. 41)

To summarise, by combining research and connections made between the theoretical methods discussed and the theories of ontological design thinking, we can formulate new posthuman lures which will draw out these unbiased futures.

1.3 METHODOLOGY

The text below will outline why this paper proposes methodological theories of *post-speculative design* using concepts from several speculative and philosophical ideologies—connecting this idea of the post-speculative research ideology and the juxtaposition previously mentioned in this text which relates to Dunne and Raby's (2013) methodologies.

The analysis of previously mentioned theories, as well as methods and using these patterns of drawing the concepts out, is similar to this idea of lures written about within the book *Speculative Research: The Lures of Possible Futures* (Dunne and Raby, 2013). It helps to visualise a new way of working with design concepts—a more flexible method that is malleable and prone to several ethical options for possible futures.

Through reading, watching videos, and attending a live conference via Facebook live with Alex Wilkie came the inspiration for this design-led interpretation. All these resources assisted in building on this concept of a post-speculative design practice through the abstraction of futures for realistic possibilities.

Furthermore, through the abstraction printed within the text; *Ontological Design* by Anne-Marie Willis (2006) the discussion of the cyclical nature of the action of design opens up.

From experience, the consequences of the capitalistic nature of the current space of design has come from this monetised value of the jobs designers are currently doing. As a designer, it becomes crucial to understand the dangers of rushing when being within the design field. Everything must be shipped quickly, and designers become desensitised by humanist led design outcomes, the flow of design becomes to ask the user, iterate, repeatedly, until the user no longer complains about a problem.

However, The designer is hired to make things look pleasing to the user, to make the human user happy. The irony here as a designer is that after finishing the design, it becomes a product of capital, and that becomes the main focus.

For example, If a shoe designer designs shoes and those same shoes come to the end of their life cycle, they create more shoes. Therefore, the modern designer is designing without value.

However, what about the child labourer who will make these shoes in a third-world country? The labourers are making unliveable wages, while designers make a six-figure salary. The labourers have no value, and if they get sick, they have no healthcare, no compensation for their lives but a nominal wage that will only allow them a meal for the day for their entire family. Furthermore, What about when they end up in landfills, devaluating land itself?

There are so many social and ecological questions, but the point is that design becomes an apparent vicious cycle that can have a knock-on effect to the human and non-human agents of our network.

To conclude, we can use these post speculative ideas of abstraction and lures to focus on the crucial effects of our proposed changes and further deepen our knowledge of global production on issues, including those not intentionally honed in on by the capitalist model.

2 JUXTAPOSING DESIGN AND PHILOSOPHICAL THEORIES

Design is a flexible and multidisciplinary field that is flexible in terms of design thinking. Just as Dunne and Raby adapted their approach to suit their speculative design methodology from critical design, critical theories and philosophical approaches. Designers can also look towards other fields, such as theoretical research and futurology for inspiration, as discussed in the next chapter.

2.1 ABSTRACTION FOR ETHICAL OUTCOMES

This theme of post-speculative design discussed multiple times might seem like it is over-reaching, but irrespective of what it might seem like, these themes are born from an abstraction. The idea is to take what Dunne and Raby have done and evolve it into a much wider field that can pivot towards human and non-human cases users and non-users included. There might be more important matters, and designers need to learn to adjust their scope.

To pursue this further, Dunne and Raby (2013) touch on something meaningful in their book they write:

Speculating is based on imagination, the ability to literally imagine other worlds and alternatives. In *Such Stuff as Dreams* Keith Oatley writes that 'imagination gives us entry to abstraction, including mathematics. We gain the ability to conceive alternatives and hence to evaluate. We gain the ability to think of futures and outcomes, skills of planning. The ability to think ethically also becomes a possibility. (p. 158)

Furthermore, this is interesting because when they express 'the ability to think ethically becomes a possibility,' they are discussing this notion of abstraction. Well, there are connections to be made because they are already discussing the idea of abstracting what we imagine.

However, they are also leading into the ethics of things and the value of the 'other'. They introduce our symbiosis with everything around us, similar to an example that will be discussed further in this text called *Foragers*. These are notions capitalism-focused designers do not get paid to consider.

The reasoning behind combining posthuman theories to current speculative methodologies is to achieve just that, the ability to think ethically. In design itself, we already use this method of abstraction, which makes it so that only minimal changes to the designers' ways of working can make a massive difference in the outcomes and discover problems and the way we achieve solutions.

Designers approach current design problems by gathering data and synthesising. Breaking the problems down into tiny bits of data that can then be disseminated and packaged into a product or service. The only thing missing here is designers going back and asking what the user needs, they need to ask themselves: “Is this okay, but does this affect the environment? What about wildlife? Does this affect them at all within the design lifecycle? Does the design work together with its surroundings? Does it need to adapt?”. There are so many questions designers are not asking, leading to this design bias, which is a consequence of the money-driven industry's ignorance.

This question of agency is hugely important, according to Forlano (2017):

These developments blur the boundaries between the familiar binaries of human and nonhuman, culture and nature, and human and animal that have dominated Western thinking since at least the Enlightenment. They underscore the ways in which nonhumans—whether environmental or technological—have new kinds of agency in the world. (p. 2)

We are living in a world of interconnected systems, and this will evolve more over time.

Designers need to start thinking bigger. In the article *Posthumanism and Design*, as

Forlano (2017) writes:

These developments blur the boundaries between the familiar binaries of human and nonhuman, culture and nature, and human and animal that have dominated Western thinking since at least the Enlightenment. They underscore the ways in which nonhumans—whether environmental or technological—have new kinds of agency in the world. (p. 2)

2.2 PHILOSOPHICAL LURES AND PPPP

The juxtaposition of philosophical theories feeds the post-speculative design process.

Through posthuman thinking, designers can broaden their scope through abstraction. As stated by Alex Wilkie (2020) during a live Facebook podcast at the University of Design Chile:

'Methodology can be seen as a machine for producing several types of realities, you put something in, and you almost know what you are going to get out.'

This concept of a speculative machine has connections to what Dunne and Raby (2013) proposed in their illustration *PPPP*, which is a visualisation of the possible futures redrawn seen in **Figure 2**.

The original cone seen in **Figure 1** was depicted in a paper by futurist Trevor Hancock and Clement Bezold (1994). When creating this cone, Hancock and Clement (1994) wrote: 'There is a marked difference between the future we think is likely to happen and the one we would prefer to have happened.' Examining both

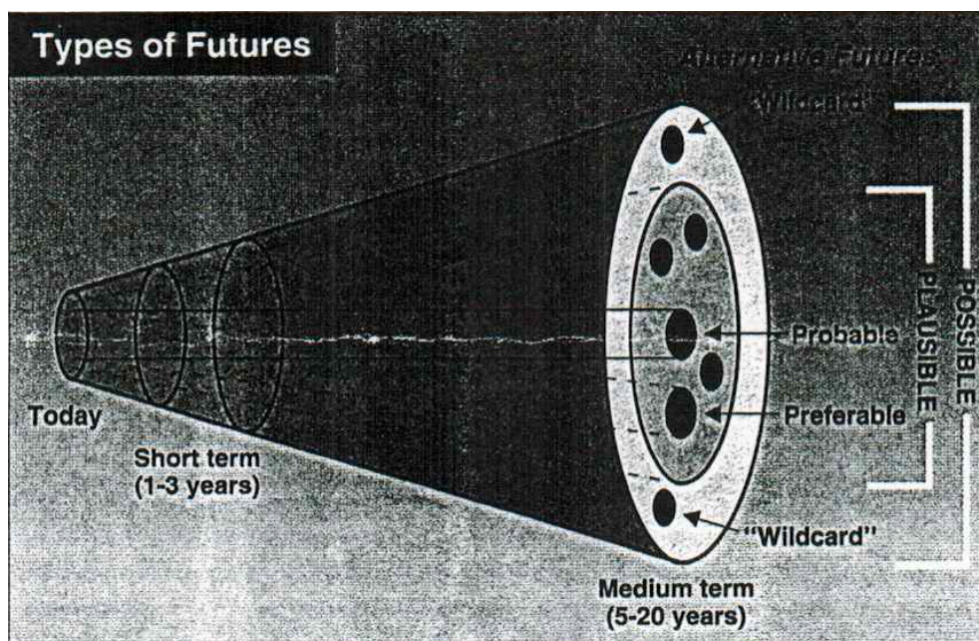


Figure 1: An overview of the Health Futures Field illustration for the WHO Consultation. (Hancock and Bezold, 1994, p. 25)

can be very liberating.' (Hancock and Bezold, 1994, p. 25) Even though Dunne and Raby (2013) illustrated an abstracted version, it serves its purpose well, especially considering the topic and points made in the previous section. To discuss this depiction further, Dunne and Raby's (2013) reinterpretation of this cone includes probable, preferable, plausible, and possible futures for designers (seen in **Figure 2**).

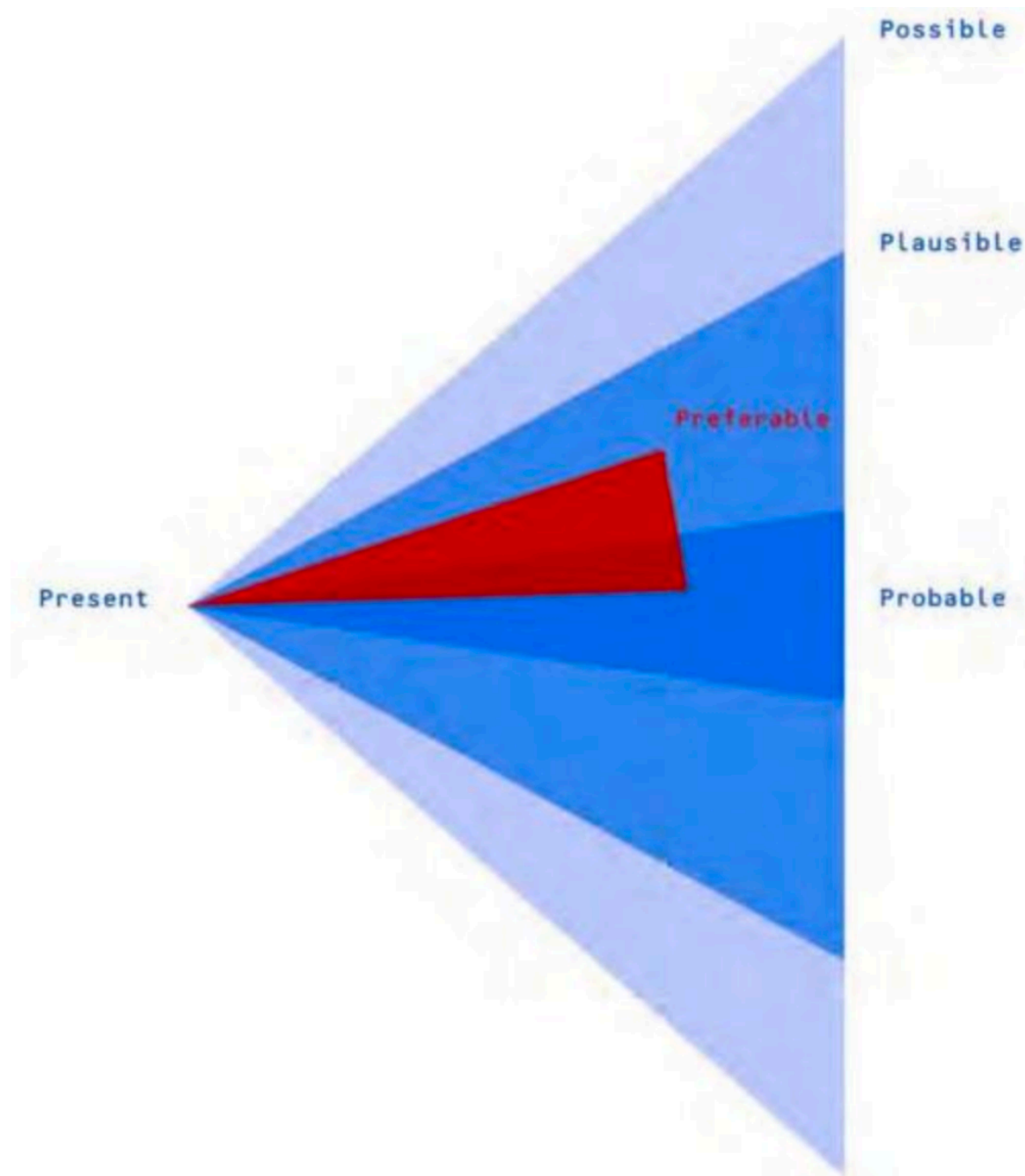


Figure 2: PPPP. Illustration by Dunne & Raby. (Dunne, Raby, 2013, p. 24)

Dunne and Raby (2013) break this down into the four labeled sections

- The first cone is the probable where most designers operate.
- The next cone describes plausible futures. This is the space of scenario planning and foresight, the space of what could happen.
- The next cone is the possible. The skill here is making links between today's world and the suggested one.
- A final cone intersects the probable and plausible. This is the cone of preferable futures. (Dunne and Raby, 2013)

This cone is an excellent tool for designers, and it helps keep them on track during the ideation phase of design which is the phase when designers are brainstorming. It is advantageous because it helps to understand how to work with such a critical subject as futures.

When thinking about futurology, it is not easy to imagine how one would expect this to be understood by people who have not studied abstract concepts. It is essential because design thinking for these kinds of scenarios is a collaborative effort. Alone, designers cannot understand problems and gain insights. Through this illustration, they can guide major stakeholders when pitching their abstract concepts.

Furthermore, this cone can be modified to suit the needs of post-speculative methodologies as seen in **Figure 3**. The previous depictions have a few problems that would hinder the focus of someone working with these concepts. To start, they categorise the cone from one perspective but there is no concept to draw ideas.

Dunne and Raby, consider this to be:

The zone of fantasy...It is of course valuable, especially as a form of entertainment, but for us, it is too removed from how the world is. This is the space of fairy tales, goblins, superheroes, and space opera. (Dunne and Raby, 2013, p. 24)

To castaway, this zone altogether could be foolish as this would mean casting off possible insights; it also limits the designer when working with speculative devices, which can help designers test whether ideas are worth pursuing. In **Figure 3**, notice a few

The Taxonomy Of Post-Speculative Futures

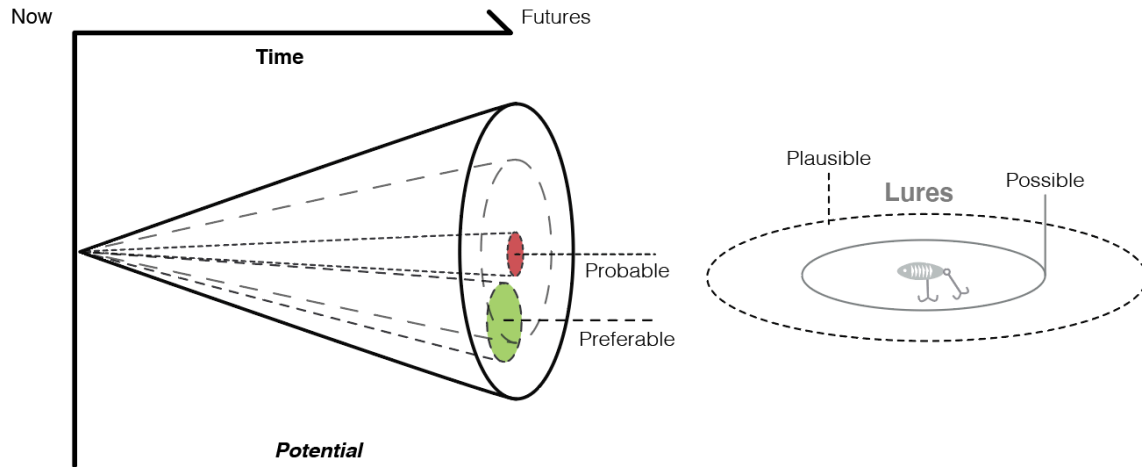


Figure 3: The Taxonomy Of Post-Speculative modified Futures by Reinaldo Bonet abstracted from Joseph Voros' version

changes, which will assist designers in embracing this. Below, the reasons why and how this illustration is vital within the concept of post-speculative design thinking.

First, we realign the terms preferable and possible for post-speculative thinking. Consider the following: In older illustrations, designers envision themselves within this safe space of things that are likely to happen. They will not get a chance to solve the most pressing problems.

Nevertheless, the thought that designers are working within spaces of possibilities rather than what is preferable, especially when it comes to ethical problems, is a dilemma when considering many of our problems in society have to do with our perceptions as a species.

Furthermore, it is not to say that designers should not narrow in eventually as this is valuable for designers, but it is essential to centre the mind in a frame of thinking with questions of 'how do we get there?' Rather than just thinking they might not be able.

This is no easy task, according to Dunne and Raby (2013) themselves:

Of course the idea of preferable is not so straightforward; what does preferable mean, for whom, and who decides? Currently, it is determined by government and industry, and although we play a role as consumers and voters, it is a limited one. (Dunne and Raby, 2013, p. 24)

Furthermore, these are posthuman interrogations that we should ask ourselves to engage in while identifying our interconnected ecosystem's real problems. In other words, the main goal should always be to use design to solve problems, not solutions. Solutions should be what comes next once we have an understanding of the vision.

Dunne and Raby found this to be the most stimulating section of the cone, yet they still have it depicted at an almost random angle on their version of the diagram. About this, they write:

This is the bit we are interested in. Not in trying to predict the future but in using design to open up all sorts of possibilities that can be discussed, debated, and used to collectively define a preferable future for a given group of people: from companies, to cities, to societies. (Dunne and Raby, 2013, p. 26)

This is very interesting, and this connects to the second point, the lures of speculation. Dunne and Raby (2013) discuss speculation at all levels of society. They also mention exploring alternative scenarios where reality can become more malleable. They affirm that the future that we cannot predict can help set opportunities for factors that will increase the probability of more desirable futures.

Moreover, equally, factors that may lead to undesirable futures can be spotted early on and addressed or limited. **Figure 2** shows a response to this inspired by the lures mentioned in *Speculative Research*, according to the author,

For Whitehead, the term is resolutely neutral: a lure incites a change which can be either positive or negative, according to the circumstances; it entices someone, producing a diversion, modifying the course of an event by giving it a new direction. (Wilkie et al., 2017, p. 330)

In other words, lures are whatever we make of them, and depending on how we respond to them, they could possibly incite someone to take action and even change the course of the event. The depiction in **Figure 3** is an illustration of a fishing lure. The reason for this is because of the wording for the term as well as what it stands for.

When fishing, a lure is not used to tell one that a fish has been caught, but it gives the angler an edge to attract them. Speculative design is less interested in producing objects that accomplish a specific goal or achieve a specific purpose and more in creating particular engagements with possible futures. (Wilkie et al., 2017)

As cited by Wilkie (2017) Whitehead highlights :

To present the world in a consistent and creative tension that promotes novel modes of thought. Maintaining this tension sustains aesthetic experience in the interest of producing creativity.' (p. 491)

This form of thinking is essential for a designer, and although this thinking can be a strenuous process. It could lead to a light at the end of the tunnel, contributing to a ripple effect of possible and plausible outcomes for designers or other collaborators to respond through prototypes.

2.3 Object Oriented Ontology

A relatively new school of thought referred to as *Object Oriented Ontology* (OOO) makes a few suggestions which, in my opinion, need to be considered for the sake of designing ethical and sustainable futures. This section is not meant to be a full explanation of the topic itself because of the breath of detail within the ideology. However, it will highlight some key ideas that as a designer I feel are very hard to ignore. According to Harman (2018):

A relatively new school of philosophy that takes Socrates at his word. No one is actually in possession of knowledge or truth, which therefore cannot be our protection against the degeneration of politics or of anything else...since reality is always radically different from our formulation of it, and is never something we encounter directly in the flesh, we must approach it indirectly. (p. 12)

This quote directly supports speculative methods and their use in industry. Evidently, our habit of approaching a problem as if we already know what the issue is, is a problem in itself. However, in a design school setting, designers are told not to assume the root cause of the problem.

Nevertheless, it is human nature to assume that, as a designer, you know the solution and that design bias directly correlates to mass societal and environmental problems.

This notion of withdrawing and withholding objects is a central principle of OOO (Harman, 2018, p.12) and as designers you can imagine that it is a necessary restraint.

According to Harman (2018) his main concern when writing the book *Object-Oriented Ontology* centred on 'detecting the gap between knowledge and reality' (p. 15)

Furthermore Harman (2018) writes about some of the basic principles relating to OOO which I consider to be significant:

- All objects must be given equal attention, whether they be human, non-human, natural, cultural, real or fictional.
- Objects are not identical with their properties, but have a tense relationship with those properties, and this very tension is responsible for all of the change that occurs in the world (p. 147)

As mentioned previously, OOO is much broader than the above-mentioned points but for the sake of this text, I've chosen these two.

The first point relates to post-human ideology, objects and their focus. As a designer working within posthuman futures, it is important to keep in mind that human-centred is no longer going to be the most central aspect of design, particularly when juxtaposing design with philosophical posthuman theories.

Understanding that here there is no main focus that can help increase the span of research for the designer to gain understanding of the various types of lures that can be found when conducting research on a certain topic or set of issues. According to Harman (2018), 'OOO is a bluntly realist philosophy. This means among other things that OOO holds that the external world exists independently of human awareness' (p. 18) This is probably the most critical topic you have to consider as a designer working within the posthuman landscape.

We then arrive to the second point. Which has to do with objects and their interconnectedness. It is worth mentioning that when referring to objects, every agent is included, such as human and non-human. According to Harman (2018), working with this theory means understanding that even though objects may not be related, they are interconnected and they also play a role in all the change seen in the world. In short, everything we design has an impact, both known and unknown, and as designers we have to be fully aware of this paradox.

To conclude, lures are a method of research that can inhibit possibilities and ideas. Coupled with futurist methodologies, it can create an opportunity to pre-emptively design futures that are ethical and ensure that every agent within our posthuman epoch is valued. In the next chapter, I will discuss how foresight and planning can be used to respond to potential futures.

3 Futures Frameworks Through A Posthuman Lens

Many frameworks currently used for speculative design are small components of futurist methodologies, and they are still human-focused. There is no mention as to the reasoning behind this, but Dunne and Raby (2013) elaborate on the looseness of design methodologies to address various needs in their work. As posthuman ideas within speculative design frequently appear within their designs, it is important to discuss future forecasting, how designers and futurists prototype, and projects with posthuman undertones even if they are not the primary focus.

3.1 Futurist Foresight

Embedded into the current futurist methodologies pipeline are businesses looking for profitable futures. Futurism itself is a multi-disciplinary field in which methods are already in place. However, it is worth mentioning the field itself focuses on forecasting. This methodology can be integrated into the proposed post-speculative framework to work with futures as a concept for design based on previous research.

The current methods the foresight framework futurist uses are very similar to that of designers, and can be adapted for designers to work with speculative futures. This section will discuss this topic in-depth and discuss how we can use it for post-speculative design.

Futurist Joseph Voros (2003) wrote a fundamental text called *A Generic Foresight Process Framework* wherein he writes:

The framework recognises several distinct phases, leading from the initial gathering of information, through to the production of outputs intended as input into the more familiar activities of strategy development and strategic planning. The framework is also useful as a diagnostic tool for examining how foresight work and strategy are undertaken, as well as a design aid for customised foresight projects and processes. (Voros, 2003, pg. 1)

This framework is also similar to the one featured in *The Health Futures Field* illustration by Hancock and Bezold (1994). Voros (2003) discusses this as a method of classifying futures so that 'participants of foresight workshops and processes get clear about what sort of futures they are thinking about.' As previously mentioned, Dunne and Raby (2013)

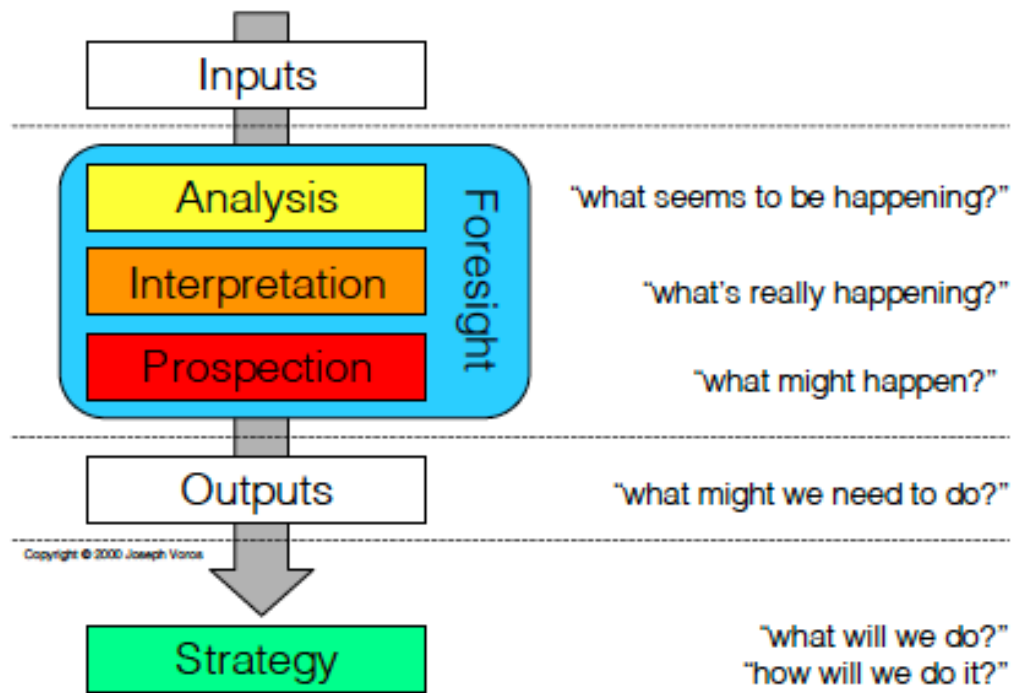


Figure 4: Joseph Voros' Futurist framework (Voros, 2003).

also implemented this within their methodology. The framework is crucial to building on top of what Dunne and Raby (2013) have already started for ethical and sustainable futures to bring equal value and worth to every being within an interconnected network.

As Voros explains:

In figure 4, you have the foresight framework, in 'question' form (...) the comments on the right hand side are some typical questions which were used in presentations to illustrate the type of activity or thinking which is undertaken at each step. They are not definitive, but rather attempt to show the 'flavour' of the activity in that step. (2003, p. 9)

Through research, Voros (2003) discovered that the framework helped the participants involved understand the actions taken through each step outlined. As designers, we can repurpose this framework to speculate about posthuman futures and demystify foresight's nature to explore an alternative method via research. The first step is called *Inputs*, and this is where the previously mentioned lures can be engaged. Designers can use this as a form of what Voros (2003) calls 'environmental scanning', which is the starting point of most design and marketing strategies within industry design but is just named differently for the purposes of future forecasting. This is when you gather information about events,

their relationships, external changes and much more. It also helps to build the vision of a project. (Voros, 2003)

Next, we have the beginning of foresight work. Three stages follow a logical sequence: Analysis, Interpretation, and Prospection. We first find our emerging issues and trends through analysis.

The *Analysis* phase is what Voros (2003) considers the preliminary stage to conducting more in-depth work, as opposed to a standalone technique. We try and decide 'what seems to be happening' when synthesising a large variety of data. We can input our research data in the input phase, where, for example, we can analyse lures. We can then take results from the phase into the next phase, *Interpretation*. (Voros, 2003)

Interpretation is where the designers continue to question what is really happening, according to Slaughter (1989) and Inayatullah (1998) as cited by Voros (2003):

Seek to 'probe beneath the surface' (Slaughter 1989) of the analysis to look for deeper structure and insights. This is the realm of critical futures studies (Slaughter 1999, p.203), causal layered analysis (Inayatullah 1998a), systems thinking, and other 'depth' approaches to futures thinking (p. 10).

These sections come from a well-known systems metaphor seen in **Figure 5** of the iceberg, a metaphor of events, patterns, and trends to analyse the complex layers of a problem that might be much larger than first perceived.

In addition, you have *Prospection* or 'the activity of purposefully looking forward to create forward views' (Voros, 2003, p. 10). Voros (2003) explains this step as the step where the futures are created or examined. He goes on to state:

I tend to locate 'backcasting' methods here as well, even though they tend to be analytical by nature, because they presume the existence of a forward view. One need not necessarily be bound to use explicitly 'futures'-type methods at this step, either. For example, simply evolving a systems map or causal loop diagram forward in time with different assumptions is also a perfectly valid prospective technique to examine how different futures may unfold. The question asked at this stage depends upon which type of potential futures are under consideration—possible, plausible, probable or preferable. (Voros, 2003, p. 10).

This idea of backcasting as mentioned above is fundamental because this is where one can compare and contrast what could happen with what might happen. With this concept,

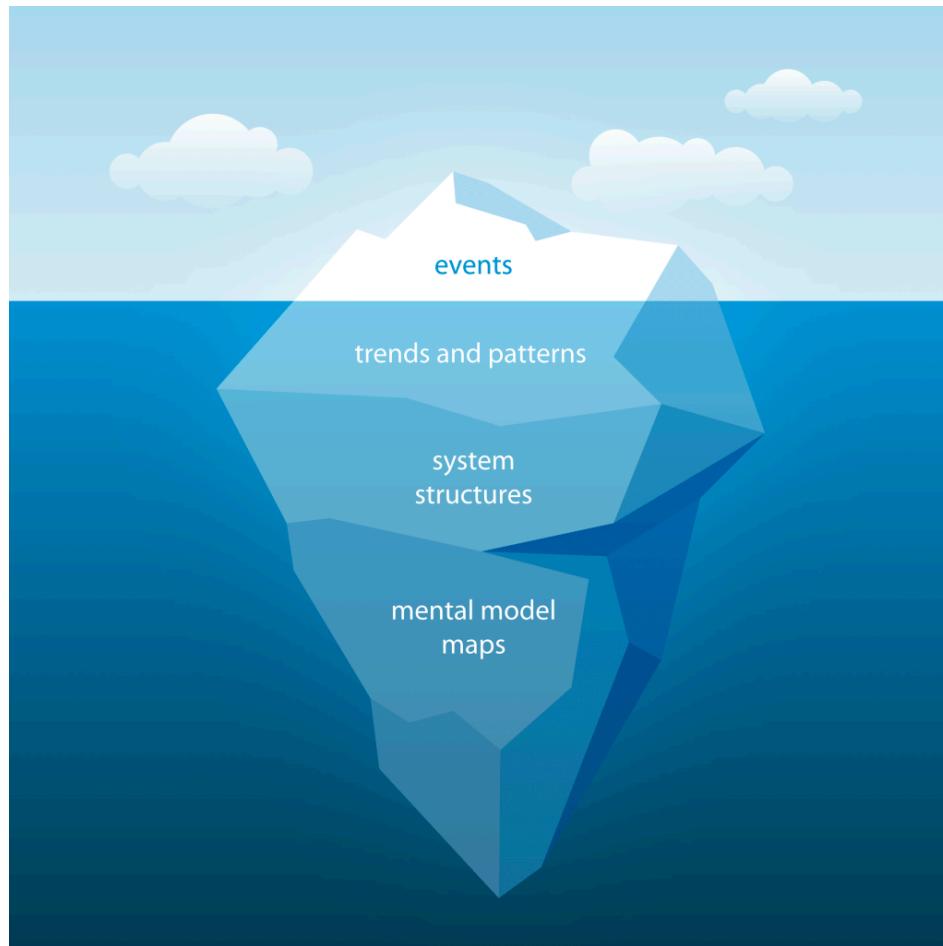


Figure 5: Systems approach metaphor – an iceberg. The system's behaviour stems from its structure. (Magnuszewski, 2021)

we allow for informed decisions to be made, and for designs to be researched through a preemptive process.

3.2 Outputs

Futurists build on ideas from the foresight framework. Combined with the methods of prototyping ideation and an intense critical thinking session to eventually develop an output, the outputs within the work of futurology are 'two-fold: tangible and intangible.' (Voros, 2003, p. 10).

To start, we have the tangible output, where various options are generated, including changes in engendered thinking throughout the whole process. Insights are also generated in the Interpretation step and, therefore, create forwarding views in the Prospection step (Voros, 2003).

The intangible output is more difficult to grasp due to it being overly subjective. On the contrary, the intangible output would be the more critical of these two due to the malleable mechanics involved which support strategy development and allow us to branch off into further speculations. According to Voros (2003), 'namely the perceptions of the mind(s) involved in strategising.' (p. 11) .

Voros (2003) also mentions, that the methodologies need not be specifically related to futures which means they also fit into the strategy of speculative design. Voros (2003) states:

The methodologies employed in the Outputs step need not be specifically futures-related, because the focus of this step is the 'getting across' of insights, and/or the stimulation of thinking about options, prior to and as inputs into more formalised strategy work. (p. 11)

Much like speculative methodologies, we can use various working methods, such as workshops, reports, roleplaying, film, multimedia, fully-immersive experiential events, in addition to other methods to get a designer's idea across.

The tools used and the methodology can be flexible, but it is also essential to consider the angle in the case of post-speculative design. The methodologies are the tools, but the designer's critical eye must remain vigilant as many of these methodologies are usually for the case of profit-making futures.

Nevertheless, these are general steps that could be expanded and aligned with many ideologies simply through overt questioning. They may also be indirectly expanded through the means of engineering experiences which further provoke questions and expansion.

The one crucial question designers must always ask themselves that captures this step's main idea is 'what might we need to do?' At this point, foresight has done its real job—the generation of (hopefully) an expanded perception of strategic options available. (Voros, 2003, p.11)

3.3 Output Examples

In the following sections, it would be difficult to explain this workflow purely by using diagrams and explanations. To make it easier to visualise the way this process generates substantial evidence of potential futures with the context of post humanism, examples of outputs using aforementioned methods have also been included. As well as critiquing the posthuman undertones concerning the speculative outputs to make a case, designers are already working with these concepts. However, they are not typically factored into designers' output, which makes it difficult for designers to explore this methodology.

3.3.1 Overpopulated Planet: Foragers

The first example of these methods I will discuss is *Overpopulated Planet: Foragers*, a project by Dunne and Raby (2013), which explores the notion of a dystopian future. In the project, we can see a glimpse of the idea I previously presented on the concept of lures, which is how this project came to fruition. The project's initial idea was derived from a



Figure 6: Dunne & Raby, *Between Reality and the Impossible* for the Saint Etienne International Design Biennale, 2010. Photograph by Dunne & Raby. (Dunne and Raby, 2013, p. 315)

statistic released from the United Nations, which warned that in the next 40 years, we would have to produce more food due to growing demand. (Balagtas, 2019)

Regarding their work, Dunne and Raby (2013) describe the process as beginning from an interest in how the relationship between the reality, the here-and-now and fictional worlds are alluded to through props, atmosphere, supporting material and staging. (Dunne and Raby, 2013) The work started as almost some kind of play and was developed through speculation.

Regarding post-humanism, the focus here is on the human, but the participants of the project are placed within the ecosystem as 'foragers' in search of food. In a world where humans have used up most of the resources, what would they do? A very posthuman response was expected when thinking about these devices attached to humans, which are very industrial looking. They are almost like smokestacks and the lines of humanism are blurred to the point where we don't know if they are animals, machines, or apart of the land itself. This is a posthuman outcome because of the ambiguity of the devices.

The project included speculations that humans and machines would become one, but humans actually ended up becoming one with the animals in the ecological sphere. Dunne and Raby (2013) ask themselves:

What if it were possible to extract nutritional value from nonhuman foods using a combination of synthetic biology and new digestive devices inspired by the digestive systems of other mammals, birds, fish, and insects? (Dunne and Raby, 2013, p. 317)

From experience, Dunne and Raby (2013) developed these designs through a process of iteration and exploration into a range of possibilities within the visualised futures they had speculated was in and of itself a lure. Attaining inspiration from current ways of doing things combined with a posthuman comparison is essential because this can frame the state of mind for a designer to understand how this all works and interconnects.

These are authoritative exercises in creative thinking defined in terms of problems they can help highlight, much like what Dunne and Raby (2013) have highlighted in their project.

In an excerpt review within the book Alex Burrett as cited by Dunne and Raby (2013) , says:

Although human, if you blur your eyes they are beasts patrolling the Serengeti or wild creatures waltzing through a jungle. I'd previously found our kind clumsy, as if unsteadily making our way on two legs is penance for mastery of the planet. Let me tell you, these committed hobbyists have recaptured the natural grace of the animal kingdom. (Dunne and Raby, 2013, p. 322)

Posthuman theories are not specifically in the research conducted for this paper, but it is evident that the thinking required is looming. The point being made is that framing this better can help designers understand boundaries, especially when considering what they would be learning in design school – with the exception of certain schools that might be already discussing futurism. Even then the importance of this philosophy gets lost in the human-centred approach.

Many designers may have only learned basic user experience practices. As a result, we cannot have many designers using these techniques, and many problems can be solved before they even happen if a proper research study has been conducted to back it up. Design in this context is not typically thought about or understood. However, it is beginning to take hold, even at present, with large corporations such as Google, Samsung, Philips and Fjord realizing the necessity of future forecasts from their respective incubators full of multi-disciplinary artists, designers and technologists.

3.3.2 Lonely Boi

A further example of this posthuman and futurist theory is *Lonely Boi* in **Figure 7**, a project I worked on in the National College of Art and Design in Dublin, Ireland, in 2018. The idea behind *Lonely Boi* is to discover the relationship between human and non-human agents. Can robots keep us company throughout the day? Can machines and humans have relationships?

The formulation of this concept came from the critical critique of humans and their technology, namely, their phones. The lure for this concept came about as a result of these pressing questions in our digital world. During the research phase of this project, many of the people in my life had a noticeable obsession with, and dependence on, social media.



Figure 7: Lonely Boi, a relationship based Tamagotchi; 2018 by Reinaldo Bonet

However, being a somewhat private person, I myself did not understand why this was so important to them. But based on my research, it seemed to be a way for humans to sustain social relationships they were in fear of losing. Many users felt that if they did not partake in social media, they would feel lonely or isolated.

After conducting more research into this societal trend, many people between 17 - 28 years old faced similar feelings of isolation and loneliness that they felt only could be resolved by engaging with other social media users online.

During my research, I was inspired by the ideas behind the actor-network theory, which according to Bruno Latour and as cited within Forlano's (2017) work is:

One of the theory's key proponents—this approach emerged in the late 1980s as a way for theorists to grapple with the role of things and objects in the social studies of science and technology, saying 'it was at this point that non-humans—microbes, scallops, rocks, and ships—presented themselves to social theory in a new way.' In this view, objects—such as seatbelts and door closers, or door-closers—are the 'missing masses' that stand in for human actors, embed specific socio-political values and ethical commitments, and serve to enroll human actors into certain programs of action. (p. 21)

I began to prototype ideas using motion sensors, which led me to the idea of creating a device that automatically sensed your presence and social gestures, like waving. It would 'live' life along the human subject, much like a lifelong companion.

The device would become less lonely the more time you spent with it. By triggering actions through eating with it, playing games next to it, and sleeping with it etc., this project attempted to exaggerate our role with technology, to try and highlight the processes and interconnectedness with objects.

This leads us to the theories behind Object-Oriented Ontology, according to Ian Bogost as cited by Forlano (2017):

OOO puts things at the center of being. We humans are elements, but not the sole elements, of philosophical interest. OOO contends that nothing has special status, but that everything exists equally—plumbers, cotton, bonobos, DVD players, and sandstone, for example. (p. 23)

Contemporary thinking usually involves the aggregation of scientific, natural elements and constructions of human behaviour and society. OOO steers between these two paths and draws attention to all the layers down to the molecular level. Powers, their nature and relations with one another as much as with human beings themselves. (Forlano, 2017)

In a way, *Lonely Boi* is questioning humanism in these two regards and trying to explore those intimate feelings many humans share with technology. Humans and technology have become intertwined, each feeding the other for its needs and through design we are exploring these undiscovered channels within our psyche and extending our influence on the technological world. Forlano (2017) discusses the state of our species and mentions a similar idea using Keller Easterling's quote:

Design is an excellent arena in which to observe the relentlessly human as well as the possibilities of the more than human. Within the narrow framework of the human, design can be about the total extension of rationality into the surrounding environment with universal systems of proportion or geometry that make claims to 'natural laws.'... But design can also be about extending other powers of that nervous system. There are so many underexploited faculties of voice, skin, skeleton, muscles in interplay with other solids, photons, and waves. The more than human doesn't negate human design; it only multiplies those designs in a larger field so that there are always many instead of only one. (p. 25)

According to Forlano (2017), Easterling's is arguing that design offers a range of intermediate, agile changes and 'dispositions' in a 'network of possibilities' (Forlano, 2017, p. 25).

This concludes that the signs are there for posthumanism to begin to break the humanistic views currently within the design industry. Posthuman ideologies can begin to penetrate various sections within a design, including speculative design itself.

This concept of looking at things through this 'posthuman lens' is 'enabling thinkers from philosophy, science, and technology studies, geography, and history around notions of the nonhuman, the posthuman and the more than human.' (Forlano, 2017, p. 29) to effectively speculate what comes next for our society but also focus on our connectedness with this great network of agents.

For *Lonely Boi*, it was important to understand this concept and the speculative design methods so that I could explore the notion of our relationship with technology. *Lonely Boi* was not a realistic design output, nevertheless, it did lead to important questions which would help further outcomes for design.

There is no need for bias when Speculating for the human or non-human agents. This all shows that design does need to evolve as a practice. To continue, the same old practices means that designers create stagnant design outcomes which will further worsen problems rooted within humanist ideals. Cross-disciplinary design itself is important if we are to champion these ways of working. According to Forlano (2017):

The most relevant strands of this theory such as actor-network theory, feminist new materialism, object-oriented ontology, and transhumanism are covered. With new epistemologies and ontologies to help make sense of the current conditions, it is likely that design practices will also need to evolve in order to stay relevant and to cope with new problems and questions. (p. 29)

In the next chapter, we will discuss several methods of prototyping using speculative techniques capable of outputting post-humanist ideologies which can be further expanded and tested. In this way, designers can further push these posthuman speculations within design and other fields for the benefit of human and non-human agents.

4 Post-Speculative Machines and Prototyping

In a previous section, we discussed output, but the question remains: how do we prototype? As designers, the acts of making, drawing, creative coding and anything imaginable to create engineered physical or digital designs are always a part of the job, usually with a final product in mind. Likewise, as speculative designers, several prototyping methods are employed to suit the needs of these visions of the future. However, it is worth highlighting that figuring out how to test the future is no easy task. This section will discuss methods being explored within the space to engineer what is perceived to be intangible and, at times, incomprehensible. It will entail the use of examples of several methods and logic and designers that employed them and why it could be helpful in terms of the posthuman epoch.

4.1 Role-Playing

A method commonly used for research by various designers is role-playing. It helps the designer to use their imagination and have a clearer perspective of the problem at hand. Wilkie et al. (2017) discuss this concept of how design within the confines of a black box with preset options reduces a designer to a relatively impoverished sense of the world.

Throughout their book they mention:

To undertake cosmopolitical speculation, to engage in idiotic thoughts about the future of us, our planet, civilization, Gaia and ecology we need a far more refined machine that can mediate the world in all its complexity. We need to create a machine, which is 'potentially capable of allowing us to creatively resist the mere extension of the present into a likely future', as Savransky puts it (in this volume: 25). We need to create a machine that can engage with what Halewood (in this volume) calls 'situated speculation'. It is a form of speculation, which is both situative and risky. It creates new worlds, it is 'performative' (Wilkie et al., 2015), which in turn creates constraints on what can happen and which encourages us to take risks to engage with these constraints. In the remainder of this chapter, we report on an attempt to build such a machine and on some results derived from its operation (Wilkie et al., 2017, p. 234).

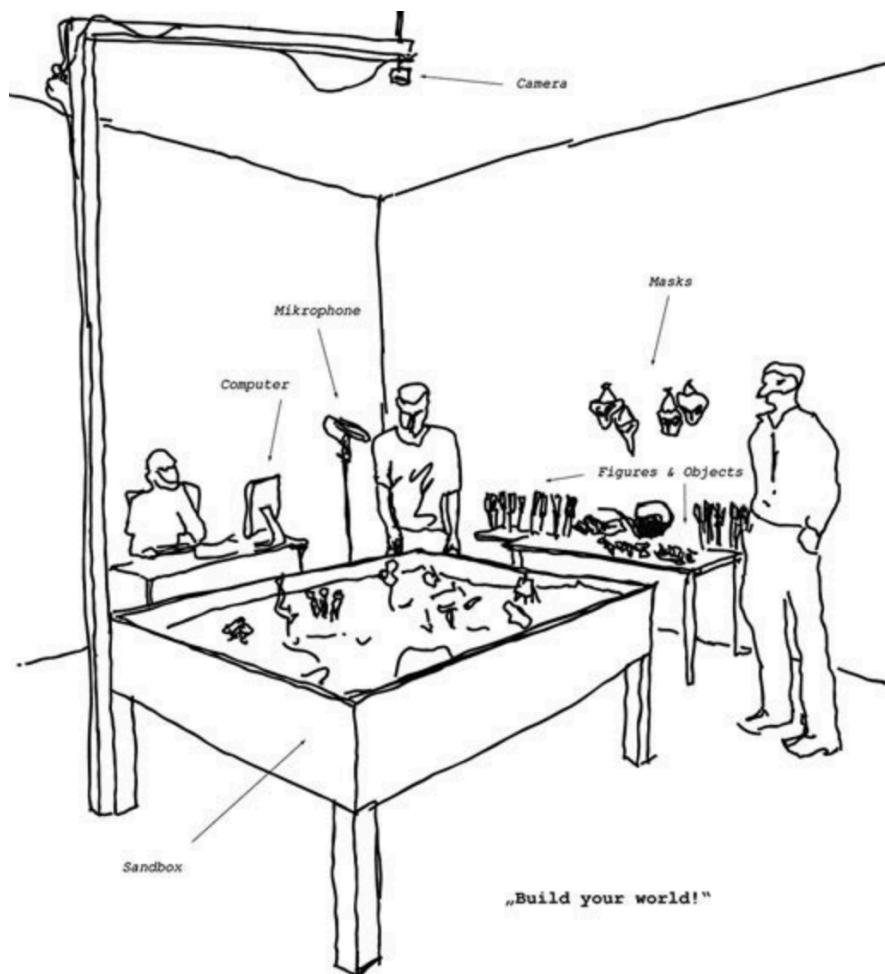


Figure 8: Sandbox study by Alex Wilkie et al. (Wilkie et al., 2017, p. 236)

For example, one of these machines aimed to create disaster scenarios and new forms of emergency provisions, Wilkie et al. (2017) referred to as the first machine prototype. We can see an example below in **Figure 8** called the sandbox.

They created a speculation device that would allow them to brainstorm through prototyping. Another technique designers have often used is called collaboration, where we can work with major stakeholders and other participants such as the service users.

The lure here is obvious, the team started with this title, *In the Event of...Anticipatory and Participatory Forms of Emergency Provision*. Extremely broad, but when we have a sandbox and other objects for building in a room full of people who are not disaster

experts, we are most likely going to get varied and interesting results. The title itself is posthuman in nature as well, it doesn't mention for whom or what it is intended, it just mentions the problem. Very open-ended results come from these sorts of explorations.

For our project we wanted to create a speculation device that would allow us, as a society, to open up the business of thinking about future disasters and to move it away from disaster experts. We needed to create a machine that would slow people down (to avoid creating the ever same stories of earthquakes and terror strikes), to think in unusual ways what, if anything, might endanger us? (Wilkie et al., 2017, p. 234)

With this speculation, the box was born 'with our sandbox, we do not only produce speculation, but we can make its processes visible and create a catalogue of speculative practices' (Wilkie et al., 2017). The whole idea of this is to create a tangible diagrammatic space, which is malleable so that ideas can branch off, and we touch the future in this way - even if it is not real. It opens up this frame of mind for the speculators to explore their ideas and testing possibilities becomes fun and simple.

4.2 Fabrications

In *Speculative Everything*, Dunne and Raby (2013) use very similar techniques for *Foragers*. Not only do they role-play and record media for their exhibition. They also engineer objects and models using wood, 3D Printing, Welding and other physical or even digital prototyping methods, similar to the speculation sandbox mentioned above.

Dunne and Raby (2013) built models so that they can be tested in the world outside as seen in **Figure 9**. The devices can be prototypes themselves or props for role-playing.

In my opinion, the issue currently with speculative prototyping is that designers are usually the ones doing it and applying it to speculative research methodologies.

According to Stengers and as cited by Wilkie (2017):

Such a device conceives of speculative design as the participatory art of staging and as a matter of distributing roles. A design that aims at 'imbuing political voices with the feeling that . . . the political arena is peopled with shadows of that which does not have a political voice, cannot have or does not want to have one' (Stengers, 2005: 996). (Wilkie et al., 2017, p. 232)

The keyword here is participatory. Wilkie et al. (2017) are trying to give everything a voice, which is significant when you imagine the kinds of problems that can be encountered from



Figure 9: Dunne & Raby, from *Designs for an Overpopulated Planet*, No. 1: Foragers, 2010. Photograph by Jason Evans (Dunne and Raby, 2013, p. 332).

the posthuman epoch. Everything interacts with these products and services. We need to be transparent and open to solve these problems.

4.3 Digital

Like other fields of design, post-speculative research entails digital prototyping as well, simply because it can have severe consequence in terms of privacy rights and bias. If used ethically, computers and technology can help us design ways to make things much easier in terms of prototyping, and it is also another option that must always be considered. In my opinion, we need to include them within the speculative process, according to Wilkie et al. (2017):

in common with other contemporary 'creative' practices, designers of computational and information systems have adopted and operationalized brainstorming as a technique with which to formalize, manage and coordinate inventiveness and knowledge production, not least in relation to human- computer interaction design practices predicated on 'user' engagement and involvement. (p. 147)

The brainstorming Wilkie is discussing is considered to be prototyping by designers, especially within the field of interaction design. Arduino which are simple physical

hardware devices that can be coded quickly are used for trying and prototyping experiences that we can test. Apart from this, some designers who work with the web use HTML and CSS and Javascript to prototype user interfaces. I suspect this trend will carry on within fields of speculation especially when you consider the futures are potentially fully automated and highly technological.

Furthermore, we could use this method with plants, animals, other objects, and humans to test interactions between each agent. This will be especially important within IoT (Internet of Things) and other ubiquitous computing technologies. This could all be combined with other prototyping methods, including collaboration, which would make it a powerful tool for delivering vital concepts for problems that we might not have thought were solvable.

According to Wang et al. (2009) and Bautista et al. (2012) as cited by Wilkie et al. (2017)

These innovations generally feature the deployment of experimental digital communication technologies into the brainstorm process, including: online text and video conferencing to explore cultural differences amongst participants (Wang et al., 2009); tabletop and whiteboard interfaces as a means to counter agonistic 'dominance' (Bautista et al., 2012); a digital 'picture space' for visually stimulating group activity and the production of ideas (Wang et al., 2010) (p. 147)

To conclude, digital communication technologies are an essential part of the brainstorming process, as mentioned above. Visual stimulation is hugely important as this is the only window designers can fully prototype realistic ideas. This form of prototyping usually takes more time.

However, it is excellent for when the design needs to be displayed to organisations or the public because it draws them into the future that we are speculating. Sometimes we can test interactions which are essential to see possible new problems within design our outcomes.

4.4 Turning Agents Into Speculators

One thing to remember is the methods of posthuman speculative design. For example, plants, animals, etc., are typically thought of as not being designers, well, one could argue that is not true. They had their methods of design long before us, and they change as we do. They evolve. They are, by definition, designing.

As speculative designers, we need to figure out how to work together with these designs without disturbing other ecosystems. In *Speculative Research: The Lure of Possible Futures*, Wilkie et al. (2017) mention that you can invite outside speculation through these aforementioned prototyping methods. In a way, the previous project from Dunne and Raby (2013) is also an example posthuman speculation because they are interacting with the plants involved in the study.

However, how does one turn people and other outside agents into speculators? Through all of the previously mentioned prototypes and intense brainstorming. According to Wilkie et al. (2017), beginning to speculate is a simple task with people. We can include them, and with speculative machines, they become like children again once, they have let their guard down and become fully involved.

Maybe animals could be reasonably straightforward design subjects because their reactions could be studied. The same could apply to robots and A.I. The point is to include the 'other' within the theoretical study itself, so that we give everything the time it needs to show possible problems, adverse effects or anything.

The idea is to keep things open-ended so that our chances of discovery increase. As Wilkie and his team say, 'The openness also highlights the problem that the players can't develop a storyline merely by thinking without creating it with objects in the sandbox.' (2017, p. 241)

They also mention the importance of adding elements of contingency to each scenario. This allows for the opening of possibilities. (Wilkie et al., 2017) The whole experience then becomes iterative with the constant addition and subtraction of the affecting variables.

To build the world is a cumulative and additive practice in which the speculators usually pile up entities. The end of the first step usually comes slowly, when the players do not see the need to have even more props (Wilkie et al., 2017, p. 243)

Apart from speculation, the interaction between the speculative machine or prototype tool and all of the agents involved is hugely important. It is essential to understand in more detail the micro-techniques of speculation. (Wilkie et al., 2017, p. 244) This starting point for speculation allows for the possibility to enact alternatives. The actors themselves or the agents not specific to any time of being can acquire qualities during the enactment of the said speculative process instead of resembling what they represent. They would have acquired qualities that either come from the player, the plot or within the props, rather than from any resemblance to the outside world (Wilkie et al., 2017).

The reasoning for this receptive approach is not to narrow down the possible answers but to produce an environment in which anything is possible. (Wilkie et al., 2017). Once that is done, we can study their 'natural contraries' (Tarde, cited in Wilkie et al., 2017). Wilkie et al. (2017) mention Tarde's notion of 'opposition' is erroneously conceived . . . as the maximum degree of difference.' This means that it is a repetitive phenomenon wherein two similar things are mutually destructive through their similarities in real life.

Explaining their understanding of this concept, Wilkie et al. (2017) state:

Opposites or contraries always constitute a couple or duality, they are not opposed to each other as beings or groups of beings, for these are always dissimilar and, in some respect, sui generis; nor yet as states of a single being or of different beings, but rather as tendencies or forces. (p. 259)

These points suggest that it would be better to employ contrasts than it would be to enact new oppositions to add new agents. This is purely because everything added is a disruption within or outside a network. We should seek to improve the current network and only add to it when necessary for the benefit of the rest of the network.

5 CONCLUSION

It is evident that there is much room for speculation for the posthuman society of the future. When giving every non-human and human element agency, possibilities for precise foresight increase our ability to preemptively design to mitigate any potential dangers. Through the use of the posthuman lens and speculative design, we can navigate our way around possibilities for futures which are ethical and integrated within the larger network of agents.

This paper describes the use of several different theories that have been used and shows how design can borrow methodologies used in distinct, multi-disciplinary fields. It also describes that the field of design can be the driver of new ideas through collaboration and the value of agency. Moreover, we can be confident that we are not collaboratively designing selfishly, and as a result, designing future moments of 'natural contraries' as a direct result of our poorly planned design decisions does not occur.

By examining the available theories, it is clear that good design is best in its critical state and that trying to answer big problems requires constant abstraction and more integration into our network of agents. According to Dunne and Raby (2013):

All good design is critical. Designers start by identifying shortcomings in the thing they are redesigning and offer a better version. Critical design applies this to larger more complex issues. Critical design is critical thought translated into materiality. It is about thinking through design rather than through words and using the language and structure of design to engage people. It is an expression or manifestation of our skeptical fascination with technology, a way of unpicking the different hopes, fears, promises, delusions, and nightmares of technological development and change, especially how scientific discoveries move from the laboratory into everyday life through the marketplace... On the most basic level it is about questioning underlying assumptions in design itself, on the next level it is directed at the technology industry and its market-driven limitations, and beyond that, general social theory, politics, and ideology. (p. 89)

While Dunne and Raby never discussed the topics of agency and lures, they mention them at their most basic level. In sum, design is meant to question its own underlying assumptions. Provided that the designer themselves seeks to question the boundaries of design with philosophical methods, it is critical that they reduce their standard industry-led design approaches that are driven by profit rather than ethics.

Finally, design is usually used to answer critical societal issues and provide for human wants, however, the bias of design being solely dedicated to profit-generating projects is clearly a mistake. Designers need to address the consequences of how products and creations can become a dark and even oppressive tool when focusing design concepts solely for human use, with no regard for non-human agents. Clearly, we need to mitigate problems which could hinder sustainable ecology and human development directly leading to irreversible consequences. With a vast array of speculation methods and ways to employ collaborative innovation, we already have all the tools to abstract all the realistic parts of our speculations and build those ideas up to meet ethical and sustainable standards.

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