Faculty of Liberal Arts & Sciences, Strategic Foresight and Innovation, Digital Futures Initiative (DFI)

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Creative techniques handbook 2015 Digital Futures OCAD University

Stein, Suzanne, Bruce, Alison, Carnevale, Michael, Shakdher, Smriti, Owen, Adam, Rice-Khouri, Alex, Hicks, Andrew, Zheng, Davidson, Viðarsson, Egill Rúna, Uzun, Fusun, Hammadullah, Syed, Essex, James, Yerbury,, Jazmine, Salk, Jonathan, Shaw, Jordan, Lu, Leon, Ding, Ling, Gunatilleke, Manik, Luft, Marcelo, Gordon, Marcus A., Castro, Margarita, Syed, Nimrah, Slater, Theresa R. and Xu, Xiaqi

Credit for this work also goes to Smriti Shakdher, graduate student in the Strategic Foresight and Innovation program, for her design work and general chaos management.

CREATIVE DIGITAL FUTURES TECHNIQUES HANDBOOK 2015

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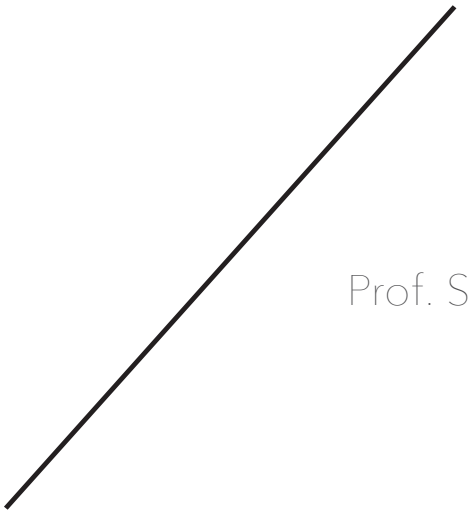
Table of Contents

/ CREATIVE TECHNIQUE / 89

What is a Creative Technique?



Prof. Suzanne Stein

A creative technique is a tool that may be used by groups of creative practitioners to move from a broad concept to a defined idea for implementation. Indeed, it may help a group find or frame a problem to solve; it is intended to give shape and form to the sought after solution or offering

This text is divided into two sections, for two types of Creative Techniques: Conceptual Techniques and Creative Elicitation Exercises.

Conceptual Techniques are the most recognized in a design thinking process. They help with cycles of divergent and convergent thought throughout the progression of idea development. They may help to open or close options as a group moves its thinking forward.

Creative Elicitation Exercises aid in a group's ability to successfully apply a design thinking process; they may encourage lateral thinking, level a group's hierarchy or encourage group cohesion.

Some Creative Techniques certainly qualify as entrants in both categories. The distinction this handbook makes helps us remember that creativity is not merely procedural - selecting the right tools at the right time for a given problem - it is also about opening up the space for kinetic group dialogue and generative team performance.

The techniques in this text have been co-authored by graduate students in the Digital Futures Program at OCAD University. We have created this reference of the techniques we chose to explore together for other practitioners exploring new Creative Techniques to include in their toolkits.

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CREATIVE ELICITATION

Bodystorming

Hammadullah Syed
Nimrah Syed
Ling Ding

Overview

Bodystorming is an immersive ideation method to enliven the relationship between the user and the creative problem-solving experience through role-playing and physical interaction with props, prototypes, actual products, and physical spaces. This User Experience Design Technique helps not only in ideation but also in uncovering the potential problems and hidden assumptions associated with a prototype or existing product.

Types Of Bodystorming:

In Situ

This method takes place in the actual environment, and is used to figure out the impact of the internal and external factors on the product and the whole user experience.

Service Simulation

When an in situ experience is not feasible, this simulated environment prototypes the environment as well as the product, allowing the designers to figure out the constraints and restrictions that place will impose in reality.

Group 3 - Tim Hortons

constraints and restrictions that place will impose in reality.

Use Case Theatre
This is an extension of Service Simulation, in which the prototyping of the space is done along with the use of props and actors. This helps in gathering information on different levels and aids in improvement of the product and overall experience.

Background/History:
Bodystorming started off with the understanding that performance in real space can help designers make a connection between the imagination, empathy and communication. Initially begun through a technique called Informant Design, wherein design ideas were explored through improvisational acting (Burns, Dishman, Verplank & Lassiter, 1994). Bodystorming can actually be traced back as an extension of Brainstorming, in which ideas are generated through a verbal process (Osborn, 1953). That the methodology thought became more multi-modal and immersive in Bodystorming.

Purpose:
The objective of this user-driven design technique is to teach stakeholders to feel empathy for the users through various scenarios and physical interactions. This in turn, assists in the analysis of loop-holes in the design ideas in the quickest, most spontaneous and effective way possible.

Sample Bodystorming Activity:

Duration
20 – 25 min

Participants
20 players with 4 in each group

Input
Active body with a present mind

Supplies
iPad Mini template

Preparation
- Participants are to organise themselves in groups of four or five.
- Each group is to come up with a company/game to create an app for.
- Each group is given seven minutes to brainstorm ideas. They may use props.
- Each group has to use an iPad Mini template to 'display' the app features and enact the usage.
- Each group is given two minutes to present.

Things to Consider
- Everything around the participants could be used as potential props and ideational resources. May or may not include buttons, accelerometer, other 3D objects.
- The app must indicate what it does and how the user will interact with it.

• Everyone in the group must have to have a role; so that no one is to be left out.

Compilation of all groups

Running the Workshop
Group 1: Theresa, Michael, James & Jonathan
Need For Speed - https://youtu.be/vf9CKr77mic
Group 2: Andrew, Marcus, Leon & Manik
Star Wars - https://youtu.be/jQ0eUlKCUkM
Group 3: Marcelo, Jazmine, Adam & Tuesday
Tim Hortons - **https://youtu.be/JsrE5Qz4f0E**
Group 4: Davidson, Fusun, Margarita, Jordan & Egill
Burger King - https://youtu.be/oXaCa8aSdCQ

Output
Quick pitching of an innovative app idea for better awareness of the product and its usage through experience.
• Immediate prototyping of spontaneous ideas
• Immersive experience with direct interaction
• Prompt responses to the realisation of action

Discussion
Each group came up with a spontaneous action plan to figure out how the app would work.
The performance gave a jumpstart to the whole process, from ideation to prototyping, and lended a more realistic feel to the exercise. It led to accepting how to brainstorm with your body, to understand the physical aspects and responses. It charged the participants up for a quick response rather than bogging them down in overthinking the procedure, which led to more spontaneity.

VARIATION: References

A few related methods that combine scenarios with acting are listed below:

Embodied Storming
This is a natural extension of Bodystorming, where an experiential awareness is created through physical performance instead of premature ideation. Without any prior knowledge of the subject area, participants delve into rapid communication and physical interaction to generate free flowing ideas which may not be solution driven but are more experimental. The purpose for the extension is to use this technique as a rapid expression instead of a user-need-centred approach and to create collective and shared experiences (Schleicher, Kachur & Jones, 2010).
In Bodystorming, the participants are generally researchers ad industry representatives whereas in Embodied Storming, participants might not know

about the subject area. Enbodied storming could be used to address sociopolitical and socioeconomic problems as well.

Empathy Tool
This technique is used to simulate an impairment to the participant, in order to a deeper understanding of the user experience. This process helps in accepting the emotions and identifying the needs of the users, which aids in making an informed decision in the research and the improvement of a product. (Hoss & Roopani, n.d.). The difference between the two is that Bodystorming can be looked upon as the initial step, whereas Empathy Tools are the refinement of that output, thus being the later step.

Rapid Prototyping
This is a quick method of creating a mock up product to analyze and improvise on it. This time efficient technique gives shape to early ideas and hunches. It may involve mock-ups, in the form of story boards, rough models or role playing scenarios, to create a low fidelity object and get the ball rolling (Ranson & Lahn, n.d.). In Bodystorming no particular objects in made, unlike in this method, where a prototype is produced,

Potential
Bodystorming it helps designers make more informed decisions during the conceptualisation process, thus trimming time down substantially. It also helps them gain better insight and discipline when approached by obstacles. The method helps designers almost or actually experience what a user may encounter, which can strengthen their product designs and even their relationship with their consumers.

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Design Fiction

Margarita Castro
Leon Lu
Jonathan Salk

Overview

Design Fiction is a tool to promote imagination. While many ideas may be considered impossible or hard to execute. Design Fiction applies creative design skills, different sciences, literature, films, and even engineering as fodder for ideas of possible futures.

With design Fiction, designers can craft different scenarios, with an object under consideration, as stories.

"A design fiction practice creates these conversation pieces, with the conversations being stories about the kinds of experiences and social rituals that might surround the designed object. Design fiction objects are totems through which a larger story can be told, or imagined or expressed. They are like artifacts from someplace else, telling stories about other worlds".

Considering the importance of a defined environment, a design fiction elicitation should provide those who take part with different *"provocations."*

A provocation, in the context of this elicitation, may (without being too explicit). Participants get involved with the given provocation by; to consist of an object, a situation, a place or a current reality further analyzing it and considering its possibilities to change: Can it be improved or should it be changed? What are its opportunities and limitations, be they in the context of society, politics, economics, current technologies, prototyping, etc?

For the elicitation, teams presented with a category based on a basic human needs as provocations: (transportation, expression/arts,

medicine, food, housing and communication) and then asked to deliver a forecast on how they believe their category will change in 5, 20, and 100 years from today.

After initial discussion and brainstorming within groups on future scenarios for the next 5 and 20 years, each team is asked to present their 100 year prediction. They must also list one positive and one negative aspect of their projection.

After all teams have presented, all participants vote on the idea they found to be the most fascinating, plausible and innovative.

The team with the most votes will win a mini prize.

Background

OCAD University's Digital Futures graduate students developed this exercise based on our discussions about potential futures, and about how open and broad Design Fiction should be in order to promote the highest levels of creativity and imagination to aid in analysis of new ideas and find the way to actualize them.

We realized that because of our varied experiences and skill sets, each student's foresight into the future differed immensely. The purpose of this exercise is to get a diverse group of people to interact with one another openly and to stimulate the formulation of creative yet logical ideas based on group understanding and experience.

Goals

- Share ideas amongst a group that takes advantage of the unique experiences of every participant.
- Learn to communicate in an engaging, thoughtful and concise manner.
- Explore a logical approach to idea development from a pre-established scenario.
- Optimize individual and group performance.

Preparation

- Groups of four, participants, who were previously assigned to bring in writing/sketching supplies, are formed by splitting people randomly based on a number given to them.
- Each team is asked to pick a card. Every card has written on it a different category.

Details of Exercise

Duration: 30 - 40+ minutes
How many can play - configuration of players: 20 players. They must be grouped in teams of 4-5.
Number of Facilitators: 3
Exercise facilitator: 1
Scribe: 1
Video/Still documentation: 1

Inputs

- A4 sheets of paper
- Sketch pens
- Crayons
- Internet access
- Laptop
- Prizes

Running the Game

- According to the category given, teams are asked to visualize future scenarios at different points in time. Ex, transportation in 10 years from now.
- Teams will be asked to discuss the scenario five years into the future, describe on paper a 20-years ahead future and present a 100-years from now future scenario.
- After all presentations are shared, every participant picks their favourite concept.
- The team with the most votes wins a prize.

End of Game

Outputs

- Presentations of a 100 year future in given categories.
- In our practice of this method, Each of the teams came up with the following ideas according to their chosen categories of human needs:

- In 5 years:
  - ° Nanotechnology
  - ° Genetic testing

- In 20 - 100 years:
  - ° Long life expectancy according to economical possibilities.
  - ° Elective death, in utero cures.
  - ° Easier and more accessible means to defeat diseases.
  - ° Alternative human species. People can pay to evolve their DNA.
  - ° Older people have good economic resources. Fewer poor people.
  - ° Population loss due to climatic change.

- In 5 years:
  - ° Communicating through hologram visuals.

GROUP 1, Health and Medicine:

GROUP 2, Communication:

- In 20 - 100 years:
  - ° After death communication with deceased relatives in a lucid dream.
  - ° Subconscious knowledge through dreaming.
  - ° Possible downloading of different new language skills from a network inside your brain overnight.
  - ° Machine Empathy (Communication with Artificial Intelligence beings).

GROUP 3, Nutrition:

- In 5 years from now:
  - ° Laws for food distribution.
  - ° Food will be delivered in forms of tablets, capsules or injections.

- In 20 years from now:
  - ° 3D printed food.
  - ° Manufactured food.
  - ° Increased enviromentally friendly food
  - ° Increases in hazardous food.

- In 100 from now:
  - ° Humanity will be able to travel to the moon and feed through nutrition stations.
  - ° Intelligent gas pump-like food distribution.
  - ° Food distribution will be according to the needs of every individual, in accordance to what their body is lacking for good health.

- **Pros:**
  - ° Maximize efficiency of food distribution for people.
  - ° No wasteful resources.
  - ° Optimal health for everyone.

- **Cons:**
  - ° May not be accesible for everyone, but mostly wealthy people.
  - ° Loss of food diversity. No choice in food.
  - ° Mind controlling slavery.
  - ° Contamination of the mind, no voluntary actions.

GROUP 4, Expression (Arts):

- In 20 years from now:
  - Virtual exhibits + holographic performances.
  - Virtual music concerts
  - Repatriation of artifacts
  - More A.I. musicians, celebs and personalities.
  - Longer archive needs for older type of instruments.
  - Personalized songs or visual art.

- In a 100 years from now:
  - Climate change is solved
  - New specialized skills and professions
  - Telepathy
  - Gene splicing for new talents.
  - Exploration into outer space
  - Collective Innovation.
  - New social view of art judgment.

GROUP 5: Housing - Urban Planning

- Denser cities.
- Increased population.
- Displaced population.
- Greater Urbanism

Discussion:

- Why is Design Fiction useful at the previous stages of a project conceptualization?
- Do you consider the ideas you came up during the elicitation as plausible and realistic for the future?
- What was the importance of limitations in fields such as technology, the environment, economics, and politics on your final ideas?
- Did you find your teammates' different backgrounds helpful in the process of brainstorming new and different ideas of the future?
- Would you apply this technique when brainstorming for a project in future work or assignments?

What's Next?

Design Fiction can be a quite useful technique when used to open up discovery. It may be most useful at the start of any project conceptualization, to help participants better understand certain environments and limitations/opportunities that would influence projects designed today, based on the collective understanding of our changing world.

As an example, we can consider how communication systems are continuously evolving. If we analyze communication a 100 years ago, and communication in 100 years from

today, the unimaginably magical mobile phones we use today may completely change in the future, considering factors based on economical, social, geological, technological and so many other facets.

Final Notes from Facilitator

At the beginning of planning this elicitation, we talked about potential futures and how our individual perspectives and experiences differ so greatly from one another. We wanted people to share their thoughts and come up with a collective thought into the future, in a time bound manner. We encouraged them to do so by crafting a game.

During the elicitation, we noticed how important the team members' backgrounds were in their ideation. Their ideas could differ a lot,outcomes that weren't always positive. The team working on the Expression (art) category, came to the realization that technology may eventually take over empiric abilities for artistic creation and that the conception of art may be automatized and lose its unique creativity.

The team working on the Health category - envisioned a scenario in which the automatization of health systems would be an improvment, to reduce, sickness, poverty and even death. As facilitators, we realized that Design Fiction may not always result in the best outcomes because of different limitations, which is something we should have encouraged teams to work on as their final ideas. This can also be very helpful to inspire upcoming projects' conceptualization and consider any future limitations, by finding ways to break those barriers as much as possible to make room for positive ideas.

Resources & References

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Generative Research & Design: Make Tools

Alison Bruce,
James Essex

1– Overview

In the modern era, Co-creation is emerging as a critical mindset and approach to design. This movement has roots in the approaches of the mid-1900s, including Participatory Design, Action Research, and others in which a participatory, holistic form of design occurs (Sanders & Stappers, p. 28). Gone are the siloed roles of Researcher, Designer, and User. Co-creation puts each role on an even playing field, and old role boundaries blend together (Sanders & Stappers, p. 22-25). The end goal of design is not just designing things, but designing things within a context (Sanders & Stappers, p. 18). The approach is being employed in solving difficult, seemingly intractable problems (Sanders & Stappers, p. 22). Its strength lies in its ability to unlock deeper meaning and knowledge, and drive collective creativity.

In this paper, we provide an overview of the co-creative methodology of Generative Research and Design (GR&D), referring to Make Tools as instruments that help drive the process. First, we detail the components of the Creative Elicitation (research) side of the technique. Next, we discuss our recent implementation of a Make Tools exercise for our Digital Futures Creative Techniques course at OCAD University. Lastly, we outline broadly the components of Conceptualization with the Generative Research and Design paradigm. Much of what we present is derived from the book, Convivial Toolbox.

We have opted to consolidate our discussions of GR&D Elicitation and Conceptualization techniques into one document. This is because, as Sanders and Stappers illustrate in Convivial Toolbox, "in co-designing, the different steps become much less separated can occur in rapid succession or in intermingled sequences" (Sanders & Stappers, p. 280). Further, similar, and often duplicate, techniques can be used during both the Elicitation and Conceptualization stages (Sanders & Stappers, p. 258-259).

Note also - that, while Sanders and Stappers group all phases prior to Conceptualization in the Research/Elicitation phase, and everything after as

Conceptualization, we have grouped everything after Research/Elicitation as Conceptualization. This was done because we consider Analysis and Communication as steps in concept shaping.

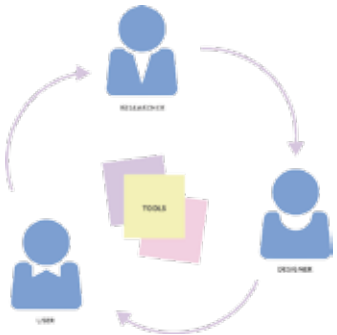
2 - Generative Research (Elicitation)

2.1 Co-creation

2.1.1 The New User

In prior design approaches, Users were viewed as consumers of designs. While they may have been brought in to assess the efficacy of a design, i.e. Usability Testing, they were viewed as entities to be were studied. They did not directly contribute to the front-end of research and design (Sanders & Stappers, p. 24).

In Co-creation, Users are integral players in the design process. They are seen as experts of their experience, and play a large role in knowledge development, idea generation, and concept development. However, since they often lack the necessary skill sets to be contributing "designers," the roles of the Researcher and Designers bring to the mixprovide them with a useful set of tools and guide users through the process (guide, but not direct) (Sanders & Stappers, p. 24).



2.1.2 Everyone is creative (38)

A key, foundational principal of all Generative Research is that everyone is creative. Traditionally, creativity was considered a quality possessed by an elite subset of the populace: artists, musicians, and designers (Sanders & Stappers, p. 15). Creativity was associated with synthesizing concepts into new ideas and inventing the new and unimagined. But this view is rapidly changing, as we see that there are levels of creativity, and that everyone can be creative in one or more of those levels. These are shown, alongside everyday activities related to food preparation, in the diagram below.

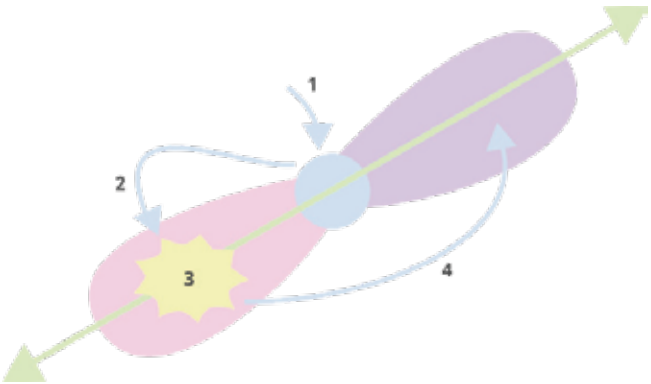
Because everyone is creative, and because is an expert within their own domain, each player is able to make meaningful creative contributions to design. The role of the Researcher/Designer - is to create experiences and facilitate the expressive capacity of everyone involved in the design process - by leading, guiding, providing scaffolding, or clean slates (Sanders & Stappers, p. 40), with a gentle nudge.

LEVEL	MOTIVATED BY	PURPOSE	EXAMPLE
DOING	PRODUCTIVITY	"GETTING SOMETHING DONE"	ORGANIZING HERBS
ADAPTING	APPROPRIATION	"MAKING THINGS ON MY OWN"	EMBELLISHING A READY-MADE MEAL
MAKING	ASSERTING BY ABILITY OR SKILL	"MAKING WITH MY OWN HANDS"	COOKING WITH A RECIPE
CREATING	CURIOSITY	"EXPRESS MY ABILITY"	DREAMING UP A NEW DISH

2.2 Activation

While Users are experts of their experience, they aren't always readily aware of that, or, at least, their knowledge requires activation. As an example, consider being asked to describe what you would value most in an improved public transportation system. The answer might not come to you immediately. However, if you were asked to recall experiences you had with the current system, you could likely recall many quite quickly. As you began to analyse those experiences, themes would emerge. From there, values would emerge. Soon, you would be able to start describing a vision for a better subway system.

This process, referred to as the Path of Expression (Sanders & Stappers, p. 55), is at the core of Generative Research and Design. We start with now, reflect on the past, and then imagine the future. Our past experiences drive new visions.



The path to unlocking future visions is not linear. Everyday people need time to allow their ideas and creativity to brew. The path to illumination normally occurs in four stages: preparation (often called "sensitization"), incubation, intimation, and illumination (Sanders & Stappers, p. 51).

In the subway example, preparation might involve giving you a workbook. The workbook could contain five questions asking you to describe your past subway trips. You might be given tools to illuminate the picture of the past, such as stickers representing emotions that you could place on your descriptions. Other sticker sets might include word sets that you could place around the emotion stickers. You would be given the workbook to take home and work on for a week. The process would give you ample time and tools to freely and meaningfully express your past experience.

The week given to you would provide time for your ideas to incubate. This step allows the unconscious mind to process your ideas and feelings. During this period, or shortly thereafter, intimation is likely to occur, as you begin to feel that you really understand what's going on with problems on the subway, and you start to feel like ideas are soon to burst from your head.

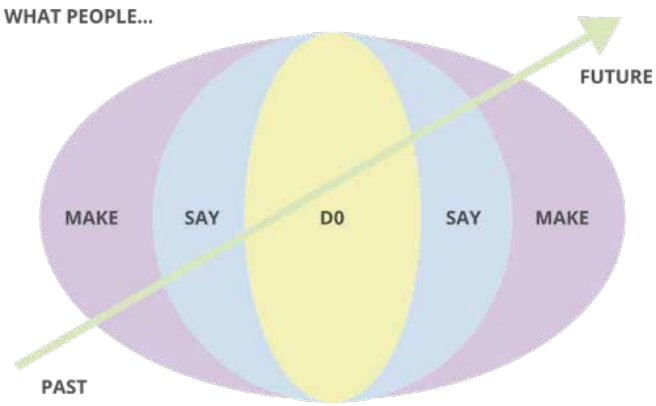
Next, we would meet for a working session. In this session, you are provided with Lego bricks representing people, walls, seats, trains. You are given pre-cut directional arrows and Velcro panels in which you can attach toys and word sets. You are given paper and markers. Within this array of tools, you are able to quickly find physical pieces that allow your creative visions to flow. You start to role-play with your new creation, describing stories of the new subway system you and your peers have designed. You vibe off of the people around you. Ideas collectively emerging into great visions. Illumination is occurring - and it is great!

2.3 Make, Say, Do

Important to note in the example above, is that you were not just given a survey. Nor did we simply take a ride or two together on the subway to observe.

You were asked to say how you felt, asked to make things, and asked to enact stories with the things your made. The reason for this is that knowledge is layered. Some levels of knowledge are harder to access than others (Sanders & Stappers, p. 53). Explicit knowledge, like, I often don't like waiting for the subway, or observable knowledge, like, the trains often run late, are easy to access. Tacit knowledge, like, being positioned far from the emergency strips at night disturbs me, or, latent knowledge, like, the time the driver missed my stop when I was a child has always made me feel like the subway system management lacks compassion, are not always easy to access.

For this reason, in Generative Research, we provide a rich set of tools to enable Users' free expression by way of making, saying, and doing. We watch, listen, and do with the Users.



2.4 Toolkits

For your Generative Research endeavours, there are an infinite number of toolkits that can be created, and an infinite way in which you can choose to implement the toolkit. One size does not fit all, and the kit should be appropriate to context (Sanders & Stappers, p. 70).

Toolkits are made of Trigger sets, designed to trigger associations and memories, and to give the Users freedoms in the way they express themselves. Not everyone will use all of the Triggers you provide. People will choose the forms that suit them best – so you need to make sure there is sufficient variety to accommodate everyone.

Example Triggers include: photos, systematic sets (i.e. a collection of emotional expressions), words, puppets, symbolic shapes (i.e. simple shapes of people moving), Velcro-covered 3d shapes (good for prototyping), raw collections of scrap materials, cartoonlike expressions, Legos and construction kits (Sanders & Stappers, p. 71).

"Triggers, together with a background and supplies such as markers, pens, tape, and scissors make up a Toolkit" (Sanders & Stappers, p. 72). Example toolkits include: emotional toolkits, used to make collages; storyline toolkit, used to chart key events and feelings on a timeline; cognitive toolkit, used to express relationships between ideas; and dolls' house toolkit, used to build models (Sanders & Stappers, p. 72).

3 – Drawing Jam, In-class Elicitation Exercise Details

Date: 27 October 2015
Time: noon – 2 (including Conceptual Technique)
Duration: Two hours (including Conceptual Techniques)
Who: Students enrolled in DIGF 6004
Facilitators: Alison Bruce, James Essex
Document Template (adapted): Suzanne Stein
Notes on space: Conventional OCADU classroom, #310, 205 Richmond St. W.

Goals:
- Elicit data on attitudes regarding group work
- Have participants work on above in an individual capacity
- Determine meaning of data within the context of the Convivial Toolbox in order to deliver report on same
- Derive feedback on concept of group work for graduate students (in order to further study same, if one were to move forward with this approach)

Using the Technique:
We approached this technique from a "prototyping" perspective, choosing to execute a games technique in Creative Elicitation and move forward with the data gathered in that exercise.

We focused on graduate student attitudes towards group work. The rationale being that students have

little input regarding the structure of their academic work, which consists mostly of collaborative approaches.

While what we did was mostly gather initial data, the responses were a good start towards deeper research into this question.

Agenda:

- Overview (10 minutes)
  - Note that research is conducted in a "playful" manner
  - Introduce exercise as an INDIVIDUAL and ANONYMOUS approach to determining overall attitudes towards the tsunami of group work involved in the Digital Futures Program
- Method (20 mins)
  - Each individual is asked to choose four words from a series of over 200 adjectives and concrete nouns to describe their attitude towards working in groups.
  - These words are included on a piece of paper folded into four chambers
  - Individuals then select from a variety of provided art supplies to visually conceptualize their responses
- Close (30 minutes – includes data crunching time when class was sent on break):
  - Participants were engaged and appeared to derive satisfaction from the analogue approach to the exercise
  - Data were gathered indicating that "animated" is, by far, the most common description of attitude towards group work (6/23)
  - Notwithstanding this, some also included – often on the same exercise – "frustration", "boredom" and other negative attributes.
- Total time: 60 minutes

Inputs:

- Photocopied list of descriptive concrete nouns and adjectives.

Supplies:

- Art supplies from a "five and dime," including plastic animals, stickies, feathers, coloured markers, pipe cleaners, glue, tape, etc.

Outputs:

- An "art wall" was created with the resulting work by the participants, allowing everyone to share in and enjoy the class's work
- Data determining overriding attitudes towards group work (see above)

Preparation notes:

- Clear steps on how the Elicitation would unfold, derived and adapted from "Syllabus" by Lynda Barry

Key questions:

In a group driven by a design aesthetic, the opportunity to illustrate the words offered a sense of fun and play as opposed to "research". We were surprised to learn that "animated" was by far the most common word used to describe attitude to

group experiences.

- Further research into how participants define "animated"
- Would participants, on the whole, prefer to work in groups or individually on academic projects?
- Following on above, how does one determine which learners benefit from which approach and/or which projects are best tackled as a group vs. individually?

Analysis on Approach:

- While the technique proved very popular and inspired some excellent visual representations, it may have been reductive. Potentially, offering a word choice for relationships to group work skewed the responses in advance. However, this consideration had to be weighed against the need to give participants a "starting point".
- In conjunction with data achieved from other avenues of pedagogical research, it is perhaps useful to continue studying the rationale for academic assignments that are heavily weighted towards group work. The overall impact of this approach on individual learning, satisfaction with work accomplished, agency, and academic excellence are outside the scope of the questions brought up by this technique. However using Make Tools/Generative Research concepts could be a useful aspect in questioning the perpetually collaborative approach that currently rules academe.

Other Points of Note:

- This was an enjoyable experience in part because of the chance to offer an aspect of "play" that was tangible and hands-on (i.e. arts and crafts), allowing participants to get away from screens and contemplate their own attitudes and assumptions about group work and the collaborative process. It is useful to occasionally have a more meditative approach to class work that requires just sitting and thinking.
- We believe that allowing participants to exercise their thoughts in an individual, autonomous, and creative manner speaks to the spirit of "Make Tools" conceptualization in giving the participants agency over the areas under question.

Next steps after workshop:

- Immediately following the game portion, we moved on to utilizing the data within the framework of our Conceptual Technique, "Make Tools".

4 – Generative Design (Conceptualization)

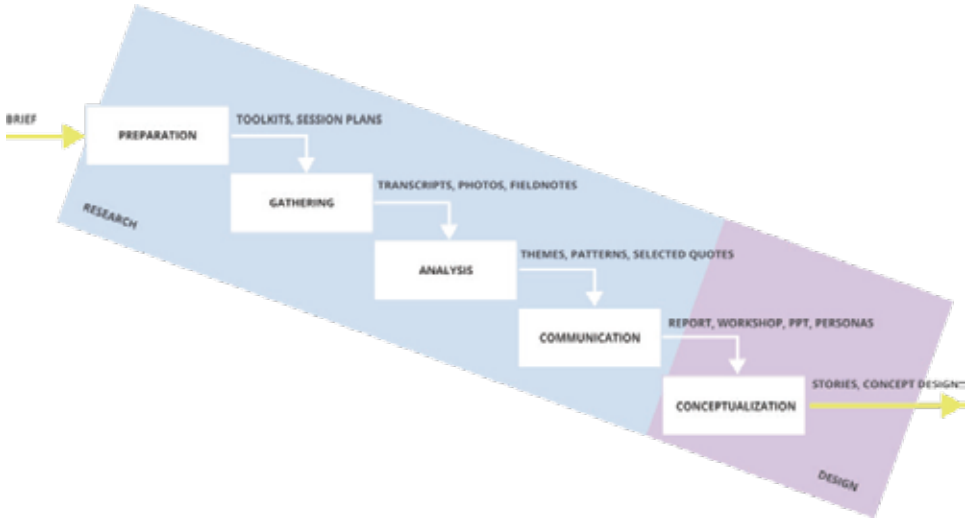
4.1 Overview

As stated in the introduction, we have grouped Analysis, Communication, and formal Conceptualization into the Conceptualization space, because each play a role in shaping the research into coherent form, and because concepts can emerge throughout the entire process (even in the research phase).

Important to note too, is that Conceptualization uses the same say/do/make activities used in Elicitation/Research, but the techniques are used to sketch future scenarios through telling, making, and enacting (Sanders & Stappers, p. 255). Further, Generative Design seeks to bridge the gap between how people are living now vs. how things can be improved in peoples' lives in the future (Sanders & Stappers, p. 258).

4.2 Process

Generative Research and Design can tend to be very iterative. Stages will intermingle, and the path through them will cycle back to previous stages (Sanders & Stappers, p. 280). For clarity, we will refer to the stages in a traditional cascading waterfall model, as shown in the model below (please, ignore Research vs. Design boundaries).



4.3 Analysis

Generative research produces a large quantity of qualitative data, including stories, images, videos, etc. Further, these data can come from multiple participants, researchers, and stakeholders, and from various different locations and sessions. As such, it can be very difficult to adequately categorize, organize, and come to meaningful conclusions (S. Stein, personal communication, October 27, 2015). Sanders and Stappers stress the importance of labeling each and every piece of data you collect during research, including "the who, what, where" labels, and that every member of your team follow the same labeling and storage protocols. Doing so will aid you enormously in whichever form of analysis you choose (Sanders & Stappers, p. 200). These forms fall under three categories: Inspiration, On-the-Wall, and Database. Each form of analysis has its own strengths and weaknesses. The choice will be driven by your goals, the resources you have available, and the skill level of your team (Sanders & Stappers, p. 207).

- **Inspiration Analysis** (Sanders & Stappers, p. 210) is used to find quick-win insights. It is the least time and resource consuming, and can be performed by

LEVEL	INSPIRATION ONLY	ON THE WALL	DATABASE
EXPERTISE	BEGINNERS	BEGINNERS	SKILLED RESEARCHERS
# PARTICIPANTS	LESS THAN 10	LESS THAN 10	10 OR MORE
FORMAT	IMMERSIVE VISUAL DISPLAY OF DATA	IMMERSIVE DISPLAY OF DATA/SUMMARIES	DATA IS HIDDEN IN TABLES
ANALYTIC POWER	FOR INSPIRATION ONLY	LIMITED ANALYSIS AND FOR INSPIRATION	HIGHLY EFFICIENT/ THOROUGH ANALYSIS
TIME & COST	LEAST TIME CONSUMING	TIME CONSUMING/ MAY BE INEFFICIENT	TIME CONSUMING/ MOST EFFICIENT
MAJOR DRAWBACK	MAY MISS IMPORTANT INSIGHTS	MAY MISS IMPORTANT INSIGHTS	MAY MISS INSPIRATION

"Three prototypical paths of analysis", Convivial Toolbox, pg. 207

beginners. Often, immersion events are used to drive the process.

These include:
1) **Immersion in the topic:** have the team do homework beforehand, often the same homework that was given to research participants.

2) **Tell stories:** use photos taken from the field to re-enact or create stories.

3) **Roleplay:** ask the team to enact future scenarios from the perspective of the participants.

4) **Use generative toolkits:** kits are used to tell stories about the future – from the research participants' perspectives – used in conjunction with the stories and roleplaying. The goal is not to generate concepts, but to come to a place where you understand the research participants and their points of view.

- **On-the-Wall** (Sanders & Stappers, p. 212-215) analysis involves using the wall like a large spreadsheet. In preparation, team members will follow some type of sensitization activity, similar to the Inspiration Analysis. You put pre-determined category labels on the wall, leaving room for some non-pre-determined categories.

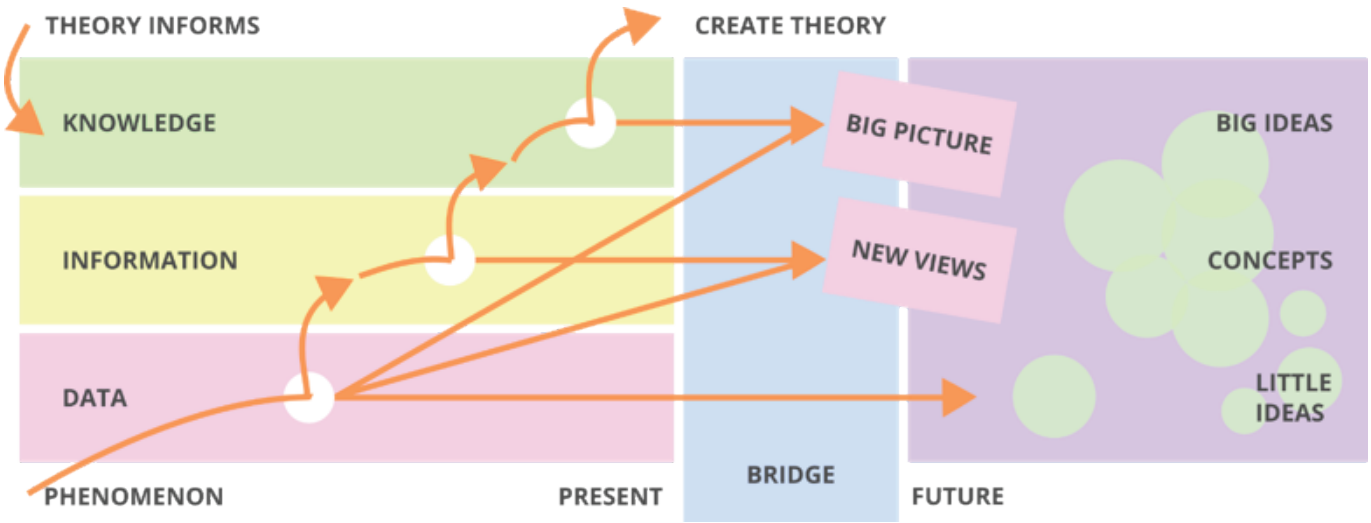
  You then begin analysis. Post-its representing ideas and qualitative data are placed on the walls in the categories. The whole team participates, grouping and assembling emerging themes. The approach can be very time consuming, but can allow you to access deeper insights than the Inspiration analysis.

- **Database analysis** (Sanders & Stappers, p. 217-218) is employed when you are dealing with large sample sizes and massive amounts of data. The process can be very time consuming, and involve skill sets that may not be available to all teams. However, once the data are made digital, they become easier to categorize, cross-reference, sort, disseminate, perform numerical and statistical analysis on, and produce reports from.

The steps involved in the process typically involve:
1) Prepare the data
2) Setup the database
3) Populate the database
4) Review, annotate, group, look for patterns, run numerical analysis, etc.
5) Compare to qualitative data (like photos)

No matter which approach you take, it is important to understand that generating ideas from raw data has merit. But, when the data is viewed within the context of User experience and the knowledge they have revealed during research workshops, new views are formed. Further, when prior theory is combined with the new knowledge acquired, teams are able to activate big picture, visionary solutions.

This layered path of analysis types to idea levels is shown here:



Adapted version of "Bridging research to design", Convivial Toolbox, pg. 55

4.4 Communication (of research findings)
Once analysis is complete, it is time to communicate your research findings. If you are the consumer of the research, this step does not apply, but in a professional context, other stakeholders are likely to need to learn from your research.

The form in which you present can either follow a traditional presentation format, or a participation approach. Presentation is less costly, but participation will generally lead to better use of the research, adoption of it (Sanders & Stappers, p. 236), and a much greater depth of understanding for all stakeholders. It can therefore lead to better ideation during formal conceptualization.

A comparison of the approach:

	PRESENTATION	PARTICIPATION
COMMUNICATION GOAL	TO IMPRESS THE AUDIENCE WITH THE RESEARCH FINDINGS AND HOPE TO CONVIINCE THEM TO FOLLOW THE RECOMMENDATIONS	TO IMMERSE THE AUDIENCE IN UNDERSTANDING THE FINDINGS AND INSIGHTS SO THAT THEY CAN BECOME COLLABORATIVE PARTNERS IN DESIGN IDEATION AND/OR CONCEPTUALIZATION
DURATION OF MEETING	USUALLY ONE OR TWO HOURS	MAY TAKE SEVERAL HOURS TO ONE OR TWO DAYS
LEVEL OF FORMALITY	MORE FORMAL AND STRUCTURED	AN INFORMAL SETTING THAT IS CONDUCIVE FOR HANDS-ON PARTICIPATION
FLOW OF CONTENT	ONE WAY FLOW: FROM RESEARCH TEAM TO AUDIENCE	ONCE THE CLIENT IS IMMERSED IN THE RESEARCH FINDINGS, THE SPACE FOR OPEN COLLABORATION AND 2-WAY FLOW OF CONTENT EXISTS
CLOSURE	THE PRESENTATION MARKS END OF THE RESEARCH PHASE	THE PARTICIPATORY MEETING MARKS THE BEGINNING OF THE NEXT PHASE OF DESIGN CONCEPTUALIZATION

"Differences between presentation and participation", Convivial Toolbox, pg. 237

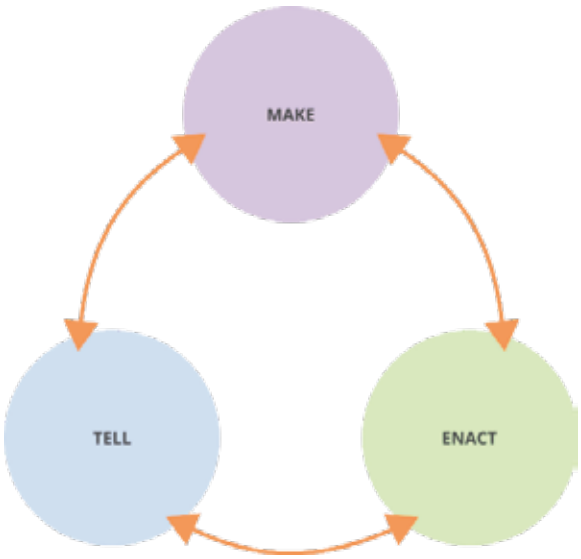
4.5 Formal Conceptualization

4.5.1 Overview

Conceptualization is where ideas transform into tangible concepts and things. In recent years, techniques have emerged that allow us to conceptualize how peoples' lives might be affected by the new concepts (Sanders & Stappers, p. 255). The goal is to end up with one or more tangible concepts that fit the insights from the research (Sanders & Stappers, p. 256).

4.5.1 Play

As stated above, similar techniques used in the previous stages of GR&D are employed in Conceptualization. Play is at the core. In it, design teams make, tell, and enact, to activate new concepts within a newly understood context.



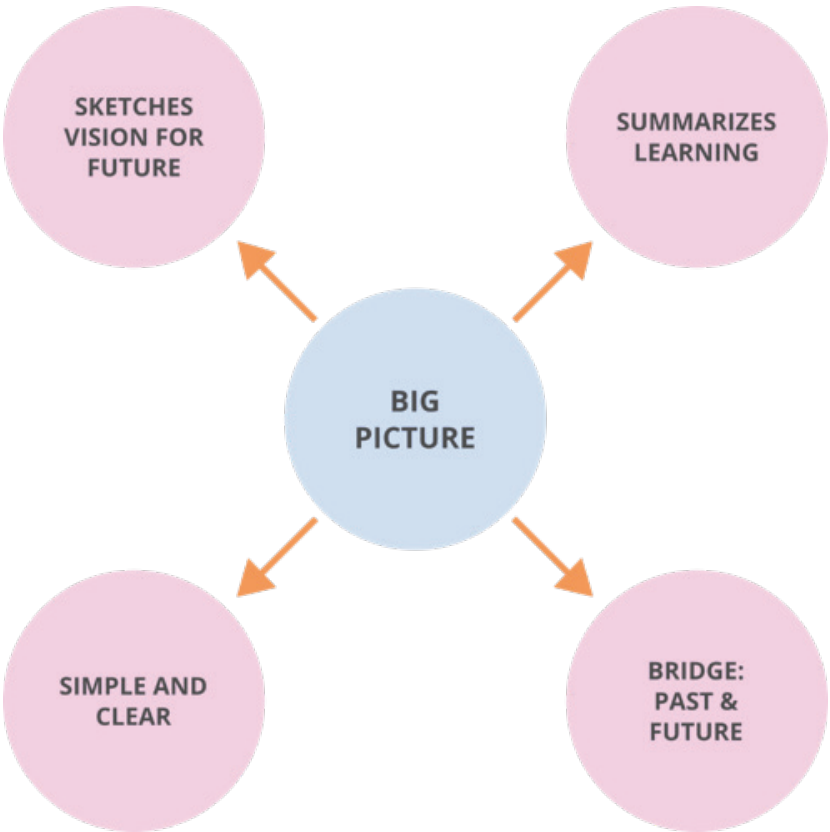
"The primary action categories in the design opportunity space", Convivial Toolbox, pg. 259

Making involves using our hands to create artifacts. This can be anything from name badges and costumes, to 3D prototypes, to pictures, to physical spaces, etc. The things we make will be used in the Telling and Enacting steps, and will evolve as we iterate through the process.

Telling involves telling stories about future scenarios. It is accessible to people in the team that lack the skills in making. It helps shape enactments and can inform iterations of making. Enacting refers to using the body inside the environment to illustrate ideas around future scenarios. This type of visual can be very compelling and enlightening, and further builds empathy with the people and problems at hand. The playing process is very iterative, using the results of one phase to fuel the next. It also allows every member of your team to contribute meaningfully by providing them with a form of expression that suits them best. (Sanders & Stappers, p. 259).

4.5.2 Big Picture Definition

A key step in the conceptualization phase is the creation of a Big Picture document. This one page summary is typically very simple and graphical. Its purpose is to summarize what's been learned while providing a vision for the future. It's the entire problem, context, and vision defined in one page for everyone to consume. It is used as a frame in which all future concepts will be driven (Sanders & Stappers, p. 260-262).



Qualities of Big Picture Document, concept derived from Convivial Toolbox, pages 260 - 262

5 - Summary

In this document, we have provided an overview of the steps and components of Generative Research and Design. Hopefully it has offered some inspiration and insight into the power of the methodology. As problems of increasing complexity emerge in our world, it is a technique and mindset that can bring the best of our collective ideas to life in building a better future.

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Johari Window

Andrew Hicks
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Overview

Most people have a predetermined vision of not only ourselves and a vision, or passive assumption, about others with whom we interact on a daily basis. Those people very likely have a completely different vision of their own strengths and weaknesses than what you could ever imagine or assume. ever imagine or assume. Unless there is a safe dialogue as to how you can address the strengths and weaknesses of not only yourself, but others you interact with on a daily basis, the constant assumption you or others may have of yourself could prevent further growth as a result of not understanding or tapping into the potentially hidden strengths of yourself and everyone around.

In order for people to work together effectively as teams, understandings of self and others must go beyond pre-conceived notions. The Johari Window technique is a heuristic communication exercise aimed to improve team communication and function by unwrapping for clear view one's own traits, leading to personal development in group dynamics in a constructive and positive fashion. The Johari Window uncovers and builds upon the hidden weaknesses and strengths of an individual that are obvious only to the individuals, colleagues, friends and family. These underlying traits can define multiple attributes of an individual's character that, and determine their actions and how they interact with others. The Johari Window method's outcome is often considered to feel like a healing process, and can be used within workplaces to better the relationship between group members, coworkers or individuals who may have gone through a challenging, stressful or sometimes traumatic experience.

As an example, the use of the Johari Window method can have coworkers understand and reflect on the reasoning behind their own actions, and the reasoning of actions taken by others during a challenging work period. Having an understanding of the attributes that define each

individual's persona can help guide colleagues to work better together with others through future challenging situations. The Johari Window method is not exclusive to work environments; can be used in any group situation where the individuals are familiar enough with each other to report accurately about others' attributes to help define one's persona within the exercise.

This document will provide the background, purpose, use, variations and considerations on how the Johari window technique can be implemented to improve working relationships by increasing the self-awareness and awareness of those those around you, in a safe and friendly manner.

BACKGROUND

The Johari Window model was originally, created in 1955 by two by American physiologists Joseph Luft and Harry Ingham, hence the name, combining both of theirs: "Johari".[5,10] The name was originally noticed by having the "h" capitalized, to spell "JoHari", ahead of typographical fashion for its time, the capitalization was dropped as the model was widely distributed over time. The careers of Joseph Luft and Harry Ingham worked in the filed for between forty and sixty years, with respective academic affiliations with the University of California and San Francisco State University for over twenty years.

The Johari Window, model was a spinoff of a dynamics study at the University of California, and was later improved further by Joseph Luft. As an emphasis grew on inter-group development, soft-skills, empathy behaviour and interpersonal development studies through out the mid-20th century, [1,10] the method became more common. Following the creation of the Johari Window method, Luft spent more than thirty years teaching at San Francisco State University, later becoming an emeritus professor.

USE OF TECHNIQUE

The "window" aspect of the title is derived from the four quadrant, or boxed, matrix that is formed when disseminating results from the process.

The four window panes reveal key words, or adjectives, that describe participants in relation to themselves and other participants of the elicitation. The four panels of the window are divided between

	Known to Self	Not Known To Self
Known to Others	Arena	Blind Spot
Not Known to Others	Facade	Unknown

Authors' adaptation of completed Johari Window from The Johari Window:
A graphic model of awareness in interpersonal relationships, C. Mill & L. Porter, 1972.

what one knows and does not know of themselves, as well as what others may or may not know of another participating individual.

Inputs
The following is needed to conduct the Johari Window elicitation:
- Fifty positive adjectives, approved for Johari Window use.
- Legal sized, blank piece of paper and pencils
- Minimum of two people
- OR, alternatively, web-based application (no writing materials needed)

Pairs & Groups
The technique can only be used in pairs or groups of individuals who have already some familiarity with one another. The technique is not an effective way of uncovering one's self awareness, when used with complete strangers.. Judging, or being judged by a complete stranger enables too many assumptions that may result in inaccuracies.

Other considerations when performing the Johari Window elicitation is to establish pairs at random, avoiding favouritism.

Adjectives
Before the first window can be filled out, a list of fifty Johari Window adjectives must be posted or distributed for reference throughout the duration of the exercise.

logical	**dependable**	**intelligent**	**patient**	**sensible**
accepting	**dignified**	**introverted**	**powerful**	**sentimental**
adaptable	**energetic**	**kind**	**proud**	**shy**
bold	**extroverted**	**knowledgeable**	**quiet**	**witty**
brave	**friendly**	**able**	**reflective**	**spontaneous**
calm	**giving**	**loving**	**relaxed**	**sympathetic**
caring	**happy**	**mature**	**religious**	**tense**
cheerful	**helpful**	**modest**	**responsive**	**trustworthy**
clever	**idealistic**	**nervous**	**searching**	**warm**
complex	**independent**	**observant**	**self-assertive**	**wise**
confident	**ingenious**	**organised**	**self-conscious**	**silly**

List of Johari Window adjective descriptors adapted from Davis, Kevan. 2012.

These adjectives all have a positive connotation to ensure a safe exercise:

Users will draw a simple four quadrant window, labeling each quadrant, from the top left, clockwise, starting with “Arena”, “Blind Spot”, ” “Unknown” and “Facade”.

One participant will first fill out the following quadrants:

	Known to Self	Not Known To Self
Known to Others		
Not Known to Others	Facade	

Authors’ adaptation of completed Johari Window from The Johari Window:
A graphic model of awareness in interpersonal relationships, C. Mill & L. Porter, 1972.

Facade (Known to Self)
In this window, participants are asked to choose five to six of the fifty adjectives that may best describe themselves. These adjectives are placed within the "Facade" quadrant, allowing all participants to see the adjectives chosen. These are known to the initial participant, but may not be known to the other participants of the exercise.

	Known to Self	Not Known To Self
Known to Others	Arena	Blind Spot
Not Known to Others	Facade	Unknown

Authors' adaptation of completed Johari Window from The Johari Window:
A graphic model of awareness in interpersonal relationships, C. Mill & L. Porter, 1972.

Unknown & Arena

The remaining adjectives are then placed within the "Unknown", "Arena" windows. As a result, adjectives mutually chosen by the initial user and their participating colleague represent an accurate description of the initial participant, potentially providing affirmation to the initial user as to how well they know themselves and project themselves

	Known to Self	Not Known To Self
Known to Others	Arena	Blind Spot
Not Known to Others	Facade	Unknown

Authors' adaptation of completed Johari Window from The Johari Window:
A graphic model of awareness in interpersonal relationships, C. Mill & L. Porter, 1972.

to others. The adjectives in this quadrant are considered to be the "Arena", seen by all and agreed upon between the initial participant and fellow participants of the exercise. [2,3]

Blind Spot
Once the initial user has provided adjectives that best represent their facade, a group partner then chooses five to six adjectives that best describe the initial user within the "Blind Spot" quadrant. This is not known to self, but is known to other participants of the exercise. [2,3]

Output
Now that the Johari Window matrix is complete, the initial participant will gather an understanding of what adjectives best describe themselves, as provided by their partner or group. When the adjectives are assessed by the initial participant, the desire to gain, or perhaps lose, adjectives in regards to how one presents oneself can be more clear and worked on over time. Overall, the Johari Window provides a look into one's self with the assistance of others.

Completing the Johari Window method also distinguishes different personas for those who complete the elicitation exercise. The Personas are:

Open Persona
The Open Persona, according to one's Johari Window self- and colleague-derived profile, is a very open and happy individual, accepting of exposing themselves to others, providing a look into their private self. The Open Persona shares slightly from the Blind Spot quadrant, which typically aids in strong negotiation skills, as the open persona has not much to hide about themselves. [2,7]

Individuals who fall under the Open Persona are cautioned not to provide too many details in regards to their private self. Open Personas often focus too much on knowing themselves, and not others, perhaps challenging their communication in understanding the personas of others. [2,7]

Naive Persona
The Naive Persona can be personified as one who acts without cautionary or filtering thought, but is often harmless. Often, they express emotion to communicate, aimed at gathering attention towards themselves within a social setting. As a result, they share a significant amount of adjectives from the Blind Spot quadrant within the Johari Window. [2,7]

Secret Persona
Secret Personas communicate very little and hide from other personas, even when knowing how to best to describe themselves to others. As a result, this often provides a weakness in effective communication towards other personas. The Secret Persona would not be classified under the Blind Spot quadrant within the Johari Window, as an individual with a secret persona would provide little information in regards to themselves when

participating in the Johari Window elicitation. [2,7]

Mysterious Persona
Mysterious personas be introverted or extroverted individuals, however they do not experience a need to understand themselves or other personas. Mysterious Personas consider themselves to be free spirited and do not see the need to assess others, yet they often possess moderate communication skills. [2,7]

Once a group of two has compile a Johari Window and have gathered some insight on their personas, other participants can add to a participant's Johari Window to add detail and further refine the self-awareness exercise. This can be done by conducting the exercise on paper, or by using an online web app that that can disseminate and share the results virtually to participants of the elicitation. This process of refinement can generate even better results for individuals who use the technique. It should also be noted that determining a persona, is not necessary for completing the Johari Window method.

PURPOSE

The purpose of the Johari Window is to elicit self-awareness within group settings. The desired result of competing the model is to gather safe feedback in understanding one's self through the opinions and assumptions made by oneself and others who are partaking in the elicitation.[2,3,4]

As an example, some of the adjectives used when performing the Johari method are all positive adjectives, such as;

- giving
- sensible
- logical
- proud

Positive adjectives are used to ensure that participants of the exercise are not potentially offended by using adjectives that provide a negative output, enabling more constructive exercise. Although the adjectives are aimed at providing a positive outlook on one self or a colleague, some adjectives do have ambiguous or potential misinterpretations that can a negative response if chosen by a participant of the elicitation. An example of this would be the adjective "proud", meaning one who is honest or hardworking, to make one's self "proud", or, in another context, "proud" as having a selfish or arrogant trait..

VARIATIONS

A variation of the model uses adjectives that are contradictory to the adjectives used in the original method of the Johari Window. This variation is known as Nohari, the inversion of Johari [5].To some, this variation may be considered to be a more of a comical exercise, aimed at inciting crude humour between participants that is not to be practised seriously in an academic or professional

environment. However, the inverted adjectives do prove the need for positive adjectives to be used in order to successfully partake in the Johari Window method and understand it's effectiveness as a self-reflection tool. It is unclear as to when this variation originated, however it was most popularized by Kevan Davis, a web developer based in London, England.[6] The adjectives used when using the Nohari method are all negative adjectives, such as:

- vulgar
- loud
- dull
- needy

OTHER CONSIDERATIONS & CONCLUSION

The profiles established by other self-awareness tests and exercises, such as Myers-Briggs, Basadur and DOPE, are each unique in their approaches to generating data that may define an individual's personality. For example, when comparing the Johari Window method to Basadur problem solving, the Basadur exercise does not involve input of others to define the persona of a participant for self reflection. Instead, the Basadur method is for groups or individuals to define how their predetermined strengths (a generator, conceptualizer, optimizer or implementor) can solve problems or problematic situations, as opposed to being self aware of one's personal strengths and weaknesses for self development, that is not applicable to problematic scenarios.

Similar to the Johari Window personas, the Myers-Briggs approach to self and team development indicates personalities of individuals within four quadrants. As a result of answering all 93 questions, a numerical value is generated and then categorized within four dichotomies of subjective, objective, deductive and Inductive types. Although similar to the Johari Window method, the Myers-Briggs approach lacks a qualitative look at what defines a profile of an individual by using adjective descriptors, like the Johari Window method. [5]

DOPE testing, compared to the Johari method, is also similar in regards to choosing a set of predetermined adjective descriptors to best define a personality type. However, the DOPE approach does not involve adjective descriptors provided by other members of a team or group to define an participating individual's personality traits. It lacks that external input that can be compared to a individual's reflection of themselves.[1, 11]

In conclusion, the Johari Window method provides a reflection of one's self, and a reflection about the user from others who may be close or familiar with the individual participating in the method. This approach, compared to DOPE, Bahadur and Myers-Briggs methods, provides the external input of adjective descriptors, creating a more well defined, and perhaps real, reflection of an individual's personal strengths and weaknesses. The

positive adjective descriptors provided when using the Johari Window method can also provide a clearer and more quantitative look at how a persona may be associated with a participant, enabling participants of the Johari Window method to have an understanding as to how and why their personas are defined in a certain way.

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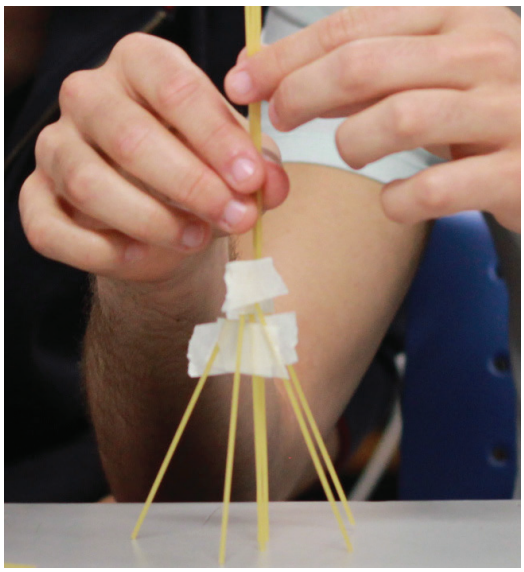
The Marshmallow Challenge

Egill Rúnar Viðarsson & Jordan Shaw

Introduction

The Marshmallow Challenge is a group design challenge introduced by Peter Skillman with numerous workshops run by Tom Wujec. The purpose of the challenge is to encourage "teams to experience simple but profound lessons in collaboration, innovation and creativity" (Wujec, n.d.). The Marshmallow Challenge takes only 18 minutes to complete with straightforward instructions, and is quite easily executed.
The aim is to have "teams of four to build the tallest freestanding structure out of 20 sticks of spaghetti, one yard of tape, one yard of string, and one marshmallow" (Wujec, n.d.). At the end of the 18 minutes time limit, each group must have their marshmallow at the top and supported by the structure they just created.

We will go through the history of the Marshmallow Challenge, its benefits, how to run the challenge, the challenge's rules and the lessons to be learned by conducting and participating in a Marshmallow Challenge.



Figures 1 – 2
Teams participating in the challenge.

Benefits

The purpose of the Marshmallow Challenge is to replicate the challenges faced by teams in a heavily collaborative workplace. The goal is to replicate these challenges and resolve them within your team in under 18 minutes, instead of in a couple of weeks or months.

One of the most interesting takeaways from the Marshmallow Challenge is that typically, children outperform adults. In "virtually every measure of innovation, kindergarteners create taller and more interesting structures" (Wujec, n.d.). Wujec offers an explanation, The reason kids do better than [f. ex.] business school students is kids spend more time playing and prototyping. They naturally start with the marshmallow and stick in the sticks.

The business school students spend a vast amount of time planning, then executing on the plan, with almost no time to fix the design once they put the marshmallow on top. (Wujec, n.d.)

This confirms one of the Manifesto for Agile Software Development rules. The rule states that teams should focus on "responding to change over following a plan". This is exactly what the Marshmallow Challenge illustrates (Beck et al., 2001).

Figure 3: Another team participating in the challenge.

As stated on The Marshmallow Challenge website "The Marshmallow is a Metaphor for the Hidden Assumptions of a Project" (Wujec, n.d.). Time and time again, people are finding themselves in situations where they're hitting a wall realizing they probably haven't thought some key aspect of a project all the way through. Or, more likely, thinking that they might have done so during the earlier phases of a project, only to realize that all they really did was make assumptions and guesses. As one of our teachers, Demosthenes Kandylis (Demi, for short), eloquently stated numerous of times, in the course Creation & Computation, "Assumptions are the mother of all fuck-ups". (Kandylis, n.d.)

The Marshmallow Challenge aims to address these "hidden assumptions" in projects. By doing research through each design step of the way, i.e. through iterative prototyping, practitioners learn about problems along the way and – more importantly – the necessity of dealing with them right away.

Tying in the ever-tasty marshmallow with the ever-elusive assumptions in projects, Wujec notes that …

[W]e need to identify the assumptions in our project – the real customer needs, the cost of the product, the duration of the service – and test them early and often. That's the mechanism that leads to effective innovation. […] The assumption in the Marshmallow Challenge is that marshmallows are light and fluffy and easily supported by the spaghetti sticks. When you actually try to build the structure, the marshmallows don't seem so light. (Wujec, n.d.)

History
The Marshmallow Challenge was originally introduced in 2006 during a Ted Talk by Peter Skillman (Original Design Challenge, 2014). Since then, Tom Wujec has been running the challenge as a team building workshop with great success. The workshop is targeted for people and teams ranging from kindergarten students to Fortune 50 CEOs.

Preparation
Before successfully hosting a Marshmallow Challenge workshop, the event organizers need to prepare a number of things, one of which is making sure that they have correct number Marshmallow Challenge kits for each team participating. For our workshop we needed four kits for the teams involved.

To create the Marshmallow Challenge kits and to successfully run the challenge, the organizers must have the following items available:

» one measuring tape
» a countdown application or stopwatch
» video projector to introduce the challenge
» if possible, a copy of the original presentation

To create the Marshmallow Challenge kits, the following items must be added into the paper bag, which is included in the list.
» 20 sticks of spaghetti
» one yard of tape
» one yard of string
» one marshmallow
» one pair of scissors
» one paper bag containing the kit's components (note: the bag is not part of the kit itself, i.e. you cannot use the bag as building material)

When you are ready to start the challenge, get the participants to form teams of four. Next, hand out a Marshmallow Challenge kit. While handing the kits out, clearly state that no one is allowed to go through the kit until the rules of the challenge have been explained, and all questions about the challenge have been answered satisfactorily.

Rules
The rules of the Marshmallow Challenge are indeed straightforward. They are as follows:

» Build the tallest freestanding structure
» The entire marshmallow must be on top of the structure
» Use as much or as little of the kit as you would like
» You can break up the spaghetti, string or tape as needed
» The challenge lasts 18 minutes

Execution
After the rules have been clearly explained and everyone is ready to start the challenge, start the countdown clock!

The Marshmallow Challenge's website offers a few pointers for the facilitators to liven up the challenge during the 18 minutes. These are some that we employed.

Figure 4: The teams in the early stages of their building.

Walk around the Room
It was really interesting to see the development of the structures as well as the patterns of how the teams built their structures.

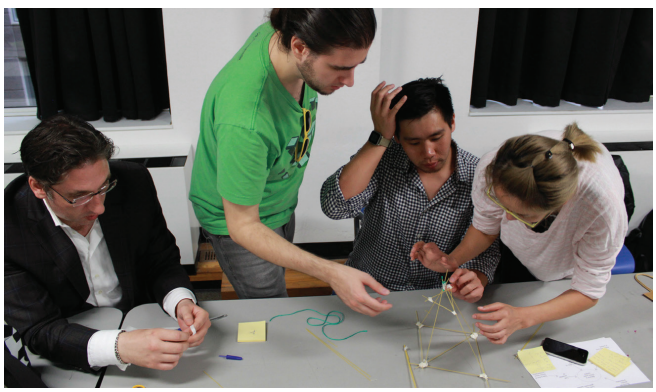
Remind the Teams of the Time
Countdown the time at certain intervals to put a certain level of competitive stress on participants. We called out the time when the time limit had reached its half, around the 9 minute mark, then at the 5 minute mark, 3 minutes, 2 minutes, 1 minute, 30 seconds and then we did a ten-second

countdown. As we were calling out the remaining time left in the challenge, an uptick in the level of felt urgency and even panic became obvious.

Call Out How the Teams are Doing
We didn't really go with this point but it's worth a mention here: "Let the entire group know how teams are progressing. Call out each time a team builds a standing structure. Build a friendly rivalry. Encourage people to look around. Don't be afraid to raise the energy and the stakes" (Wujec, n.d.).

Remind the Teams that Holders will be Disqualified
Some team members were quite keen on holding on to their structure at the end of the challenge. Usually because the marshmallow, which they just placed onto their structure moments before, is causing the structure to buckle. The winning structure needs to be stable on its own.

Figures 5 – 6: Class members building their towers.



Finishing the challenge

During the challenge we watched each team start off brainstorming about potential solutions for how to create the tallest structure with their kit. Some groups delegated tasks to individuals to create various structures or sections, including support legs, structure sides or small prototypes. This delegating took the place of full group teamwork and prototyping. We notices that, for most groups, roughly roughly the first nine minutes were used up in planning, politicking for the best ideas and discussion about proposed solutions. In the first half of the workshop, there was a lot of discussion rather than simply proceeding with iterative prototyping and refining the solution on the go.

Figure 7: Members of Group 3, the winning team!

Figure 8: One team demonstrating iterative but slow process

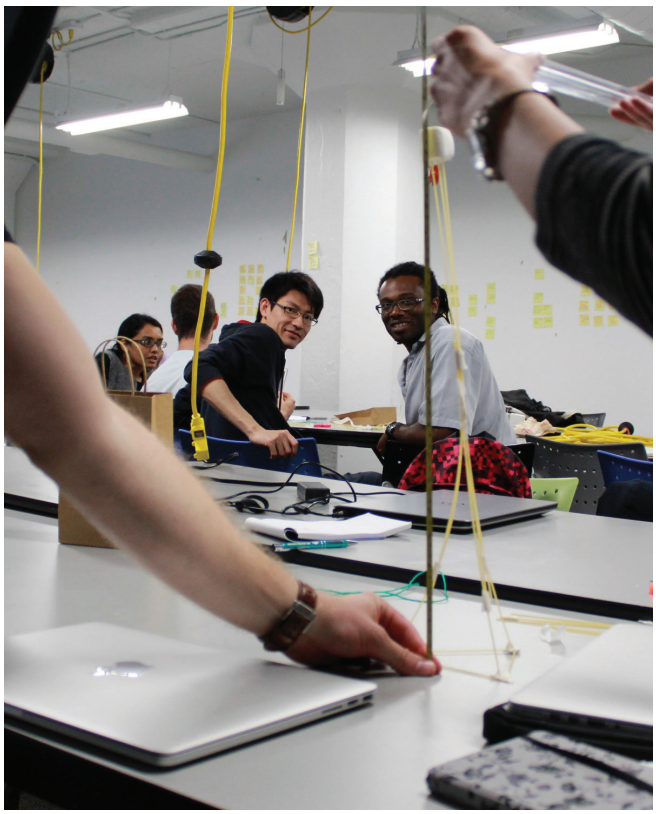


Figure 9: Measurement of Group 3's tower

Out of the four groups that participated in our Marshmallow Challenge three groups managed to produce a freestanding structure that could support a marshmallow.

The heights of each group's structure were as follows:

Group 1	Group 2	Group 3	Group 4
Did Not Finish	11″	20″	18 ¼″

Final thoughts

After the completion and announcement of the winning team it was brought to our attention that the winning group, Group 3, had a team member with an architecture background. It is hard to concretely confirm that this is why Group 3 was able to build the tallest structure, though it does reinforce Wujec's research and statistics, that teams of engineers and architects generally build structures an average height of 40" (Ted, 2010) – which is around double the height of an average structure for the challenge.

Of the four groups that participated, only one did not end up building a freestanding structure. In retrospect, the authors believed that of all the groups, this one, that failed the overt challenge, might have actually learned the most in the area of the challenges underlying intent. The other groups – especially Group 3 and Group 4 – might then have gained reaffirmation in their own respect of how to work as a team with minimum assumptions, seeing as they all managed to finish with freestanding structures.

Of course, these are our assumptions or at best, educated guesses, that reinforcing the aforementioned need for actual testing and prototyping. A second running of the Marshmallow Challenge with the same teams and conditions might help in the matter, by either proving our hypotheses or doing something else entirely.

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Starfish Behavioral Design

Alex Rice-Khouri
Jazmine Yerbury

If you design for the outcome, you're designing at the wrong place. You need to design for the behaviours that lead to the outcome. BJ Fogg

Introduction
Starfish concept maps are a way of predicting and reflecting on what steps to take and avoid to realize the perfect flow-state. Starfish charts build understanding of your process and prioritize key behaviours, paring away anything that doesn't contribute to your goal.

Designing with Starfish requires both an analytical and imaginative view of behaviour. Taking a purely psychological or aesthetic approach is not enough. You need a well defined goal, a granular look at every tiny action you take that propels you to that goal, and a macroscopic view of the process as a whole. At it's core, Starfish is about behaviour modification.

You can break the technique into two methods:

A **retrospective** look at what you or a group have done that you want to refine.

A **predictive** look at possible workflows towards a goal or approaches to a problem.

With a predictive starfish, you can work self-referentially, to figure out solutions to a problem you're facing. For example, the idea of a New Year's resolution: you have a goal you're committed to accomplishing, and need to brainstorm ways to make sure you hit your milestone. The more methods and paths you fill out and approaches you apply, the more likely that you will accomplish your target.

You can also apply the predictive starfish to a hypothetical user or demographic. This forces you to consider all aspects of their lives; including obstacles, skills, and motivations. It's useful to do this with a group; to fill out mutual knowledge gaps and build certainty around the opinions you share

with one another. Include real end-users in the evaluator group if possible; to bridge hypothetical ideas with real experience. This offers a form of pretesting to pilot your first study. However, regardless of whether you practice Starfish alone or in a group, this process will still clarify any assumptions of how your target user operates and enrichen your understanding of their process.

History
As an official behavioral design technique, Starfish is very young. Patrick Kua popularized the main **Retrospective** method in 2006; a post hoc look at the progress, procedures, and problems that working teams face to meet project deadlines.

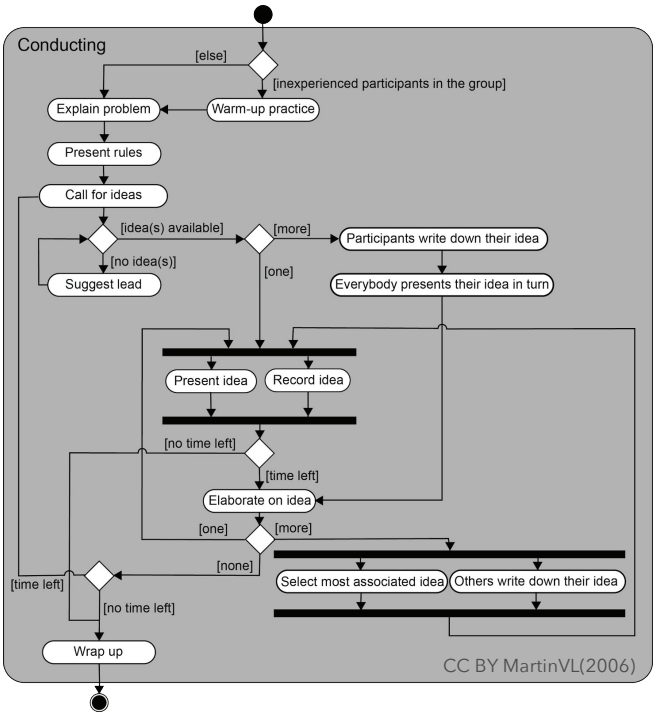
Retrospective Starfish charting draws heavily from the mature set of Scrum techniques behind the agile movement in software development (HBR 1986), and represents just one of several derivative exercises.

Predictive Starfish design exploration started at Stanford's Design school (Raftopoulos 2012). Created by BJ Fogg in 2012, as a bootcamp exercise, predictive starfishing combines elements of mind mapping with user flow diagramming. Fogg developed the technique to generate lists of triggers and chains of events that cascade towards the same target-user behaviour. If you rigorously account for as many core and outlier scenarios and entry points as you cant, object-oriented (e.g. discovery of your website, purchase of your product, arrival to your event) the mind mapped user flows can populate a formal UML flow chart (Unified Modeling Language). Since UML is objectoriented, software engineers use it to unify methods of visualizing design based software. UML diagrams that combine human behaviour with computational logic are called *activity diagrams.*

In both predictive and retrospective Starfish exercises, it is important to start loosely, brainstorm major steps, and then thoroughly fill out all of the smaller steps.

It may also help to map your charts with tools like Mindmeister, draw.io, and Ideaboardz.

***Scrum** - An agile product development methodology. Scrum evolved from the traditional waterfall nature of teamwork, where one coworker waits on another to complete a task to other members within the group. Scrum encourages teammates to work in tandem, requiring them to stay in constant contact and giving constant feedback on their progress. Given the complex nature of overlapping and mutually dependant workflows, scrum teams must be led by someone who can manage the complexity. This makes scrum popular in project management UML charts and can also show how dynamic systems change their behaviour depending on user input, in a combination of computational and behavioural steps. Rectangles represent actions, diamonds represent decisions, and bars (here) represent parallel activities. This*

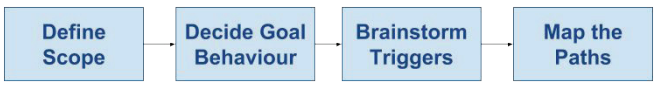


particular example outlines the procedural steps behind the computerless act of brainstorming.

Predictive Starfish

How to Run a Predictive Starfish

At its simplest, a predictive Starfish chart involves a goal and as many paths as to get to that goal. Think behaviorally. It is not enough to imagine what systems and tools can allow someone to accomplish their goal; you need to explore what cues and motivations would compel them and why.



Group Starfish exercises need a facilitator to run the workshop

Step 1 : Define your Scope

This stage requires you to define who you are targeting.

Are you looking at Android smartphone owners? A preexisting user base for your app?
Online shoppers? Students? Coworkers? Yourself?

Perhaps your target some combination of these groups.

Second, define what field you or your target users are in. E.g. Students could fall under academia, workshops, job mentorships, or international students using MOOCs like Coursera (Massive Open Online Courses)

Remember, each demographic of people, has their own needs, motivations, limitations and personalities.

Third, decide what kind of product, solution, or behaviour you're trying to create.

If you already have experience working with your target demographic, these three steps will not take much time. If you started from a field of expertise, a particular product, or a service domain, ask yourself the question, "What specific need are we fulfilling?" or "What need do we want to meet?"

Use this starting point to identify your current target-base and expand who to your user base. *In this way, a solid demographic can be built.*

e.g. A 3D printing guidebook. A fabrication guidebook is appropriate for Product Design students, working mechanics, underemployed immigrating engineers, DIY hobbyists aged 25-55, high school teachers, and owners of entry-level Makibox 3D printers who want to explore larger machines.

Most products and systems live in an ecosystem with other similar or related products. Someone else most likely has done some demographic research you can build from. If not, you have three options to build a demographic:

1) ***State your product:*** Have a clear description of your product. Being able to communicate your system, product or goal, will clarify your own understanding, and help structure your product later, so that it speaks for itself.
2) ***Consult experts:*** Talk to people in your field who know your target demographic best.
3) ***Talk to champions:*** If you have existing users, or exemplars of who you think might use it (even if that's you), ask "What would you like to do, that you can't at the moment?"
4) ***Test your idea:*** Walk unfamiliar people through your product idea. Ask them how they would use it, or why they wouldn't use it. If your volunteers do not understand your concept, don't be discouraged! As you develop and clarify the idea, take note of who responds, and to what. Build your demographics from this data.

Effective testing is iterative. Even if you feel you know your audience, keep testing to see if you can expand it.

If you want to be thorough, once your demographic is outlined, you can construct a persona. You may have elicited related products and systems in your stakeholder interviews, or you may already know comparable products in your niche. Look at the user bases and profiles of real people to supplement your hypothetical demographics with existing data. The idea is to create a perspective to empathize with and to look at your product or goal. Having a clear, representative idea of your target audience is key to deciding what motivates them.

Step 2 : Goal
What do you want people to do? If this starfish is about your own life, what do you wish you were doing? If this starfish is about an anticipated user, what do you want them to do most? Think of a clear, singular goal, and write it at the center of a sheet of paper.

Step 3 : Triggers
What key events and actions will kickstart you or your users towards the target goal? Decide your triggers, and write them at the outside edge of your sheet of paper.

Fill in the sequence of actions they trigger and write them leading towards your goal.

Powerful triggers spur a chain of events that usually lead to the desired action. Weaker triggers tease you with the possibility of reaching that goal, but leave the steps to that goal vague and wishful.

Powerful triggers save people time, money and effort; co-opt our routines, and exploit our emotions to motivate us. Weak triggers offer little expectation of reward or familiarity.

Take the simple example of waking up early. If you normally hit the snooze button too.

Place the alarm out of reach	Complicate the snooze button
Set sleep alarms	Automatically disable your computer at night
Drink valerian tea	Take melatonin 2 hours before usual bedtime
Adjust intimacy around a sleep routine	Gauge sleep quality via smartwatch/phone
Practice meditation	Practice progressive relaxation
Take a bath with aromatic bath salts	Play relaxing music

Imagine, that you just read these tips online, and decided to try setting sleep alarms. If you set your alarm for two hours before bed, you could time your dose of melatonin with your alarm. Placing the bottle of melatonin pills beside the clock helps encourage this habit. You could even place the alarm clock in a basket with the pills and bath-related products in your washroom to link all three.

It isn't necessary to combine every trigger into one overwhelming solution with high expectations. The key here is to build routines and exploit existing habits and reactions that create a chain, in order to reach your goal. It's better to have redundancies than a proverbial silver bullet .

Above all, when you're trying to change behavior, remember that we are human and forming new habits take time.

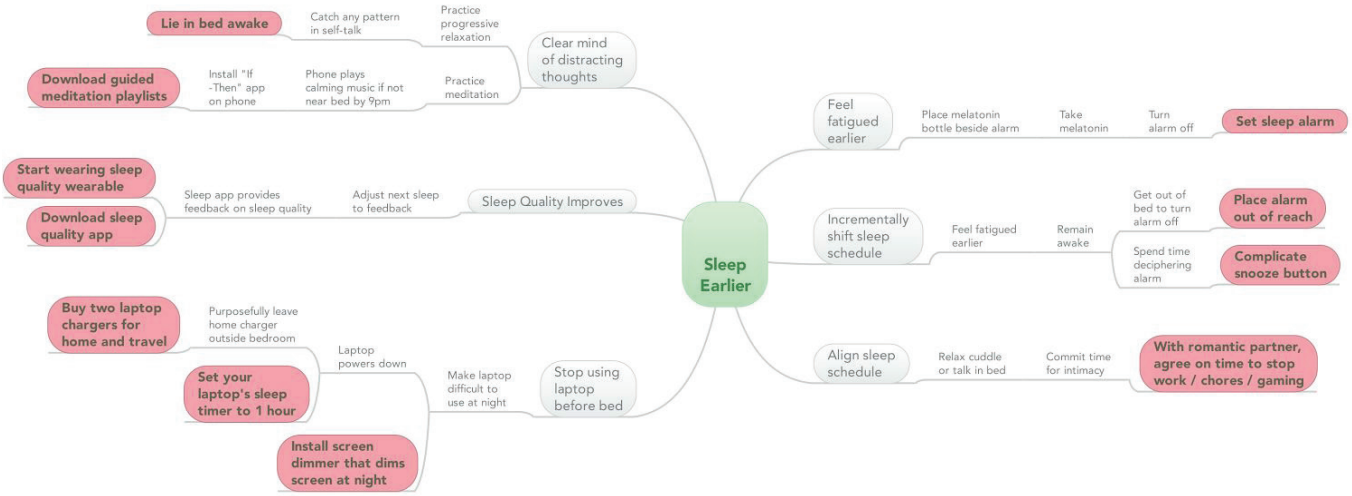
In the sleep example, regardless of whether you empathize more with someone coping with insomnia, or the developer of tools to help manage insomnia. You need to emphasize:
1) We have limitations: Delayed sleep schedules are semigenetic, and difficult to change.
2) We are habitual: Habits are hard to change; everyone slips here and there.

As a behavioral designer, you need to emphasize the rewards and sense of accomplishment behind establishing good habits and replacing bad ones. Be able to encourage users who fall off the habit not to give up. Co-opt other people in your system or in your user's life, to join them and hold them accountable, in a positive and inspiring way. We often drop off of our resolutions if we set our bar too high, penalize failure too severely, or criticize ourselves for failing.

Step 4 : Map it!
Take all of the starting points you brainstormed, and map out the full chain of events that can eventually bring the trigger to the end goal.

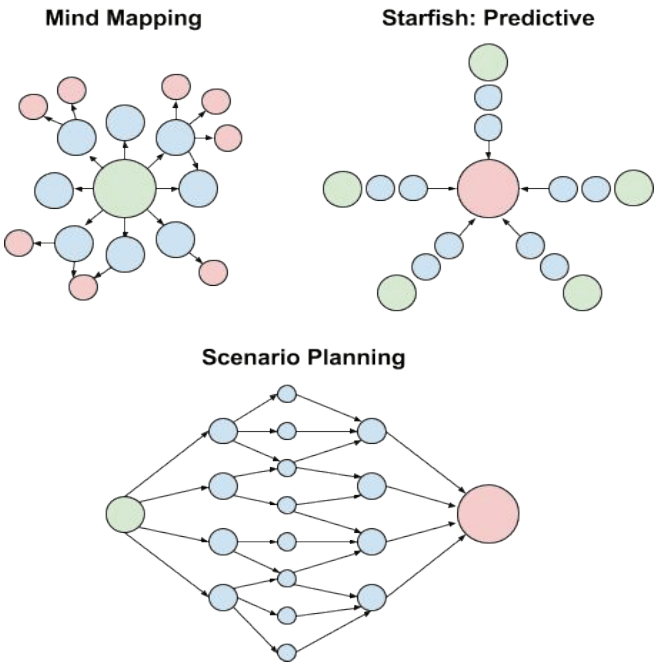
This Starfish Diagram explores several paths towards establishing a healthier, sleep schedule. They represent a mix of triggers, automated tools, and tiny habits while, piggybacking on existing routines. While not all of these triggers will persist into routines, additively, they bring you towards your goal.

Variations and Similar Methods
Mind Mapping | Concept Mapping
Concept and Mind Mapping is a method to elicit themes of related subtopics and concepts tied through your central topic. It's often better completing your maps on Post-It paper before digital, so you can shift elements around quickly and explore different ways concepts can relate. Mind maps increase in complexity and obscurity as you exhaust obvious relationships, and then push you to consider outlying concepts and connection. (Grinblo 2012)



Mind Mapping vs. Predictive Starfish Maps vs. Scenario Planning

The (green) starting point nodes and (red) end points illustrate the cognitive, semantic, and diagrammatic differences between these three popular brainstorming exercises.



How is Starfish Different?

Mind maps are open. In the context of design, behavior, and software, mind mapping works best "when the objectives for your project are fuzzy" (Nordin 2012). You know broadly where the project is starting from, and why you started it, but the outcomes of your project and related ideas are open-ended. In order to do this, one must brainstorm to discover new subtopics of your project, unanticipated goals and the relationships between them. Essentially, mind maps encourage

"association based thinking in a nonlinear way" (Evgenia, 2012). Predictive Starfish maps work in the opposite way. When you map your starfish you have a clearly defined goal in mind. You have a person, group or well defined demographic in mind. The mystery is how to begin the journey to that goal. In order to do this, one must brainstorm to discover all of the possible paths that lead to the same end point.

Think of it as the difference between shopping for a gift vs. shopping for something you need.

When you buy someone a gift you go through a deluge of factors, a literal mind map: What do they like? Should I ask them, or do they like surprises? What am I willing to spend? How well do I know them? Where should I shop? Should I wrap it or get a gift bag? Should I get a card? What do I write? How do I give them the gift? Should I just make them something?

You could end up shopping anywhere and doing anything. Your shopping experience is completely open-ended. You might not buy the gift at all, and instead make one.

When you shop for something you need, however, your task is functional. Buying a car, for example, also requires you to consider a multitude of factors: cost, reliability, safety, and fuel efficiency, just to name a few. At the end of the day, however, you are still looking for a car and making a purchase. These factors influence where you start looking. Maybe you check reviews online? Maybe you ask around with friends to see who's selling? Maybe you visit dealerships and take test drives and negotiate financing? Maybe you visit used car dealerships and check under the hood? Maybe you look on Autotrader or Craigslist and then visit CarFax or CarProof to vet the cars.

Both techniques require creative brainstorming, but Starfish maps are procedural and goal-oriented.

UX Mind Mapping
User Flows
User flows require you to diagram the discrete path a user takes through a given application, webpage or system.

User flows can be generative and explorative, in the same way that mind maps and Starfish maps can be. Explorative user flows help shape the features and workflow of an application when the purpose is still vague. User flows of more mature applications and systems provide a fixed, visual representation of the workflow: showing the intersect of the system's logic with the user's intention as they navigate through it. They require the diagrammer to specify actions, decisions, inputs, outputs, system messages, and so on.

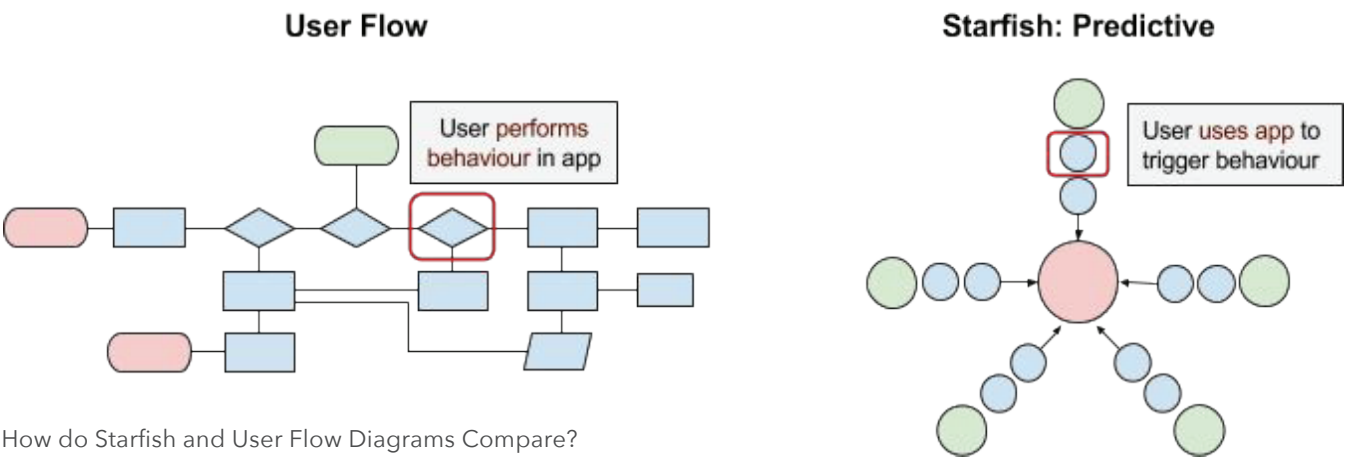
Events occurring further down the timeline often loop back to a starting point earlier in the user flow. However, these iterative relationships exist because

the user has completed a goal and needs to start over; not because the nodes and their ideas are conceptually related, as in mind maps.

Like Starfish maps, user flows are procedural. Many utilitarian websites and applications have well-defined end points (e.g. eCommerce, file sharing, video streaming, etc.). These single-purpose websites are highly suitable to practice Starfish diagramming with. However, Starfish maps tend to focus exclusively on user behaviour, while user flows only consider user behaviour as discrete input events within system use. User behaviour simply progresses an application through its pre-designed procedures, while behaviour shapes the entire purpose of a Starfish diagram. In Starfish, the use of software comprises just one method or step in a set of user behaviours, this leads the protagonist to their goal: a means to an end.

Persuasive Design
PET Design: Persuasion Emotion Trust
"A usability engineer can make it easy to purchase insurance online. But ease of use is not the main driver of why people buy a policy, rather, they buy a policy because a site has persuaded them to buy it—accomplished by appealing to someone's sense of security, safety, and responsibility." "While usability is still a fundamental requirement for effective website design, it is no longer enough. The next wave in website design is persuasive design: designing for persuasion, emotion, and trust." Eric Shaffer Founder HFI

In 2008, the user experience consulting firm HFI (Human Factors International), launched PET design as a service and accreditation course. Its creator, Eric Schaffer, a UX guru rivalling usability's Jakob Nielsen, admitted that persuasive design is not a new concept. Marketers have been calculating



How do Starfish and User Flow Diagrams Compare?

our emotions since Listerine medicalized and demonized bad breath as a popularity killing illness (halitosis), and rebranded its antiseptic floor cleaner and gonorrhea treatment as mouthwash (Clark 2015).

Some critics pan persuasive design as exploitative, but proponents of the technique counter that "persuasive design is not about manipulating users into doing something they don't want to do" (Chak 2003). Rather, you try to understand a user's decision process, reluctance, and possible mistrust or disinterest towards advertisement in your space, and supply compelling cues and welltimed information at the moments they need them. This may not require outreach at all. Customer reviews, word of mouth, and well-managed, active social communities often attract as many new users as traditional broadcast campaigns. Branding still drives strategy and decision making, but works through more personal, targeted methods that snowball product interest.

As Schaffer himself points out, usability and persuasive design can often work at odds with one another. Malls and commerce sites want to entice you with a stroll past the largest spectrum of products you could buy, while a simple functional shopping experience would only present you with what you need. Chak's point illustrates that the oversaturation of marketing campaigns can make us wary of advertisements, even for products we want.

Persuasive design fits into the perfect, grey niche in between, that makes your intended purchase as easy as possible, but teases you with recommended upsells. Think of the warm invitation Amazon sends with a personalized list of products "recommended JUST for you," or Facebook's social marketing insight that "fifteen of your friends like this brand." As long as you have a focused goal, utility, and suitable motivations for your audience, you can reliably encourage people to use your product. Kaptein, Duplinksi & Markopoulos (2011) simply warn technologists not to overwhelm users with competing demands; urging them to find a harmonious balance of the original six Cialdini motivators: Reciprocation, Scarcity, Authority, Consistency, Consensus, and Affinity. Understanding persuasive design, and selecting triggers strategically, can determine the entire success of behaviour prediction in starfish maps. As with all methods of persuasion, data collection, and sales, the technique itself is ethically neutral, and relies on the practitioner to use responsibly.

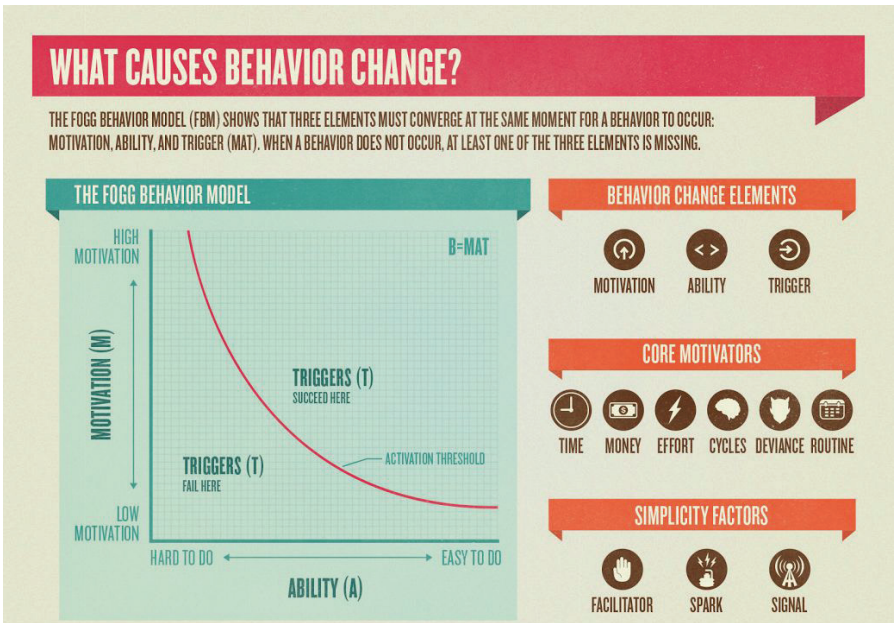
Social and cognitive psychologists, for example, argue that our capabilities for accurate perception and self motivation don't live up to the idealized way we see ourselves and our lives. They can list off statistics on confirmation bias (looking for results that confirm our beliefs), attentional bias (reinforcing your beliefs by mentally repeating them), and gambler's fallacy (overestimating how long term odds play out, e.g. on slot machines), highlighting our blind spots and vulnerability to strategies designed around those limits.

A compassionate developer practicing Starfish could anticipate your needs and goals, and help shape your behaviour towards your goals more effectively than you could alone. Productivity tools, auto-saving files, calendars, fitness trackers, alarms, diets and sleep quality apps are all designed with your limitations and best interests in mind. Their success depends on how much the tools help you. However, misguided websites and applications can also exploit these limits to serve their needs over your own.

BMAT: B.J. Fogg's Model of Behavior

Like PET theory and persuasive design, Fogg's Model of Behaviour assumes you can motivate users to perform actions you want through well planned triggers. Fogg, the creator of the Starfish behaviour mapping workshop technique, believes that you can reliably trigger a given behaviour if you carefully balance the difficulty of the task and motivating factors.

In game design, for example, an extremely easy game can motivate a player to complete the game once, but instills little sense of accomplishment (a motivator) and holds zero replay value. A more challenging game that broadcasts your success on social media - might motivate you to replay the game - by tapping into your sense of pride and competition. However, if the game proves too



The "Baker Mat" model. (Behavior: Motivation Ability Trigger)

difficult to beat, you could lose your userbase entirely. Games simulate other software learning and life challenges so well, that the motivating principles of game design, can be applied almost universally, through gamification**.** The Fogg model of behaviour has three components.

1. **Triggers :** The right triggers need to prompt the user at the right time.

Spark Triggers-When your target user is unmotivated but highly skilled (high ability), you need an incentive to trigger the desired action.

Facilitator Triggers-When your target user is motivated but unskilled (low ability), you need an assistive trigger to empower your user to accomplish the desired behaviour.

Signal Triggers-When your target user is motivated and capable, all you have to do is signal them to start.

2) **Ability** : Ability is a tricky element of behaviour. The Dunning Kruger effect demonstrates a complex nuance in perceived and objective levels of skill. People with enormous talent are usually the least confident and most critical of their ability, while those with the least talent lack the fundamental understanding of what skilled handiwork looks like, and assess their objective skill level too high. Experts are self-critical because they can appreciate expertise. E.g. someone who is slightly tone deaf cannot hear that they are off key and may over rate their singing ability. When gauging a user's ability, you have to be sensitive both to how they perceive their ability, and their actual technical capability. The ideal power users and early adopters for most technology and systems are avid users with latent capability to nurture.

3) **Motivators** : You need to identify what particular psychological, social and physical needs you should fulfill, and which best suit the context. The most potent motivators include:

Time: Anything that offers to save you time, or that puts time pressure on you to perform.

Effort: A large, cumulative amount of effort put into an activity can commit you, and motivate you to finish, to make the effort worthwhile. But knowing a task will require inordinate effort can also deter you from starting in the first place.

Routine : The novelty of breaking out of a routine (e.g. a vacation, or changing work methods) is as powerful as the effectiveness of establishing routine in your life. Routine breaks complex and difficult tasks into manageable components, that can become second nature and autonomic.

Money: Monetary incentives, costsavings and salaries are as powerful motivators as they are contentious.

Context matters

Take monetary incentive as an example. While some research shows direct correlations between compensation and effort, several studies have shown that compensation can actually diminish

effort. Bonner and Sprinkle (2001) explore just one example of how:

"When individuals are assigned tasks for which they do not have the necessary skills, they may not increase their effort under monetary incentives because they believe that effort increases will not lead to performance increases and consequent rewards. Alternatively, when individuals are allowed to select their own contracts for a particular task, individuals with high skill are more likely to choose performance-based [contingent] pay." Bonner & Sprinkle

HR and accounting researchers often explore how much compensation motivates productive employees, and find that financial recognition for hard work carries more weight than straight pay increases. The Hedonic Treadmill theory supports this idea, arguing that while money does have an effect on happiness, the potency fades as you adjust to the "speed" of your new life circumstances (Brickman 1971). Increases in happiness become much less significant with salary increases beyond 30,000 US dollars, assuming it's not a recognition for service (Ahuvia 2012).

Survey design is another excellent example. Qualitative researchers often ask themselves: how much money is too much or too little to get quality feedback? You want good sample distribution: a representative approximation of your target audience, not just survey experts who make a living from giving feedback. You want sincere effort; well thought out decisions, and more than a few words on openended questions. You also want genuine, critical responses to opinionative questions; not just a positive response bias where participants rate everything as wonderful.

In her research at the University of Michigan, Eleanor Singer (2012) points out that there are optimal levels of compensation for many of these dimensions of feedback quality, and that the best participants volunteer good information for other reasons. They altruistically want to help researchers and society through their efforts; they care about the conducting the research, and like to see their opinion valued.

Balancing all of these factors, for prediction of any behaviour, requires an intelligent and intuitive understanding of what makes people tick.

Retrospective Starfish

What is Retrospective Starfish exactly? It is a facilitation tool designed to answer the question "what can we do better?" and make those answers a reality. It is a technique that provides a visual reference to gauge the health of a team or project. It can be done individually, but is more influential in implementing real change when done as a team.

- This tool is simple and powerful, it is a straightforward 'ask and answer' method.

- Improves overall group function and workflow, facilitating advancement.
- Reduces risk of repeating mistakes; prevents future mistakes.
- Increases deliverables, making the team more productive.
- The process leaves the team feeling more satisfied with their work.

The Retrospective

The Retrospective Starfish allows a team to assess completed projects with hindsight. This is a process that occurs naturally, that often gets discussed or thought of, but not always in the right frame of mind. The retrospective allows for a more streamlined approach to the review process with an emphasis on specific problem solving and goal-oriented outcomes. Teams are able to generate tangible improvements after completing a retrospective workshop. Additionally, it offers a tool for sparking discussions and for reflecting on the concerns and issues that team members want to address, in a moderated, structured forum, so that their thoughts get explored rather than dismissed.

- Action Oriented Results
- Focus on output
- Reduce wasted time
- Reduce tension
- Increase motivation
- Realize potential benefits
- Realize possible improvements

The Method

There are 5 questions the team should be asking themselves when planning a Retrospective Starfish workshop. The participants write their answers on Post-it notes for the facilitator to reassemble later. After running the forum, the next step is to make a plan to take action on any discoveries, and finally to implement the recommended changes.

The five questions can be answered in any order, and each question will have multiple answers. The most valuable aspect of this tool is the prerogative to identify and collect similarities between answers, in order to address the team's concerns as a whole.

Retrospective Starfish Model: 5 Questions

1. What should we keep doing?
2. What should we do more of?
3. What should we do less of?
4. What should we start doing?
5. What should we stop doing?

Keep Doing

- Focus on things the team did well, what they liked about a particular project.
- Address the issues in terms of what the team would miss if there was some part of what they did that they did not have now.

Do More Of

- Refine projects and workflows.

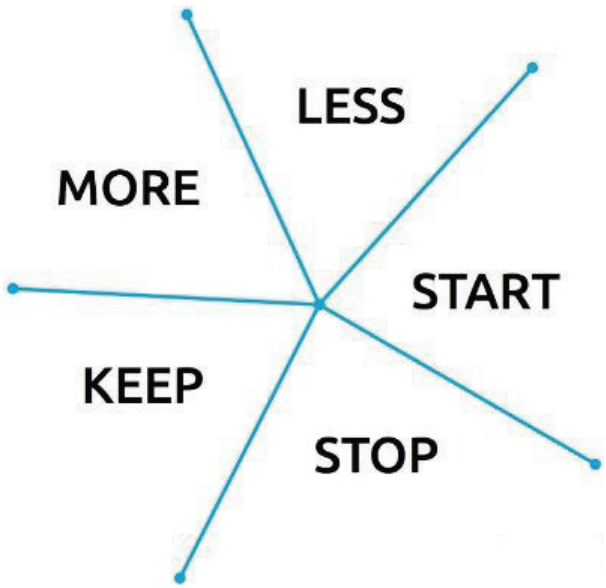
- Highlight which practices to implement, or those to take better advantage of.

Do Less Of

- Processes that need to be better, that need more refining.
- Things that were not productive or beneficial practices that may increase overall value, but not as much as something else could.

Start Doing

- Try new things, new ideas.
- Retry things that have been unsuccessful or had not been fully realized.
- Repeat this workshop regularly to keep things fresh and energetic.



Kristian Sorenson's Retro Starfish Model

Stop Doing

- Any practice which is not helpful to the creation or development of projects and not adding any value.

Using the Tool

The entire workshop should take no longer than 2 hours.

1. Before starting : the team should be prepared with pens and Post-It notes, and be seated comfortably in a calm, comfortable environment.

2. Team brainstorming : The facilitator should initially present the Starfish model with a brief overview of the model. The first half of the session is divided into five 5 minute segments where each segment focuses on one question.
   - Provide 5 minutes of silent brainstorming; ask participants to write one point per note. Move on to the next focal point.
   - During this time, the facilitator should collect the Post-It notes and post them to the Starfish board, grouping similar Post-It notess to identify trends and recurrent subjects.
   - After all 5 rounds: The board should be covered in an array of Post-It notes.

3. Prioritize changes: make sense of the information collected and what has been discussed. Group the Post-It notes into three separate categories.
   - What can be done today?
   - What can be done this week?
   - What can be accomplished in one month?

4. Discuss output: after the brainstorming sessions. Begin utilizing the starfish tool's potential to create change.

- The team should discuss and exchange ideas about what's on the board.
- Point out any trends or connections between notes; have participants ask for clarification if any are unclear.
- Maintain anonymity, and do not point out who wrote what.
- Keep the focus on what's important to the group; give priority to majority concerns.

5. Execute: providing concrete tasks for team members ensures a clear path towards the execution of common goals. Completing tasks and making positive changes make people feel validated and motivates them to work hard.

Make note of any progress

- Acknowledge change and constructive input
- Hold another Starfish Retrospective in 2-3 months

Team Radar: Another Retrospective Method

Team Radar is an agile retrospective activity derived from a variation of the Retrospective Starfish method. Similarly, this tool purposefully engages participants in open communication, essential for maintaining a robust team. The facilitator and the team should decide together on four to five subjects to be addressed before the workshop. Common subjects pertaining to team cohesion or the relational aspects of a work environment include:

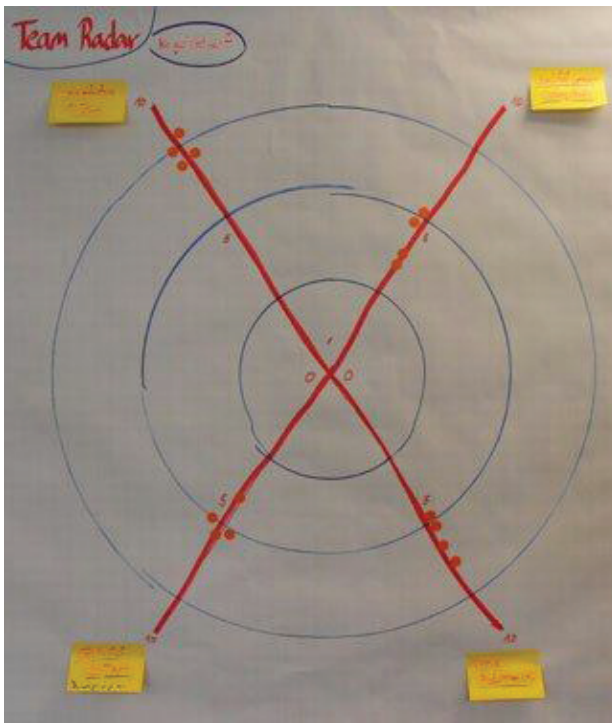
- Team Values
- Respect
- Feedback
- Communication
- Efficacy of team
- Quality of designing/coding skills

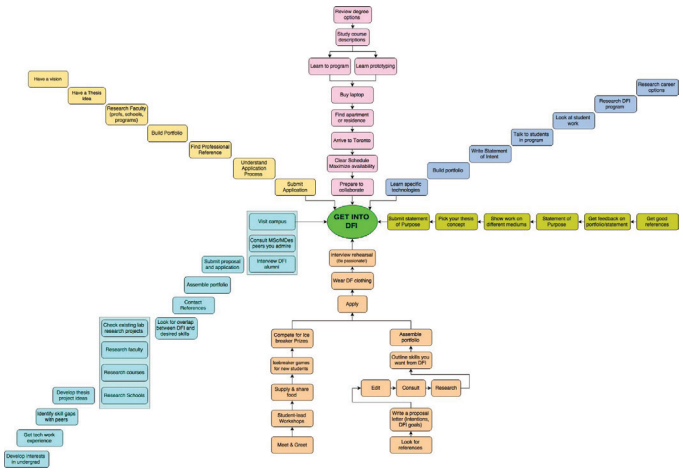
Kristian Sorenson's Retro Starfish Model with notes

The Team Radar Workshop
After deciding on the subjects to be discussed, the facilitator explains each one in objective terms, providing a consistent understanding of each of the terms. The team is given time to discuss each issue. Following each discussion, the participants place a dot on the Radar board (A bullseye type target with a large X in the center) to rate on a scale of 0 to 10 where they value the team in regards to the respective subjects.

The objective is to arrive at a unanimous understanding of each of the topics discussed. The workshop provides a safe environment for each of these issues to be discussed in detail. Finally, the participants should come to agreement about where they stand on each subject. Beware of dots placed far from each other, as these discrepancies could eventually lead to the corruption of an otherwise healthy project.

Starfish in Practice: A Graduate Case Study
We ran a demonstration of the Starfish mapping techniques for the 2015 OCAD Digital Futures graduate cohort, asking for individual and group perspectives, on the best method of successfully getting into the DFI graduate program. We intentionally left the question vague as to whether we wanted the personal retrospective experience of applying, versus projected predictions of what new applicants should do. While atypical, this created a hybrid of the two techniques, with data that could be organized and presented in either format.





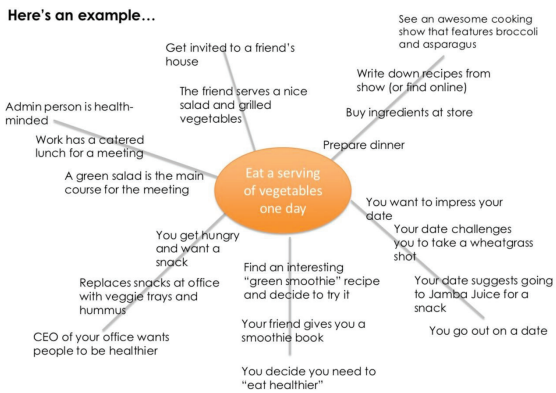
The resulting chart offers compelling insights into the assumptions of graduate applicants that could reveal the basic triggers and chain events program coordinators could watch for. The most interesting insights the exercise generated include:

- The yellow and blue groups assumed applicants approach the program with a thesis idea already in mind
- The pink and purple groups assumed you should enter DFI with technical skills already learned, while the orange and cyan groups came in expecting Digital Futures to teach those skills (Specifically programming, 3D fabrication and graphic design)
- The pink group highlighted the strong composition of international students in Digital Futures and the need to arrange residency as a key step to the application process
- The orange group pointed out an administrative need for networking and ice breakers between applicants, faculty, peers, and alumni as a key parallel activity to the actual application process
- The orange group also emphasized application coaching in the form of editorial help for the proposal document, and rehearsal for the faculty interview
- The purple, pink and yellow groups all emphasized the need to assess 'fit', in terms of program/course suitability, but cyan specifically emphasized learning goals and faculty capability for thesis supervision

Lastly, all six groups pointed out the same four core steps: finding references, writing proposal letters, assembling a portfolio, and application submission. Seeing these required steps repeat across all workflows isn't surprising. Given that they're mandatory, the true insight comes from where and when other activities fit in between them. The sequence highlights an important distinction in both retrospective and predictive starfish maps.

Some actions are mandatory, some actions are triggers. Some actions happen once and precede triggers (E.g a purchase), while some trigger actions loop and reinforce themselves. Some groups of triggers even chain into the same sequence of steps (as seen in the sleep example, where hiding power adaptors and installing screen dimmers both make

your laptop harder to use at night, curtail computer use before bed, and lead to an earlier sleep schedule).



A Starfish by Fogg understudy and Stanford Lecturer Kelly Schmutte exploring healthy eating (2012)

Schmutte's diet-driven Starfish demonstrates a classic predictive Starfish. Each spoke has a single trigger and path, and leads to dietary change in a unique way. You could extend the example to a retrospective map by testing several spokes, seeing which work most effectively, and adding and subtracting behaviour accordingly.

Ultimately, both versions of Starfish offer a quick, creative way of designing complex systems to promote behaviour. They can improve everything from purely physical activities like eating and sleeping, to the computer interfaces of websites and applications, to organizational systems such as work teams and hospitals.

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The Ultimate Challenge

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Overview

The "Ultimate Challenge" gives participants the opportunity to solve ultimate and open-ended problems that appear to have no solutions. When confronted with the question "How could you raise one billion dollars by tomorrow morning?" The obvious response is to laugh at this seemingly impossible task. If a person were to seriously attempt to solve this problem however, one might uncover possibilities or ideas not previously considered. At the very least, one could try to exercise their creative muscles and attempt to broaden their ability to generate new solutions. This "billion dollar" question is an example of a problem one might be confronted with if they participated in the "Ultimate Challenge". The Ultimate Challenge is a creativity game that can be used by groups to stimulate creativity within a general area, challenge existing dogma about what is possible, and give the ability to generate solutions when confronted with seemingly impossible problems.

The Ultimate Challenge is an example of one of Dr. Robert Epstein's many creativity games presented in his book *The Big Book of Creativity Games* (Epstein, 2000a). This book is inspired by his focused academic work on creativity research. The following sections will present the main principles of Dr. Epstein's central theory on creativity, "Generativity theory", by relating it to his academic origins at Harvard.This will be followed by a discussion of its theoretical and practical implications. Links will be presented to further this research and this will finally lead into the next section, which discusses the rationale and purpose of the Ultimate Challenge and other creativity games presented in Dr. Epstein's *Big Book of Creativity Games*. Dr. Epstein's Generativity theory, as described in detail in the next section, is a useful theory for organizations as it can be used to to gain perspective in difficult times when innovation and new ways of thinking are necessary to progress. The Ultimate Challenge is also useful within organizations in order to stimulate a group's creative abilities, create a fun environment

for participants to get to know each other, and finally to open-mindedly confront challenges that at first appear ultimately impossible.

Background

Dr. Robert Epstein is an American psychologist who was born in 1953. He was awarded his PhD in psychology from Harvard University in 1981 where he collaborated with renowned psychologist B.F. Skinner PhD. The origins of Epstein's work on creativity appear to have developed directly in response to his post-graduate research at Harvard under the tutelage of B.F. Skinner and his canonical paradigm of behaviorism. Epstein worked with Skinner during the 1970s and 80s where they observed the behavior of pigeons in response to highly controlled environments. Behaviorism espoused the idea that all behavior is predictable as it is simply the result of stimulus-response relations (Epstein, 1991). Radical behaviorism took the position that free will is an illusion, all organisms start out as tabula rasa (i.e., no inherent predispositions for particular behaviors), and all behavior no matter how complex can be reduced to a series of simple stimulusresponse associations. In this view the central mechanisms through which learning new behaviors occurs are classical and operant conditioning. During their joint research, Epstein and Skinner presented a satirical article in the journal Science (Epstein et al., 1980) to criticize the consensus in primate ethnographic research. This research, initially conducted by Wolfgang Kohler, stated that certain behaviors could not be explained entirely through behaviorist models but required a process they termed "insight" (Kohler, 1920). Epstein and Skinner suggested that the primate researchers were erroneously "anthropomorphizing" their chimpanzees and that the primates were simply performing complex behaviors similarly to their highly trained pigeons (https://www.youtube.com/watch?v=mDntbGRPeEU). In a study published only a few years later however, Epstein replicated the "insightful" and spontaneous behavior of Kohler's chimpanzees in his laboratory with pigeons. This appears to be the catalyst that inspired Epstein's future work on creativity.

In 1984 Epstein and colleagues published their work in the journal Nature which described how, similarly to Kohler's chimpanzees, Epstein's pigeons were able to spontaneously solve the "box-and-banana problem," thus demonstrating creative behavior. During the box-and-banana problem, a pigeon was put inside an enclosure where a banana was positioned near the ceiling just out of reach and a box laid on the floor by the adjacent side of the enclosure. The experiment was set up so the only way the pigeon (who was unable to fly) could reach the banana was to push the box underneath the banana and climb onto the box to bring it into pecking range. Epstein observed that the pigeons did indeed generate this new behavior to solve the problem, but only if they had previous experience with the component behaviors. The pigeons could only solve the box-and-banana

problem if they were previously trained with the individual behaviors of pecking bananas, climbing boxes, and pushing boxes. This led Epstein to conclude that some organisms of different behavioral complexity can generate spontaneous behaviors to solve problems through a process of combining previously learned behaviors in novel ways. This is the central principle of what Epstein soon formalized as Generativity Theory.

Generativity theory formally states that novel behavior is the result of an orderly and dynamic competition between established behaviors, through which old behaviors can be combined in new ways (Epstein, 1999). Epstein suggests that given an organism's history of learned behaviors, one can model the likelihood over time that an organism will perform old and new behaviors. The likelihoods can be predicted using mathematical equations representing empirically validated behaviorist laws (e.g., reinforcement, extinction, resurgence, etc.). With this view, Epstein believes that creativity no longer needs to be regarded as a mystical or mysterious phenomenon but can be scientifically understood, and more importantly cultivated in an individual through practice.

Epstein believes that the generative mechanisms that underlie creativity are universal across humans and are comprised of four fundamental competencies. These competencies include capturing, challenging, broadening, and surrounding (Epstein, 1999). Capturing refers to the ability to preserve novel ideas and behaviors. Many creative people can attribute their success in projects to the simple fact that they have the means to capture and be able to hold on to their creative insights; be that through rehearsal, writing, drawing, or other means. Challenging refers to being confronted with situations that require novel behaviors. After one has realized that old behaviors simply will not work, the individual will rapidly employ the ability to generate new behaviors based on the dynamic competition and intermingling of previously learned behaviors. Broadening refers to the learning and acquisition of new behaviors to expand one's behavioral repertoire. As the number of learned behaviors increases, so does the number of combinations that are possible. Finally, similar to challenging, Epstein suggests that novel surroundings stimulate creative behavior. If an individual changes his or her physical and social environments, they must employ previously learned behaviours in novel ways. Changing the surroundings increases the likelihood that one will maintain their generative abilities and output. Epstein emphasizes that the surest way to stall or extinguish creativity is to be stuck in stale and inflexible environments. Through using the idea of "Generative Theory," one will be able to enhance their ability of using creativity in the work environment.

Epstein and colleagues developed a questionnaire that can be used to assess an individual's strength in each creative competency titled the *Epstein*

Creativity Competencies Inventory for Individuals (ECCI-I; Epstein et al., 2008). This questionnaire can potentially be used to help individuals or organizations learn more about their creative strengths and weaknesses. In their study Epstein, Schmidt, and Warfel (2008) demonstrated that a training regime in the creative competencies lead to a higher test score as well as a significant increase in creative output.

Epstein holds a strong viewpoint that creative expression and genius is only considered a wonderful rarity due to the socialization processes of modern society (Epstein, 1999). He states that from pre-school all the way through post-secondary education, students receive negative feedback for daydreaming and expressing new and unique ideas. The education system does not specifically teach the four core creative competencies but instead prevents students from developing these skills. Ironically, it is only the most anti-social of students that develop these skills on their own, perhaps through inspiration from observing creative individuals in their lives such as musicians or the inventors.

The development of Dr. Epstein's work is rather intriguing when one considers that from his origins in behaviorism he cultivated a career with a clear focus on humanitarian goals. Some other resources of interest from Epstein include books such as "The Big Book of Stress-Relief Games" (Epstein, 2000b), "Creativity Games for Trainers" (Epstein, 2006), "The Big Book of Motivation Games" (Epstein & Rogers, 2001), and many others. For a wider coverage of topics and publications please visit Dr. Epstein's website at www.drrobertepstein.com. Also worth watching is footage from the 1980s where one of Dr. Epstein's pigeons successfully performs the box-and-banana test, which can be found on YouTube. In the next section, with this theoretical background established, we describe the purpose of the creativity game "The Ultimate Challenge".

Purpose and Goals

The purpose of the Ultimate Challenge is to give individuals the opportunity to exercise their creative abilities and develop the creative competencies described in Generativity Theory. Undertaking the Ultimate Challenge forces individuals to exercise the competencies of capturing, challenging, and surroundings. When group members generate potential solutions to the Ultimate Challenge they must somehow record these insights for presentation; this can also help to bring about new insights. This creativity games inherently forces challenge upon the individuals by putting them in a situation where they must produce something to avoid punishment (i.e., the humiliation of presenting with a lack of insight), thus spurring competition between old behaviors and ideas, and promoting the synthesis of new ideas to solve the problem. Similarly, if the groups are chosen randomly, participants are forced to solve the problem in novel surroundings with people they may not be entirely

familiar with. Changing surroundings is similar to challenging in that it provides the individual the opportunity to test old behaviors and generate new ones. Finally, broadening is present in this challenge but not as pronounced as the other competencies. If for example a participant does not engage often with others or does not practice creative problem solving this elicitation forces them to broaden their skillset in these areas. Unfortunately, in many cases this is not broadening in the sense of acquiring a brand new skillset with brand new underlying principles.

Epstein emphasized that the creative competencies have the potential to be continuously enhanced and this creativity game, like many others in the book from which it came, are meant to provide a fun means with which to develop them. Also, just because the problems are described as "impossible", and are thus open-ended, does not mean that they absolutely do not have a solution. By engaging with seemingly impossible problems with a creative and open mind they may actually stumble upon a novel solution. For example, for the majority of history, it was considered impossible to leave the Earth's orbit, but within the last century, we completed a moon landing and have people living on space stations, but we are now discussing strategies to send human beings to Mars. To conclude, in Dr. Epstein's own words, the purpose of the Ultimate Challenge is "to get a project off the ground, to move a project in a new direction, to perk up a meeting, to start the working day, and to train managers."

Preparation

Before the Ultimate Challenge begins, pens and paper should be distributed to the students. The facilitators also need a timer to keep track of the time for problemsolving session and solution-sharing session for each group. A list of problems will be either written on a blackboard or projected to the screen by the facilitators after the introduction and setup of the game.

Details of the Exercise

- Duration: 20 - 30 minutes
- Configuration of players: 16 - 20 players. (`should be divided into 4 or 5 groups.)
- Assign each group one challenge from the following list.

Example problems as used in our creative elicitation.

1) You need to raise a billion dollars by tomorrow at noon. How are you going to do it?
2) Propose a way to make OCAD University the most prestigious university in the world within the next year.
3) Propose a way for a person to live forever.
4) Propose a way to eliminate air pollution in this country within the next 30 days.

These are just suggested problems they can be altered to fit a specific situation or goal, as long as they follow the rule of being with no solution.

Roles Needed
Facilitators: 2 - 3 people. This role will monitor the process, observe and record the behaviors of participants and provide support.
Group Leader/Presenter: One per table. This role serves as the group representative and presents the solutions to the audience.

Inputs
- Writing and drawing material for each group, paper, pens.
- One problem/challenge to be solved by each group.

Other Support
- Projector screen or blackboard for showing challenges.
- Timer or alarm.
- Recording tools. Cameras, recorder and notepad.

Running the Game
Time breakdown (30 min in total)
- Introduction - 3 min
- Assign Group and Reveal Challenges - 2 min
- Brainstorm and Document Solutions - 5 min
- Presentations (4 groups) + Q&A - 16 min
- Facilitator Presentation - 4 min

Steps
1) Divide the participants into groups of 4 to 5 people. The results may be more interesting if the groups have been chosen randomly. By doing so, it is likely that participants will be in different surroundings than they are used to.
2) Present the list of problems to be solved. The groups can either choose the challenge they want from a list of predefined problems, or the facilitator can designate one problem for each group. The facilitators can also assign one problem to all groups for comparison of solutions during the presentations.
3) Give the groups 5 minutes to solve their problems. It can be helpful to set a timer projected on a big screen so everyone can see how much time they have. When time runs out the facilitator should ask everyone to stop their work. Each group should have at least one solution at the end of the problem-solving session.
4) The group will choose one or two participants as representative(s) to stand and present their group's solutions. Each group will have 4 minutes to present, including Q&A.

End of Game
Outputs
- Written solutions
- Paper Prototypes
- Drawings, diagrams, etc., of the possible solutions

Outputs can vary depending on each group and the problem they are trying to solve. The only rule is that a solution should be created and presented. The solution may be presented however the group decides is best.

Next Steps
The facilitators will record the reactions and behaviors of the participants while the game is running, through note, photo or video. The observations are aimed to give insights into further improvement of the elicitation, which answers following questions:

- When faced with challenges, how many people shut down (i.e., have difficulty presenting creative insights) in each group?
- Which questions garnered the most enthusiasm?
- What solutions did participants provide and which have most potential to solve the seemingly impossible problems?
- What are the Ultimate Challenges in a particular industry?

More specifically, the insights gathered attempt to identify challenges that may help participants relate to their old behaviors or past experience more effectively. So the participants will be able to better focus on capturing new ideas and synthesizing them so as to produce novel solutions. By understanding the participants' generative abilities under time constraints and flexible surroundings, changing the composition, size or complexity within the parameters of the challenge may give more room for spurring creativity.

Game Results by Participants
You need to raise a billion dollars by tomorrow at noon. How are you going to do it?

- Blackmail/kidnap/take hostage
- Win lotto/gamble at casinos
- Go back in time and buy Apple Inc. stock
- Receive endorsement
- Rob bank or hack into bank accounts
- Bid vacation tickets to the moon
- Date celebrities
- Drug manufacturing
- Military weapon theft
- Sell a country to another country

Propose a way to make OCAD University the most prestigious university in the world within the next year.
- Create honorary degrees and Ivy league like programs
- Give famous people these honorary degrees for international recognition
- Get patents/copyrights of some research in OCAD University (such as in medical illustration) and promote it in well-known journals

Propose a way for a person to live forever.
- Live in a hibernation chamber
- Put spiritual part of your body into a cyborg or clone
- Kill everyone to hide the proof of death
- Don't be alive so you don't die

Propose a way to eliminate air pollution in this country within the next 30 days.
- Impose heavy taxes on emissions
- Enforce use of electric cars, bikes, and provide subsidies
- Import trees

- Banning cigarettes (but vapes are okay)
- Eliminating air pollution sources (heating, manufacturing, etc.)
- Mould air pollution (natural cleaning solutions)

Final Notes

During the game, all four groups came up with some solutions in a short amount of time. Most people seemed to be intrigued by the challenges at first and became actively involved in the discussion. They proposed possible solutions and attempted to evaluate the feasibility of those solutions.

Some groups gave logical solutions and others came up with unconventional or even extreme solutions. The logical participants approach from the root cause of the challenge, but don't give too many details due to the lack of time or considerations. The extreme cases contain fictional elements (e.g. time travel or human clone technologies) or sometimes try to circumvent major restrictions, such as via violating the laws. (e.g. robbery or theft). Regardless of the viability of solutions, participants were able to continue to move on with alternative solutions in the challenge.

The participants come from a spectrum of backgrounds, including psychology, business, information technology, web design, fine arts, and so forth. We selected and designed challenges in a way that every participant is assumed to be able to produce at least one solution without necessarily referring to domain knowledge. In spite of the problem to be solved, the elicitation game itself was a challenge. For instance, the randomness of group formation posed a challenge for rapid collaboration, such as assigning roles such as notetaker and presenter. Speaking of improvement, the time for problem solving can be maximized by assigning roles for the participants prior to the game. An alternative approach for creating novel surroundings is to diversify the backgrounds in each group.

Variations

While the Ultimate Challenge is a useful tool for stimulating creativity in a group setting and demonstrating Generativity theory, there are times where it is not feasible to implement. If for example one wished to train an individual rather than entire groups, one would need a variation on the theme. The two games described below are examples of creativity games that can be implemented for individuals or in smaller groups to gain introspective insight into the creative process of solving difficult problems.

The Keys to Creativity

The “Keys to Creativity” is a game that, similar to the Ultimate Challenge, aims to improve creativity by engaging the participant in a challenging situation (Epstein, 2000a). In this game, the participant should retrieve a key from a distant location using only a broom or a mop. The volunteer will experience frustration and failure many times. However, the failure will help to accelerate creativity.

Even though frustration is hard, it is part of the creative process. After facing these situations, the right solution will emerge, and the participant will realize that failure can be valuable.

Two Strings Problem

The participants are invited to solve a very simple problem, tie the end of two strings together. The strings are hanging from the ceiling with a well defined distance between them just long enough such that the participants can't simply hold one and then reach the other one (Maier, 1933). To help find the solution the facilitator offers some supportive objects like an eraser or a pair of scissors. This game puts the participants in a challenging situation where they have to use creative thinking to solve a specific problem. The solution for this game is to tie an object to one of the strings, swing it so it moves back and forth like a pendulum, and while it is still moving to grab the other string and wait until the one that is moving is within reach. Problem solved.

Conclusion

All in all we were pleasantly surprised at the wide range of creative solutions brought forth by our fellow classmates. The responses to the question of how to make OCAD the most prestigious university in the world were creative enough that they could actually be given a second glance. The Ultimate Challenge proved to be an executable and potentially useful creative elicitation technique for mobilizing the creative energies of a group. Finally, learning about Generativity theory proved useful as it opened up discussions about the idea of creativity in general, and provided an inspirational and grounded path for discussing how creativity and creative solutions are always a viable option even when the challenges we face appear impossible.

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Wild Card

Marcus A. Gordon
Fusun Uzun

"… Sleepwalking into the new century" - James Howard Kunstler

When we are sleepwalking the experts say the brain is active enough for us to move, but not so active that we wake up. When organizations or countries follow this paradoxical mindset a wild card could be a necessary wake-up call.

In 1992, the CIFS (Copenhagen Institute for Futures Studies), BIPE Conseil (France) and the Institute for the Future (Menlo Park, California) defined the wild card in a joint publication: "A wild card is a future development or event with a relatively low probability of occurrence but a likely high impact on the conduct of business."

John Petersen of the Arlington Institute (USA) extended it to social systems, defining wild cards as, "a low probability, high impact event that is so large and/or arrives so fast that social systems are not able to effectively respond to it."

Jim Dator from the University of Hawaii defines wild card as 'The Tsunamis of Change'. In this instance, the event is so large, sudden and widespread that there is little that can be done to change or stop it. In Dator's own words - "…I see the future approaching us in the form of huge tsunamis for which we are wholly unprepared as a society, and largely unprepared individually"

An asteroid colliding with earth, any Alien contact, major earthquakes or cyclones (depending on where they occur) the collapse of the Berlin wall, and September 11th are considered as the typical examples of wild cards.

The effect of a wild card is massive since it does not fit into our usual frame of reference. It can disrupt systems, shift paradigms, and force people to change their values, perceptions, and lifestyles. It may trigger a chain of events that is much worse than the initial event itself. For example, a major natural disaster could produce a global epidemic, which could lead countries to close their borders, causing the collapse of the airline industry, and so

on. Once a wild card occurs, the whole system moves too fast to adapt to the shock. Most futurists say even though wild cards are defined as surprises, we can identify developments and conditions that predict the surprise happening. We can reduce the severe consequences of wild cards by watching for weak signals that anticipate them. For example, on September 10, 2001, most people would not be able to believe that the World Trade Center's famed "Twin Towers" could be destroyed by Islamic terrorists. However, futurists mentioned about that event as a possibility to consider: A 1987 article, by terrorism expert Brian Jenkins, mentioned the possibility of aerial suicide attacks, and a 1994 article by forecaster Marvin J. Cetron specifically identified the World Trade Center as a choice target from the terrorists' perspective. (Cornish, 2004)

Background

In 1940, future general Matthew Ridgway wrote a war game scenario about a surprise attack on the U.S. fleet at Pearl Harbor. Ridgway officers refused to play out the war game because they regarded it as a "possibility so improbable that it did not constitute a proper basis for maneuver". In 1975, Igor Ansoff, known as the father of strategic management talked about the concept of "strategic surprise", which he describes as "sudden, urgent, unfamiliar changes in the firm's perspective which threaten either a major profit reversal or loss of a major opportunity". John L. Peterson, popularized this technique with his book Out of the Blue: How to Anticipate Wild Cards and Big Future Surprises.

He rates each wild card according to seven factors:

Power Factor: The level at which the change will affect individuals

Vulnerability: How easy it would be for the affected system to prepare for the wild card

Opposition: The degree to which the change will be fought by established interests. If there is significant opposition, the chaos that usually accompanies a wild card may last longer.

Timing: How soon the wild card is expected to happen.

Reach: Whether the effect of the wild card is local, national, or global.

Outcome: The degree to which the end of the change is agreed upon.

Rate of change: The faster the change, the more the impact

Nassim Nicholas Taleb's book *The Black Swan*, written in 2007, comes close to the concept of wild cards. According to Taleb – Black Swan have three characteristics: They are outside of our expectations, nothing that has happened in the past points to such a possibility; they have a huge impact; despite being unforeseeable – once a 'black swan event' has happened we are able to construct

convincing explanations of why it has happened. He believes that “black swans” could absolutely not be predicted. Taleb has been criticized with ignoring the impact of slowly accumulating changes.

Taleb considers uncertainty as a possibility, but also our imperfect condition of human beings, the complexity of the social world, as well as our insufficient knowledge and understanding. Yet, he suggests we must work on to improve ourselves to foresee the future by allowing oneself to go beyond groupthink, norms (institutional, social, cultural), belief-systems, even if ideas may feel dangerous. He emphasizes on the risks of induction, which are linked to our tendency to seek confirmation rather than falsification.

Taleb is accustomed to conflict and controversy. An ex-Wall Street derivatives trader turned author and academic, he is a professor of risk engineering at New York University’s Polytechnic Institute and a scholar at Oxford.

Daniel Kahneman was quoted saying "The Black Swan changed my view of how the world works," and has stated that it had a big influence on his writing in "*Thinking, Fast and Slow*." In his book *Thinking Fast and Slow*, he discusses the narrative fallacy and describes how flawed stories from the past shape our view of the world and our expectations for the future.” These fallacies arise from a fundamental human need, and that is to make some sense of our lives.

He raises a strong objection to the word "knew" which he feels should be removed from our vocabulary when we are talking about major events. Like Taleb, he doesn’t think wild cards can be predicted. He says, “Some people thought well in advance that there would be a crisis, but they did not know it. They now say they knew it because the crisis did, in fact, happen.” This, says Kahneman, is “a misuse of an important concept.” “If something is known, then it is true, and it can be shown to be true. …In reality, it was not possible to know, that the crisis would happen and to claim. It helps perpetuate a pernicious illusion.”

Why Wild Cards Should Be Used

One of the main purposes of wild cards is reduce the rigidities how people perceive the future. "The most-successful products throughout history could only have been anticipated through wild-card thinking," says Rockfellow and continues. "The leap from horse to car, from pen to typewriter, and from typewriter to computer were wild-card events."

In a strategic planning process one can ask three questions with respect to wild cards (Petersen 1999): which are the most important wild cards for an organization? Can we anticipate their arrival? Is there anything we can do about them? Peterson says if managers can answer these three questions, the possibility of some major future negative events might be averted.

Weak signals have been defined as one of the indicators of wild cards. Weak signals are the signs of emerging issues, an early warning of change;

sometimes called seeds of the future in the present. Crisis managers believe that most of the time crisis sends off a repeated and persistent trail of early warning signals.

Wild cards have three main functions in the brainstorming process:

1. **To 'Stretch'** the thinking paradigm: thinking beyond the current paradigm in an attempt to enable the consideration of alternative points of views.

2. **To 'Expand'** the thinking paradigm: lead to a much wider acceptance of alternative views, broader number of factors added to the melting pot of ideas and possible changes in time frames for events unfolding.

3. **To 'Crack'** the thinking paradigm: the breakdown of the thinking paradigm being used by the client and the initiation of a search for a new one.

Wild cards are a powerful yet playful way to provoke a group to envision unexpected success or extremely dark possibilities, cultivate a mindset that anticipates or at least prepares for "wild card" scenarios, and accepts the need to build and manage an effective risk anticipation and management system.

How To Guess Wild Cards

Surprise element is subjective but essential in determining wild cards. The question "What might surprise you?" is a good starting point for a wild card brainstorming session. The most popular use of wild cards is within the development of 'scenarios'.

The 9/11 Commission reported that the failure to anticipate and prevent the events of September 11th was as much a "failure of the imagination" as anything else. Imagination is not a gift usually associated with bureaucracies. "It is therefore crucial," concluded the Commission, "to find a way of routinizing, even bureaucratizing, the exercise of imagination." To resolve complex security puzzles, since September 11th, some top military members have met with filmmakers to brainstorm and think outside of the box. Unite States intelligence agencies have also received advice from Steven de Souza, who wrote *Die Hard*, and Joseph Zito, director of *Delta Force One* and *Missing in Action2*.

In a wild card context, scenarios are not predictions of what will happen, but instead, they are developed to enable people or organizations to consider a potential future and find solutions to get prepared for events designated within the 'story of the future'. The practice of scenario planning also constitutes a key ingredient for the notion of improvisation. It helps the organization to deal with unexpected events.

While improvising, we can also practice role-playing; allowing each participant to focus on one specific aspect of the scenario, and not to worry about the others. This means that they are more

likely to come up with thoughts that might not occur to them if they were trying to think of everything. As well, different actors can interact with each other in a kind of "Well, if you do that, then I will react by doing this" interplay that helps you explore how different aspects of the scenario might unfold.

The Risks Of Wild Cards
The experts suggest waking up people while sleepwalking might disorientate them to the extent that they become distressed in that regard.

The degree to which the wild card is accepted as worthy of consideration will be defined by the perception of the degree of relevancy that the wild card has to the client. A wild card introduced may be considered too far-fetched to engage the client. As a result, the client may disengage from the foresight process due to insufficient reference about the wild card. The other trouble is the more we know about a potential risk, the less threatening it becomes and the more obvious the solutions seem. However, the familiarity can create indifference against the wild card.

Wild Cards In Class
We developed a fictional and political story built on a conflict between a political leader's supporters and the press. The structure was like a Cassandra vs. Pollyanna game where one side of the class thinks the positive possibilities and the other side of the class foresees negative possibilities. We also added a third party, who doesn't take a side, but changes its positioning based on their economical benefits. The first group was presenting for the former mayor of Toronto, Rob Ford. This group is formed by his supporters and family. The second group, press, was represented as Globe & Mail. The third group played the role of real estate development agency Concorde Real Estate Development. During the game, the press came up with a wild card and the leader's supporters found creative solutions to protect their leader from the probable effect of the wild card. We used also role-playing as an execution tool to facilitate the improvisation.

We've aimed to construct a scenario considering how the decision makers process the information, what they perceive to be the risks and where they are confident about where the future may be heading. We identified key actors based on the conflict and refined the story by testing first within a small group.

Details of Exercise
Duration: 30 minutes
12-36 players. They must be grouped by multiples of 3 or 6.
Number of Facilitators: 2
Group Reporter: One per table (up to 6 groups)
Inputs: A game scenario delivered by the facilitators.

Running The Game
First, we explained what wild cards are to the class. We introduced the scenario with a brief background of former Toronto Mayor Rob Ford. We identified the

various characters/groups involved in the scenario and gave the script to each group. Each team assigned a team leader who shares the final decision of the group.

The press came up with a challenging wild card: The wild card was a scenario where Rob Ford spoke of creating a potential limit to heights of new condo development buildings, and spoke of this behind (supposed) closed-doors. During the game, we represented, secretly, the other "mini wild card" to a small group of the press, who weren't journalist but instead executives of the press company. The "mini wild card" was that money was exchanged between two groups for attempting to sway interests.

End of Game

The end of the game happens when the press makes a group decision on what their next course of action will be, and presents it to all groups and facilitators. Throughout the game, the individuals amongst the groups (including the facilitators) get to observe the power and chaotic outcomes of their decisions and the decisions of their peers, which demonstrates the complexity involved in preparing for wild cards.

Outcomes

In our activity, the outcome had a "surprisingly" unanimous agreement from the city council in allowing Rob Ford's last minute request for urban change. The additional outcome was finding out that the executives from the press (not the journalists) accepted a payout to ensure the news went out clearly as a final decision from Rob Ford and city council. The important thing to note was that the payout came from the real estate agency, and provided a separate force of convincing decisions to not side with the press in their interest to release this news, prior to City Council's actual approval.

Final Notes from Facilitator

Predicting unpredictability is challenging. If the wild card is a "human-caused" event where the "good" and "bad" will of actors are involved, the surprise is more or less subjective. We had minimum control by letting the press decide the wild card, which makes the exercise more interesting but challenging at the same time.

Variations On The Game

We can focus only on finding the wild card and brainstorm with the class about possible wild cards for an organization. In that case, we would look at the problem from the two perspectives: looking outside-in and inside out. An outside-in perspective means systematically exploring the major forces of change: demographic, social, and economical. An inside-out perspective explores the risks or the key vulnerable points of the organization and pushing those elements to the extreme.

Conclusion

Marshall McLuhan states that too often people steer their way into the future while staring into the rearview mirror because the past is so much more comforting than the present.

Moreover, because of our dislike of uncertainty and our preoccupation with the present, we tend to ignore indicators that don't fit into familiar boxes. More often, we shy away from failures and anomalies. Yet, we must look for the turns, not the straightaways. Peterson says, "Extraordinary events require extraordinary approaches ... These events look so big, strange, and scary because our traditional methods of problem solving."

Montreal born, Harvard Professor Steven Pinker suggests we must ask taboo questions, the ones that raise our blood pressure and threaten moral panic and we should not be afraid to answer them. By "dangerous ideas" he says not the weapons of mass destruction, fascist, or other fanatical ideologies, but the ones defended with evidence and argument by serious scientists and thinkers, which are felt to challenge the collective decency of an age. As a result, as Dr. Karlheinz Steinmüller states we can re-write the future, but also re-write the past.

By starting with radical doubt, and then using a systematic approach to generate new ideas and brainstorming we can explore new opportunities. If we play our wild cards right, the future ought not to be as surprising as it has been.

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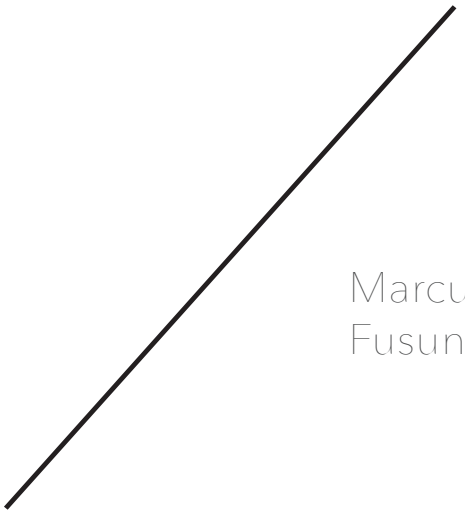
CONCEPTUAL TECHNIQUES

Action Method



Marcus A. Gordon
Fusun Uzun

"Process needs to be organically derived…"
- Scott Belsky

Action method
A technique for implementing ideas.

Ever had an incredible idea, that you just couldn't find the mojo to realize it? Ideas come in many forms, but what they have in common is the excitement they create. Transforming vision into a reality becomes the priority after these small bursts of excitement, but onto the the laser focus when the excitement fades? How do you handle thing when you enter the period of execution where nothing remains but the task of actually doing? The natural tendency is often to go back into idea generation rather than seeing the original idea through to the finish. Does this sound familiar?

If you're serious about your ideas coming to realization, consider implementing this: the Action Method. In this paper, we will define this often overlooked system, give a background on its origin, the way it works and how it can be incorporated into your workflows and used to launch your ideas.

What Is This?
The Action Method is a productivity methodology targeting creative professionals, and is often considered to be a task-management system. It was invented by Scott Belsky, founder and CEO of Behance.

Most ideas will never happen. This is something you first have to come to terms with. Although you may come up with creative solutions to problems everyday, only a few of those make the mark. Ever notice how many of those solutions are pitched and thrown away? You could write a book on it, right? No need for that, as Scott Belsky did that for us. He is the author of the book titled "Making Ideas Happen".

In his book, Belsky states that most of our ideas get caught into something he likes to call the "project plateau". He goes on to say that the project plateau

is a period of intense execution where your natural creative tendencies turn against you.

The plateau principle is considered as a mathematical or scientific model originally developed to explain the time course of drug action. The principle has wide applicability in pharmacology, physiology, nutrition, biochemistry and system dynamics. The plateau effect is a force of nature that lessens the effectiveness of once effective measures over time. It occurs when the body no longer responds to a certain stimulus because it becomes accustomed to it. For instance, the noise of a subway behind the apartment dulls over time, because our bodies are trained to notice new things more than old.

Big ideas are glamorous, but we tend to judge execution process more like boring, routine work. However, without the reality of execution, big ideas go nowhere. When it comes to the process of executing an idea, surviving the project plateau is a common challenge we all must face. The first steps of implementation are generally easy, thanks to the excitement of fresh ideas, however, our natural tendency is often to go back into idea generation rather than following the original idea to make it happen. Perfectionism, distraction, distorted data, flow issues, and failing slowly are some of the reasons that sticks us in the plateau.

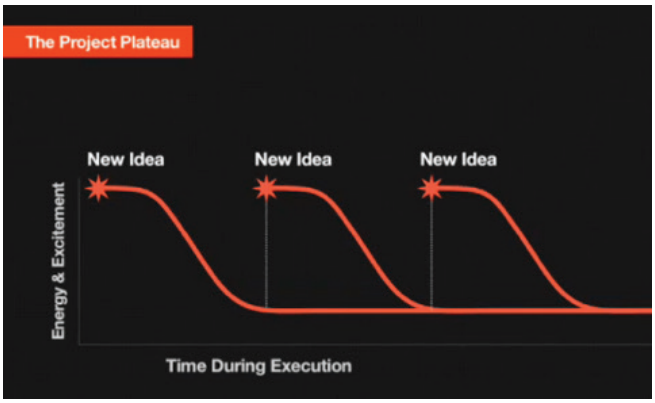


Figure A: The project plateau is filled of dead ideas that have never happened

Framework For Idea Implementation

Making Ideas Happen =
Ideas + Organization + Communal Forces +
Leadership capabilities

This formula clearly states that the secret to fulfilling the vision behind your ideas involves a combination of the forces of organization, community and leadership. As a framework, organization helps you manage your energy while navigating a world of information overload, all while avoiding a state of reactionary workflow. Since ideas don't happen in a silo, Belsky reminds us that we must embrace the energies of the people around you; to allow your ideas to gain traction. The last ingredient of this framework is leadership. The ability to build and manage creative teams is essential in delivering the final blow to project plateaus.

Purpose
The purpose of the Action Method may seem obvious – it's a simple solution to getting things done. However, there is more to it than meets the eye.

Creativity x Organization = Impact
In his book, Belsky asks this question:
Why would Apple, a company known for new ideas and its ability to "think different," also be one of the most organized companies on the planet? The answer is—like it or not—organization is a major force for making ideas happen.

We believe this is the basis behind the true purpose of the methodology: to change or improve how we organize.

Action Method goals:
- Limit your "reactionary workflow" and start pushing ideas forward.
- Learn how to work with a bias towards action.
- Reconcile urgent versus important to focus on what matters.
- Overcome the stigma of self-marketing to maximize the impact of your ideas.
- Maximize the creative chemistry of your team.
- Break free of consensus and bureaucracy.

Limiting your reactionary workflow
The big picture here is that once you're in the middle of addressing something, you need less distraction until that something is at least underway or complete. We live in a time where reactionary response is easy, with our smartphones, email clients, social media notifications, etc. This also creates a level of chaotic looping that can easily draw you in, with no way out.

Bias towards action
We all know things we want to or "have to" get done, but rarely do we always engage in that action of getting it done. Why is that? Sometimes it's procrastination, but other times, it can be fear. The challenge is to prepare yourself to overcome both.

Reconcile urgent versus important
When working on creative projects, we feel the need to solve everything quickly, like the e-mail question that popped up in your inbox 5 seconds ago, or the upcoming problem you learned about because of a news headline you read this morning. Scott Belsky calls this immediate impulse Creator's Immediacy – an instinct to take care of every problem and operational task, no matter how large or small, as soon as it comes up.

Overcome stigma of self-marketing
The stigma of self-marketing can sometimes be a deal breaker for ideas, especially when there's a vast sea of opportunities in your strengths and perhaps even your weaknesses that you're just not tapping into.

Maximize creative chemistry
Acknowledge the diversity of your working teams, and use them to your advantage, as they have the

power to remove infected ideas that sometimes miss a beat, that someone "different" can point out. This diversity encourages ideas to be great, as there is always someone with a different mindset to ask the tough questions, strengthen, or even clarify your ideas.

Break free of consensus and bureaucracy
Traditionally in a corporation, process equals bureaucracy, but that doesn't have to be the case. The best countermeasure to idle stand-offs and wait queues are incremental actions.

All of these goals, if met, will change the way you organize, gather, and execute your ideas. This is the true purpose behind the Action Method.
So now, how does it work?

Modus Operandi
The Action Method is a technique. It is based on three elements: actions, projects and methods. These elements work together to bring your ideas into reality.

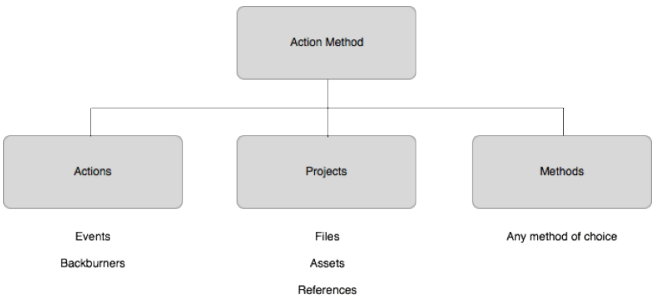


Figure B. The basic structure of the action method.

Actions
Actions (also known as action steps) can be organized and associated with events and backburners. As events, actions become time based, or at the very least, prepared to receive a chronological order to them. Backburners are actions that may not have chronological order to it right away, and also may not even be relevant to the task or project at hand. They are, nonetheless, micro-ideas or actions that lead to other ideas. The important thing here is to acknowledge their existence, and place it safely away for the purpose of revisiting it.

Projects
Projects group and organize events and actions. They also envelope associative files of assets and/or references related to the project. The whole purpose of this section, is to group action steps in a categorical manner, hence creating a "project".

Methods
Action Method is technologically neutral. Use a voice recorder, write on paper, diagram, or use whatever method you prefer. The sole purpose of the method is to style your approach for achieving the goal of completing your action steps, and then in turn, completing your projects.

Background
The necessity of innovation for the growth of business has been promoted for decades. However, few companies have succeeded

consistently. In the eyes of Vijay Govindarajan and Chris Trimble, authors of *The Other Side of Innovation*, this is not due to a lack of good ideas but is a system problem. Most of the organizations are not able to bridge the gap between creativity and the ability to turn ideas into marketable products and processes. The consequence is slow progress, unsatisfied executives, and frustrated employees.

However, there are entrepreneurs and executives like Scott Belsky who strongly believe that creativity is only half the picture – systemizing a way to realize creative projects is the other half to bring our ideas to life.

Peter Drucker (1909-2005) a leader in the development of management education underlines the need for creative thinking by emphasizing the importance of actions for tangible results.
"In innovation, as in any other endeavour, there is talent, there is ingenuity, and there is knowledge," Drucker wrote in 1985. "But when all is said and done, what innovation requires is hard, focused and purposeful work..."

He says without an action plan, the executive becomes a prisoner of events. And without re-examining the plan throughout the process, we can't figure out which events really matter and which ones are simply noise. He believes successful executives should concentrate on or two tasks at a time; set priorities and stick to them. He suggests that after completing the original top-priority task, it is necessary to reset our priorities rather than moving on to number two from the original list. The key elements of his execution approach has many similarities with Belsky's method:

- Ask what needs to be done: Create the to-do list, set priorities.
- Ask what's right for the enterprise: What is right for the organization as a whole isn't always right for individual stakeholders.
- Develop action plans and revise it often to reflect on new opportunities.
- Take responsibility for actions: Ensure each decision specifies the accountable individual(s) and deadline.
- Take responsibility for communicating: Make sure to clearly explain your action plan and information needs.
- Embrace change: Don't treat change as a threat. Instead, exploit opportunities and explore changes inside and outside of the organization
- Run productive meetings: Clearly articulate the purpose of the meeting. Follow up with a meeting summary and include new assignments and deadlines.
- Say "we" not "I": Always put your organization's needs ahead of your own.

Another supporter of solid execution models, Ted Levitt, a professor of Harvard Business School, doesn't like to romanticize creativity, Levitt states: 'Creativity is not Enough', written in 1963, for

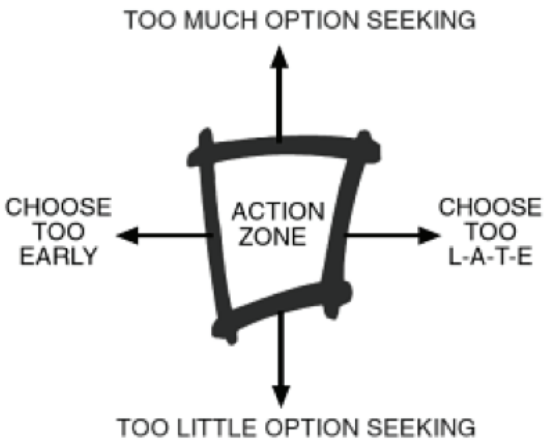
Harvard Business Review. He believes, "creativity is not the miraculous road to business growth". He thinks there is a confusion with creativity in abstract and practical innovation and people underestimate the complexity of business organizations that emphasize on creativity itself. According to Levitt, innovation without the potential of usefulness could be destructive in actual operation.

His other main concern is that many people with the ideas have the notion that their jobs are finished once their ideas have been proposed. These people tend to take less responsibility to make their ideas happen because they believe somebody else should take care of the boring details.

John O'Keffee, writer of *Business Beyond the Box* (1993) suggests finding the balance between thinking and acting: the optimum between spending too much time creating alternatives and not taking enough time to think of enough alternatives. These two windows create the action zone, which is the optimum place to get breakthrough results.

Routine Management

Building a better routine is an essential part of Scott Belsky's action method: He says "Our individual practices ultimately would determine what we do and how well we do it. Specifically, it's our routine, our capacity to work proactively rather than reactively, … determines our ability to making our ideas happen."



The second book of Behance, "*Manage Your Day-to-Day*" supports the action method by tackling the challenges of a 24/7 and focusing on what stops us from getting into action. The writer, Jocelyn K. Glei, explores several facets of the creative life and offers solutions for the demons of perfectionism, managing procrastination and breaking through our creative blocks. He includes insights from the president of the Rhode Island School of Design, John Maeda, to the legendary graphic designer, Stefan Sagmeister. He points out how we are self-sabotaging, until the point when our own projects are left somewhere in the dark, because we already managed to convince ourselves that is not good enough or, that we have more urgent stuff to do. One of the most powerful insights for one of the most common excuses comes from Stefan Sagmeister. He says, "We don't have time because it is convenient we don't have time because maybe we don't want to challenge ourselves".

Is Action Method A Unique Tool?
There are many books and tools related to idea implementation methods and productivity, but Belsky differentiates his tool by saying, "The Action Method is project centric rather than context centric." He believes that we should live life focusing less on "reference material" and should use design to make us more productive.

GettingThings Done: The Art of Stress-Free Productivity by David Allen*, and The Accidental Creative* by Todd Henry have similar approachs and tips when it comes to following an effective execution.

Getting Things Done: The Art of Stress-Free Productivity gives a real world system for getting things done efficiently. David Allen's approach is a total work-life management system; he doesn't put rules around how we actually do our work. Instead, he focuses on how we capture the work we need to do, organize it, and choose what needs our attention. He describes his system as a "bottom up" approach, by which he means that life's values emerge from its tiniest component actions, rather than a top-down approach that starts with deep thought.

David Allen says he uncovered "the strategic value of clear space". He believes our head is for having ideas, not holding them. Just dumping everything out of our head and externalizing can have a significant effect. Similar to Belsky's method, he suggests breaking big tasks down and focusing on smaller "next actions," which can seem more manageable.

David Allen summarize his method in five steps to get things done:
- **Capture:** collect what has your attention
- **Clarify:** process what it means
- **Organize**
- **Review** frequently
- **Engage:** simply do

Author of the *Accidental Creative*, Todd Henry focuses on being constantly creative, having the ability to create better ideas without the stress and burnout. He aims to help creative professionals, like writers and designers, establish a structure to get the most out of their process, and "accidental creatives," such as managers, consultants, and salespeople, to unlock their hidden creative talents. He tells both groups: "Don't go to the grave with your best work still inside of you. Die empty."

Henry discusses that imaginative sparks can grow into fully realized ideas if they are given a little structure and a lot of space. He thinks burnout comes from unrealistic expectations combined with unproductive meetings and nonstop e-mails.

Allen, Belsky and Henry explain their own systems in a way that the creative work force will find more practical and accessible with very little technical jargon and distilled information. These books are

motivating, concentrated and easy to read.

If you would like to dive in deeper, the study of Vijay Govindarajan and Chris Trimble, *The Other Side of Innovation: Solving the Execution Challenge* is considered one of the most successful book about the on-going issue of too much emphasis on ideas and not nearly enough on execution.

Govindarajan and Trimble describe the dilemma with the idea of an ascent of a mountain. They say most climbers focus their energy and enthusiasm on attaining the summit, but descending is as challenging as climbing. Similarly, companies devote their energies only to reaching the innovation summit. After the summit comes the other side of innovation - the challenges beyond the idea - execution. Like mountain climbing, the other side of adventure is quite difficult.

They suggest the basic success factor for innovation initiatives is finding the right balance between the roles of the performance engine (the collection of organizational structures, operational processes, human resource policies…) and those of the dedicated team. They focus on assembling dedicated teams by clearly defining their roles and responsibilities. It is important to establish clear expectations for each team member. They believe seeking the truth is crucial because pressures in organizations can push people toward interpretations of results that are comfortable and convenient rather than analytical and objective.

In researching *The Other Side of Innovation*, they analyzed detailed case studies of all types of innovation over a period of ten years. They detected clear patterns both in what goes wrong and in how it can be made right. Their key message is each innovation initiative needs to be designed for the requirements of that initiative. One size does not fit all--even within the same company.

The Purple Santa Experiment

In December of 2008, Behance performed an experiment that would prove the Action Method to be a force of idea implementation. The group wanted to spread holiday cheer, especially during that time of economic downturn. Belsky refers to this experiment in his book as:

"An exploration in rapid idea generation turned execution."

Lunch meetings for this new startup at the time was filled with ideas, always discussing the future of their new company. Spreading holiday cheer was one of them, and they soon devised a plan to do just that. The question was: ""What if Santa made a surprise visit to a string of agencies and creative work spaces around New York City?"

Their idea was to have 3 santas with purple beards, bags of candy, lottery scratch tickets and small notes of holiday cheer. But once someone realized lunch time was over, they all began to rise up and go back to work, until one employee said: "Hey, I know

where we can get really cheap Santa outfits with white beards that could easily be died purple."

This was the first Action Step!! Even as they were beginning to table the idea and head back to their work, what ended up happening was a continued list of action steps instead of a project plan that, in the end, lead to purplesanta.com and social media messages about the strange purple bearded santas going thru offices and spreading cheer! Belsky ended this story in his book: "In this experiment, a random idea thrived only through a willingness to act quickly and without conviction. This fond memory serves to illustrate the mechanics of quick action and how, without it, fledgling ideas are far less likely to ever happen."

Conclusion

"Creativity is like chasing chickens," Christoph Niemann once said. But sometimes it can feel like being chased by chickens – giant, angry, menacing chickens. We know that the creative process can be challenging and we can feel paralyzed while trying to keep them alive. The discussion about the prioritization of ideation vs. execution brought a lot of productivity tools deconstructing the innovation process. These tools guide us to convert our glamorous ideas into something new that actually solves a problem.

In the end, from managing a successful business to designing our lives, we need creativity, an efficient process and dedication for implementation. We can't ignore any of them. Being responsible for our ideas and a loyal follow-through are not only crucial for business but for our personal goals as well. However, there is a change in the system with the addition of the Internet. Today, an idea can have great value even if we are not willing to implement them: the platforms like Quirky or Ahhha rely on the creative engagement of people who just have ideas. Quirky filed a volunteer bankruptcy in September 2015 but Ahhha is still growing. Ahhha compares itself to Facebook and defines the organization as "the social ideation market" harnessing co-creation. We will see more and more of these disruptive platforms, occasions, and co-shared working structures, where the doers and dreamers meet and disrupt the traditional tools of how to make ideas happen. This means more people will be integrated in designing the economy and the participatory outcome will be hopefully based on more shared values.

Adobe Acquisition Of Behance

In December of 2012, Adobe acquired Behance for $100-$150 million dollars to integrate it as of an additional feature their software subscription model.

"Behance will play a key role in Adobe's efforts to serve the creative world in the years to come and will accelerate our efforts to enable a more open and collaborative creative community." – David Wadhwani, senior vice president and general manager of Adobe.

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Bibliometrics

Jazmine Yerbury
Michael Carnevale

Introduction

Bibliometrics, webometrics, and Google Scholar are citation index tools used to analyze the quality of research papers, scholarly articles and journals. The use of these tools will be compared by drawing primarily from a paper written in 2008 by Mike Thelwall. The use of bibliometrics, which began in the early 60s, has shifted from a primarily print-based hierarchical system of analysis to a mostly automated, web-based indexing system. The categorical hierarchy remains the same; the status of a paper, journal, or even author is given a numerical ranking based on the number of times it has been cited by other scholars. There are complex calculations and statistical reviews performed by a huge number of people working for the major bibliometric analysis organizations. Recently, more of these analyses are implemented by automated algorithms that allow for more specific classes of rank within each field of study, and at times, overlapping fields. Figure one shows a cross-section of some of these citation indices representing different broad fields.

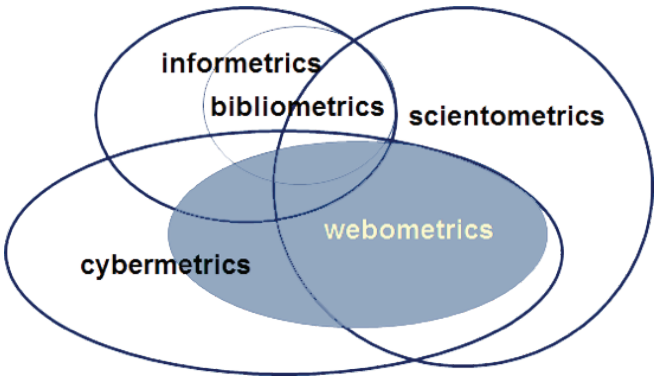


Figure 1. A Venn-diagram showing how different citation index fields and how they overlap. As can be seen, bibliometrics is only a small part of a larger field of tracking the relationships between interlinked fields of information.

Creative Technique

Bibliometrics, webometrics, and Google Scholar are part of an extensive web of citation analysis tools. Bibliometrics is the quantitative analysis of academic publications. Researchers and practitioners use these metrics to more efficiently track and sift through areas of academic work (Thelwall, 2008). The use of citation analysis is useful

for conceptual development when constructing literature reviews, exploring relationships between academic fields, and understanding the bigger picture of academic research. These methods can also be used by government organizations or other granting agencies when performing reviews for funding and employing researchers.

Citation indexing is the process whereby researchers explicitly give reference to previous academic work. Citation indexing is used for a number of reasons such as referencing the work of other authors and to give credit to partial results that have the same end goal. It is also used to back up unfamiliar terminology, for providing background information to construct an argument or concept, and in some cases to criticize other works (Bence & Oppenheim, 2004; Garfield, 1972; Garfield, 1979; Small, 1973). There is the potential for cases of nepotism or corruption using such an impersonal metric system; for example, when colleagues cite each other unnecessarily to boost citation index scores where the reference would otherwise be irrelevant (Merton, 1973).

Quantitative analysis can be misleading and lead to bias. Highly cited papers could have popular but unimpressive concepts or methods, and should realistically be considered only an estimate of academic merit (Thelwall, 2008). The opposite is thus also possible, where the high value of an academic work may be overlooked due to an undeservingly low journal impact factor (a citation analysis measure described below in the section discussing standardized measures). This leads to grants being awarded to authors with higher ratings without accounting for journals that do not fall within the indexing bounds despite potentially having equally compelling research.

Stages of Project Development

When collecting research materials, scholars usually try to include as many high-ranking references as possible to add to the overall validity and thoroughness of their work. Whether or not the scholar has been commissioned by a journal or organization to write a paper or review, the likelihood of the paper being a success can depend on how well it adheres to the parameters of the bibliometric hierarchy. Following bibliometric expectations and adequately referencing the relevant works of a research field when constructing a paper, demonstrates to the reader that the current work is well researched and can be backed up by previously established findings and insights. Finally, in order to stay on track throughout the writing process, the use of referring to works of bibliometric standards is extremely helpful and provides a common paradigm for researchers to communicate their work. Below are bullet points that illustrate how bibliometric methods and literature reviews are commonly useful in the process of developing a research project.

Early Phase:
• Useful for gathering information to begin conceptualizing the project
• Aids in writing proposals

Mid Phase:
• Fine tuning project iterations
• Narrowing results to arrive closer to desired result

Late Phase:
• Estimation of project reception (by tracking its citation index)

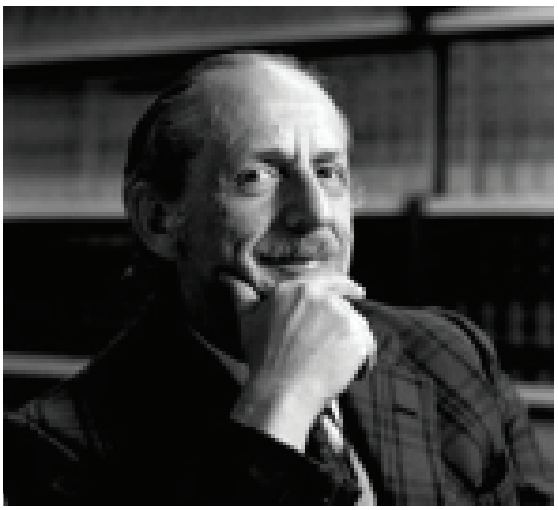


Figure. 2. Image of Eugene Garfield.

History and Background
Institute for Scientific Information (ISI)
The Institute for Scientific Information (ISI) was co-founded in 1960 by scientist and businessman Eugene Garfield, Ph.D (Thackray & Brock, 2000; Figure 2). He created the ISI company based on the bibliometric and scientometric tools he developed. Garfield's method of Scientific Citation Indexing (SCI) provided a method to quantify research papers and evaluate them based on their impact factor, which represents how often a work has been referenced in other journal articles. This can enhance reputations and further expand citations.

The company operated as a bibliographic database service, offering citation indexing and analysis, for print publications. The ISI was bought by Thomson Reuters in 1992, and has since evolved into Thomson ISI, whose database is primarily maintained online on the website *Web of Science* (Thelwall, 2008).

Relational and Evaluative Bibliometrics
Relational Bibliometrics
Relational Bibliometrics illuminates relationships within, and potentially between, areas of research. An example of Relational Bibliometrics would be, to gain an overview of a field, to establish international relationships, or to provide links between journals publishing research in comparable areas (Cawkell, 2000; Chen, 2004). The more a paper or journal is cited by another will determine how closely linked the two journals are. This provides context for the various fields of study and helps provide a measure for how strongly related particular journals are within and across specified fields. Figure 3 presents a diagram showing how strongly related different research areas are based on the degree of cross-referencing between them.

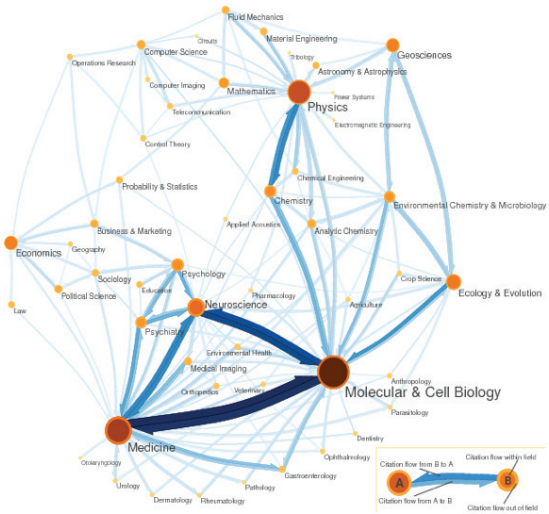


Figure 3. Diagram showing strength of cross-referencing between research areas. The thicker the line stroke between nodes, the greater amount of referencing between the fields.

Evaluative Bibliometrics

Evaluative bibliometrics is focused on measuring and assessing the impact of scholarly publications. This method is based on the assumption that the number of citations correlates directly to the measurement of scholarly impact (Small, 1973). Figure 4 below illustrates the level of connectivity between various scientific journals in relation to Nature, the scientific journal currently with the highest journal impact factor. One can see the strongest connections between the journals Nature and Science, another very popular journal.

Main Databases and Coverage

There are only a handful of organizations that track and report bibliometric data on academic authors and journals. In the beginning there was a single company, and although the ISI had stringent ethical standards, it is inevitable that there would be at least some bias. Today, there are three primary databases that do not work together, but use similar methods.

ISI Thomson Reuters, Web of Science

- Science Citation Index: Founded 1945
- Social Science Citation Index: Founded 1956
- Arts and Humanities Citation Index: Founded 1975

Scopus (Elsevier)

- Founded 1996
- Coverage across the hard sciences to life Sciences

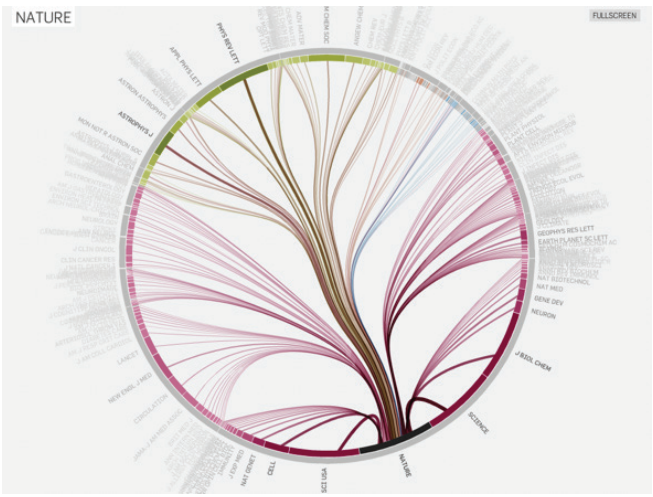


Figure 4. Diagram showing the relational bibliometrics between the journal Nature and its related scientific journals. Nature currently has the highest impact factor in the scientific field and the impact factors of other journals in that field are often considered in comparison.

Google Scholar
• Founded 1996
• Multidisciplinary

Standard Bibliometric Measures and Methods
• Article Citation Count: The number of times an article is cited.

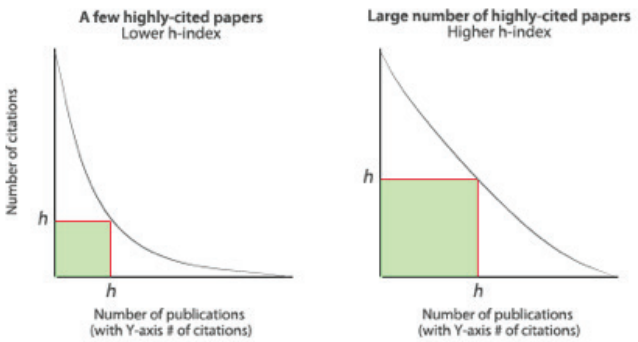


Figure 5. A representation of how the h-index is calculated. Uses a weighted combination of the number of publications and citation counts

• h-index: Author-level index that reflects the number of papers cited and average citation counts (Hirsch, 2005).
• Journal Impact Factor (JIF): The average citation count per paper over the last two years.
• Aggregated Statistics: This analysis is used as a reference when choosing to award government funding, hiring new recruits or choosing candidates for promotions. Citation statistics can be calculated at different levels of complexity, such as at the department level, the university level, or even as far as the national level.
• Special Considerations: Citation counts are relative and depend on the research area. Not all areas have the same volume of publications or average rates of citation. Some research areas are simply not focused on publishing in journals but share research primarily through conferences.

• Matthew's Law: Older articles and authors have existed for longer and are therefore more likely to have been cited more over time.

• Bradford's Law of Scattering: "A pattern first recognized by S.C. Bradford in the 1930s that the most significant articles in any given field of investigation are found within a relatively small cluster of journal publications." (Bradford, Segen's Medical Dictionary, 2011). Most researchers only use the core publications, and do not go beyond 20-40 different journals. For example Nature and Science are the core journals for the field of hard science.

Webometrics
Overview
Webometrics is the quantitative analysis of web phenomena. In comparison to bibliometrics, webometrics is a relatively newer field that puts to use many similar tools, such as web citation analysis, which is analogous to journal article citation (Almind & Ingwersen, 1997; Thelwall, 2008). The primary difference is the way in which these connections are made. Webometrics evaluates a publication based on the number of links to specific webpages.

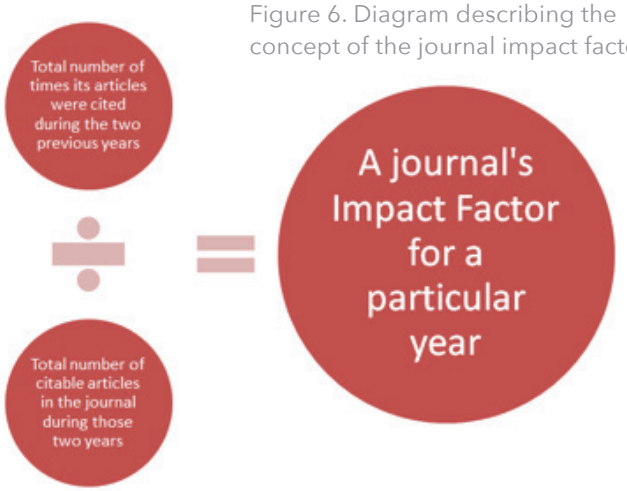
Similarly to bibliometrics, there is an indirect relationship between the quantity of work produced and the visibility of a website. The same assumption is made however that the number of references is a valid measure of the productivity or value of a journal or author.

• **Link Analysis:** The quantitative study of hyperlinks between web pages. The web impact factor is similar to journal impact factor, and the idea that the more publications you have, the more productive you are. Universities must now promote their research online to attain global impact. Link analyses are thus performed to determine the relative ranking of various universities.

• **Web citation Analysis:** Academic journal publications that are now also published online are being measured to see if the web can provide a wider use of research. This type of indexing is still considered unstable due to the short shelf life of web pages, a lower ability to have quality control, and expansion of the web. Web citation analysis is essentially the same as counting journal article citations, except the references have been established over the web. There is a high correlation between ISI citation patterns and established journal citation indices (Ingwersen, 1998).

• **Describing the Web:** There exists a wide variety of quantitative data used to describe the web. Such measures include webpage size, type and number of meta-tags used, and the use of the technology.

Figure 6. Diagram describing the concept of the journal impact factor.



Bowtie Model

A subsection of webometrics deals with trying to create a clear picture of what the overall web looks like from a bird's eye view. How can the countless web pages be conceptualized and organized in such a way that we can represent its structure in one model? The Bowtie model of the web is the most widely accepted model of the overall structure of the entirety of the internet (Broder, 2000). The organizational components of the Bowtie model are described below.

• **SCC** (Strongly Connected Component): The core of the web where web pages are all strongly connected to each other through hyperlinks. In the SCC links always bring you back to one of these core web pages.
• **OUT:** This section refers to web pages that are found within the SCC, but do not always lead you back to articles that are within the SCC.

• **IN:** Refers to links that begin outside, but can lead directly to the SCC.
• **Disconnected components:** Web pages existing outside of the SCC. These web pages are not as easily discovered or accessed, and do not lead back to the other sections.

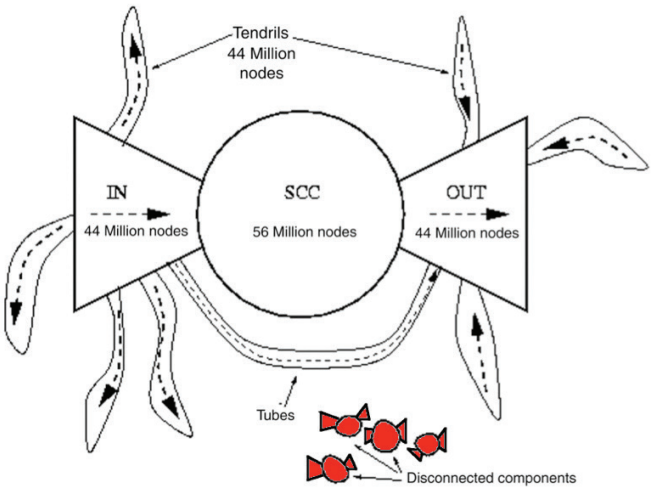


Figure 7. The Bowtie model, a diagram illustrating the overall structure of the internet.

Bowtie Model Diagram:
Google Scholar

Google Scholar is an online bibliometric database containing thousands of scholarly articles. Google Scholar includes lists including who cited which particular article, while providing names, dates and links to each. Google Scholar allows you to create your own personal library catalogue and stores your citation lists, keeping your reference material organized and making it easy to reference these sources from anywhere at anytime. Google Scholar uses primarily evaluative metrics when awarding numerical ranks. Articles have citation counts that are readily visible and allow you to access each article or reference by a web link. Google Scholar provides author and journal h-index, the standard practice for bibliometrics. In addition they also provide their own system, which is Google Scholar's h5-index, and works in much the same way. Much like the original Google search engine, it allows selection of advanced search options, author bios, and more.

Google describes their system as "…a simple way to broadly search for scholarly literature. From one place, you can search across many disciplines and sources: articles, theses, books, abstracts and court opinions, from academic publishers, professional societies, online repositories, universities and other web sites. Google Scholar helps you find relevant work across the world of scholarly research." (scholar.google.ca). Google Scholar is quickly becoming a strong citation index competitor to the more traditional ISI and similar databases (Thelwall, 2008; Meho & Yang, 2007). Google Scholar is however not exhaustive, and if one is looking for research within a particular field, one should consult one of the other indices that focus on a particular area of interest.

Comparing Google Scholar to Traditional Citation Indices

- Citation index independent of ISI
- Citations can include journal references, patents and legal documents
- Multidisciplinary coverage of subjects from Sciences to Humanities
- Broader range of coverage than Scopus or ISI, but less exhaustive
- Now considered a competitor to ISI and traditional bibliometrics

Images

Figure 1: Malinsky, R. (2012) The interrelation of webometrics and bibliometrics, cybermetrics, informetrics and scientometrics. [Digital image] http://malinsky.eu/blog/what-is-webometrics/

Figure 2: Garfield, E. (2005) [Photograph] http://www.the-scientist.com

Figure 3: Mapequation.org. Science and social science citation map [Data visualization] http://users.dimi.uniud.it

Figure 4: Stefaner, M. and Eigenfactor Project. (2012) Visualization of the citation flow for the journal Nature. [Data visualization] UCLA Science and Engineering Blog. http://blogs.library.ucla.edu

Figure 5: Marnett, A. (2015) Variation of the h-index between two researchers with the same number of publications. [Graph] http://www.benchfly.com/

Figure 6: Thomson Reuters. (2015) Journal Impact Factors [Digital image] http://libguides.du.edu/citationanalysis

Figure 7: Metaxas, P. T. (2012) The shape of the Web Graph [Data Visualization] http://cs.wellesley.edu/~pmetaxas/Why_Is_the_Shape_of_the_Web_a_Bowtie.pdf

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Design Fiction

Adam Owen
Theresa Slater

Overview
Design Fiction uses creative storytelling methods to expand a designer's scope throughout the conceptualization process. It focuses on diegesis and disbelief suspension in exploring the near-future possibilities of product development. Diegesis is a method of narration that unfolds the world as it is operating within the story. Design fiction as a methodology is still in theoretical development, and is considered to be a type of an approach or mindset, rather than a single technique.

Design Fiction involves exploring hypothetical futures, either possible, probable, or plausible. It then works to conceptually or physically build them out; adding logic to a fictional world to make it work with greater texture and granularity. Design Fiction is borne of Science Fiction. Science Fiction writers frequently utilize this method to foster believability in their worlds. Designers can use the same type of thinking to make their products more useful to future users.

Build a possible world around the product, then explore that world.
Build a possible product within a world, then explore that product.

Design Fiction encourages the building of a story and the world around a product, where by practitioners develop insights regarding their products use and form as well as its relation to the world around it.

Background
The term Design Fiction was first coined by Bruce Sterling in 2005's *Shaping Things*. Sterling used the term to explain his process as a Science Fiction writer, explaining that Design Fiction is about creating design based scenarios, and that its purpose is to use 'designerly practices' to create more realistic, detailed imaginary worlds.

"Design has few universal scientific laws to offer us. You can ponder many a design text without ever finding a quadratic equation, a testable hypothesis,

or an experimental proof. But design thinking affected my science fiction profoundly, and justly so. I've been writing "design fiction" for years now. Design fiction reads a great deal like science fiction; in fact, it would never occur to a normal reader to separate the two.

The core distinction is that design fiction makes more sense on the page than science fiction does. Science fiction wants to invoke the grandeur and credibility of science for its own hand-waving hocus-pocus, but design fiction can be more practical, more hands-on. It sacrifices some sense of the miraculous, but it moves much closer to the glowing heat of technosocial conflict." Bruce Sterling, *Shaping Things*(2005)

Meanwhile, a paper by Paul Dourish and Genevieve Bell had been circulating for years before being published in the journal Personal and Ubiquitous Computing in April of 2014. In Resistance is Futile: Reading Science Fiction Alongside Ubiquitous Computing, Dourish and Bell formalized the idea that Science Fiction directs contemporary scientific research as a component of design thinking. Notably, while this paper was first published academically in 2014, it had been circulating in draft form for nearly a decade among designers, futurists and computer scientists. The two most important, interlinked ideas from this paper were that "science fiction does not merely anticipate but actively shapes technological futures through its effect on the collective imagination" and that "science fiction visions appear as prototypes for future technological environments." (Dourish, Bell, 2014)

In 2009, Nokia engineer Julian Bleecker responded to this paper by supposing that the relationship of fact-following-fiction as described by Dourish and Bell could be controlled in some way, or at least better understood as a means to guide real world design. Bleecker concluded that rather than relating to each other causally, science fact and fiction were two facets of the same goal; to realize ideas and other products of the imagination. Joshua Tanenbaum believes the purpose of Design Fiction is to use the freedom that hypothesis allows to solve existing design problems while exploring social effects of proposed design solutions.

"As in the famous case of British science fiction author Arthur C. Clarke's speculative "invention" of the communication satellite, science fiction does not merely anticipate but actively shapes technological futures through its effect on the collective imagination." Paul Dourish and Genevieve Bell, Resistance is Futile: Reading Science Fiction Alongside Ubiquitous Computing (2014)

Purpose

1. Design Fiction can expand one's scope

Design Fiction as a mindset allows designers to break free of the constraints of their field and approach their practice unfettered by (often self-imposed) limitations. Design Fiction has the power to convince designers and users that change

is both possible and likely. It encourages the participant to accept a variety of possible 'quality' futures. It challenges the designer to acknowledge the likelihood that context and use of a product will vary from an assumed case. This technique is performed in order to "... enhance our capacity to seek out and work with possibility, enrich communication in the exchange of speculative ideas, disrupt conventional mindsets with provocative visions of alternative futures, and affirm individual agency." (Jonathan Resnick, 2011, p.3)

2. Design Fiction can communicate an idea's value
David Kirby uses the term 'diegetic prototypes' to describe the product and outcome of design fictions, a fictional artifact in a fictional setting, that nevertheless articulates its own use and need in the real world. For example, in the film *Minority Report*, gestural computer interfacing was shown as a plausible future technology. The technology had existed for some time prior to the film's production, but did not have any share of place in common imagination. Following the film's release, however, a technologist working on gestural interfacing could count on some public reception to their work, and could rely on the film as an example to point to.

Variations
This technique is also called:

- Experiential Futures focuses on immersive Design Fiction. (Noah Raford)
- Diegetic Prototyping offering "cinematic representations of technological possibilities." (David Kirby, 2010)
- Anticipatory Ethnography studies the process, audience interaction and content of design fiction outcomes. Authors Joseph Lindley, Dhruv Sharma, Robert Potts (2014).
- Futurism Art History: In 1909, Felippo Marinetti published The Futurist Manifesto and started the European Futurist movement. It was both artistic and political, advocating the importance of the machine over the demands of Communist labourers and other institutions Marinetti opposed. It is an early example of how futures can articulate the value of an idea in the present.
- Foresight: Futurism is also the name of a school of practical foresight in which current trends are examined as a means to present their possible ends. It is a strategic practice in business to anticipate market needs and conditions, and prepare to meet them before the competitor.
- Afrofuturism: A common criticism of individual futurist perspectives is the continuance of the contemporary status quo. For subaltern people, this can be disengaging. Afrofuturism is a specifically designed response to this criticism that imagines Afro-centric futures. It has counterparts in other subaltern identities.
- Science Fiction: Science Fiction is a literary genre that supposes hypothetical realities (usually events, social structures or technologies) and explores the result those possibilities could have. As a literary genre, these explorations usually take a narrative form to place the reader in the created world, but this is not always the case. An example of a non-narrative piece of science fiction is the

Star Trek Technical Manual, and while the Star Trek world began as a narrative, it has grown to include many interlinked properties, some of which, like the Technical Manual, are not based in narrative.

- Speculative Design: Speculative Design is similar to Design Fiction, however it does not make use of diegesis and other narrative elements to create. Instead, it supposes a likely future and designs to that end. As such, it is constrained by the same limited scope that Design Fiction tries to escape.

Using the Technique

The following is a proposed example of how to use Design Fiction as a technique. The inputs listed provided an opportunity to develop many variant worlds quick. Each roll of the die builds a world with a unique government, economy and society type. This process is used to "defamiliarize and disrupt [...] to anticipate (or create) alternative possible futures is what science fiction does." (Bleeker 2009). Once the practitioner is situated within the world, the following questions are used to carry one's idea or product through various phases of future forecasting.

1. Imagine a future iteration of your product fifteen versions forward. Build a world around it. What issues will the product face, given your conception of the future? What issues will it resolve?

2. Bring the product into the modern world. What issues today need to be resolved to make the product a reality? Take the solution to those issues and envision a technology built around that solution.

3. What effect would that technology have on the present iteration of your product? What effect would your present product, augmented by that technology, have on today's world? Does that technology suspend your disbelief?

Inputs:
3 Die

6 Governments
1. Disciplinarian
2. Authoritarian
3. De-centralized
4. Utopian
5. Anarchy / Failed State
6. Democracy

6 Economies
1. Late Capitalist
2. Merchantile
3. Communist
4. De-centralized (eg. Bitcoin)
5. Socialist
6. Post-scarcity

6 Societies
1. City-state (Ultra urban)
2. Agrarian
3. Nomadic
4. Hunter-gatherer
5. Trans-national United Earth

The outcomes of this exercise as a Design Fiction method are: potential actionable insights, the ability to conceptualize change materially and to provide a story used to contextualize projects to clients/collaborators with.

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Empathy Tools

Davidson Zheng
Marcelo Luft

Overview

"Empathy Tools" is a technique that aims to create an immersive understanding on the user experiences and feelings by using physical objects, tools and techniques to simulate an environment or an impairment that the user might have. As an Empathic Design methodology, its main objective is to help designers create empathy with the target user.

It is almost impractical for a designer to properly develop a project if he/she has no connection with, and doesn't belong to, the target audience. For instance, a young designer may have little idea about the feeling of living as an elder with motion impairment. Under this circumstance, the best practice is to use techniques that put the designer into the user's context. In this case, Empathy Tools is perhaps one of the most immersive techniques that helps designers create empathy with the users.

The world life expectancy has been increasing within the past few years, which means that people will be experiencing a longer period of their lives as elders. In the future more people will be facing disabilities caused by the extended aging process.

New York Times,. MIT Agelab Suit. 2011.

"…Employing empathic research strategies, designers will gain insight and shared understanding with users that enable them to create more intuitive, sustainable and successful product outcomes." - (McDonagh, Thomas, 2011)

Background

We couldn't find any research evidence that the experiments done by Beatrice Webb and Giovanni Bernadone influenced the way Empathy Tools are being used today. However, it is true to affirm that there are so many young designers and engineers applying the technique inspired by Pat Moore's Experiment, such as the Ford Age Suit mentioned in the Case Studies and Examples section of this document.

Eye Magazine. (2011). Patricia Moore

Pat Moore Experiment

One of the earliest Empathy Tools experiments was done in 1979 by an industrial designer called Patricia Moore. She realized that few projects being designed for elders were actually concerned about getting to understand them. Therefore she decided to role play an 80 year-old woman and walk the streets of New York. She had continued the experiment for three years in order to get an immersive understanding of the limitation an elder faces on a daily basis.

She not only dressed as an old woman, but she also used plugs on her ears to reduce hearing, glasses with cloudy lenses and prostheses to curve her spine and reduce her body movements (Moore, Conn, 1985). Inspired by Moore's work, special suits were later created to simulate third-age limitations.

José Benlliure y Gil (1885) - Josep Benlliure Gil43. Retrieved from: Wikimedia Commons. In 06/10/2015

Learning from beggars
In 1206, Giovanni Bernadone, now known as St. Francis of Assisi, during a pilgrimage to Rome, decided to experience the life of poor people. He borrowed rags from a beggar outside St. Peter's Basilica and spent the rest of the day begging for change. It was one of the first empathy experiments that we know of.

Unknown (1875) - Webb. Retrieved from: Wikimedia Commons. In 06/10/2015.

From comfort to the sweatshop
In 1875, as part of a research project into urban poverty, Beatrice Webb decided to leave her comfortable and wealthy life and dress up in simple clothes and work in an East London textile factory. The experience motivated her to advocate for the co-operative movement.

We couldn't find any research evidence that the experiments done by Beatrice Webb and Giovanni Bernadone influenced the way Empathy Tools are being used today. However, it is true there are so many young designers and engineers applying the technique inspired by Pat Moore's Experiment. For example, the Ford Age Suit mentioned on the case studies session of this document.

Purpose
This technique is performed in order to:
- Improve awareness and empathy for the target user.
- Get a deeper understanding of the user's needs and feelings.
- Collect emotional and rational insights.
- Provide insights and inspiration for future research and design.
- Test out ideas and experiences from the user's perspective.

In order to achieve the objectives aforementioned, it is worth mentioningt that there are some precautions that need to be considered during the experiment. (Refer to Risk and Limitations)

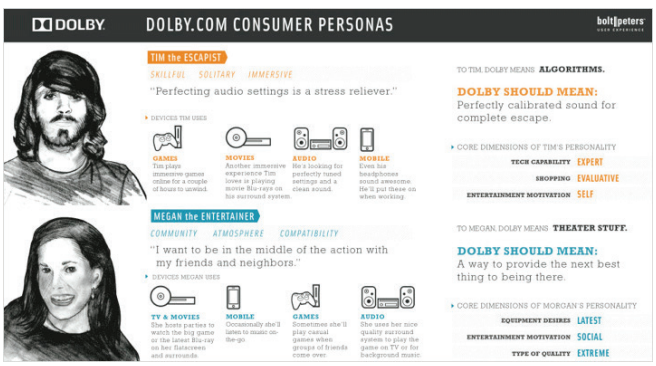
Variations
For being a very specific and detailed technique, Empathy Tools do not have many variations. We could find some related techniques that aim to help designers create and increase empathy for the users as well, however, they are not as immersive as Empathy Tools. Most of them are only written

documentation gathering all the information about the user's profile.

Personas

Personas are a technique to help designers create empathy for their users. Commonly, they are profiles based on real people that represent your target user. Each profile contains a photo, name and a brief description of a person. It is considered to be a much more meaningful way to present your target user than simply describe it as, for example, "Our target users are males between their 20s and 40s with a strong wish to succeed in their careers". It is worth mentioning that this profile must be based on real people, otherwise it may ended up being just stereotyped information. The main difference with Empathy Tools is that this technique doesn't immerse you into the user's life. It only gives you enough information so that you can relate to a person in an essential but superficial way. It is usually used at the beginning of the project,

Bolt Peters - Dolby Personas. Retrieved from: boltpeters.com. In 06/10/2015



whereas Empathy Tools can be used at both the beginning and during the project development phase.

Interviews

Interviews are generally used to gather more in-depth and personal information of the target user. By being personal, it can be essential to understand the user's feelings and needs towards a specific product or service. Listening to their stories and immersing in their personal lives will put the team in a direction of a more empathetic design perspective. Despite being a more in-depth technique, it still is not as immersive as Empathy Tools (Vanhuysse, 2008).

Shadowing

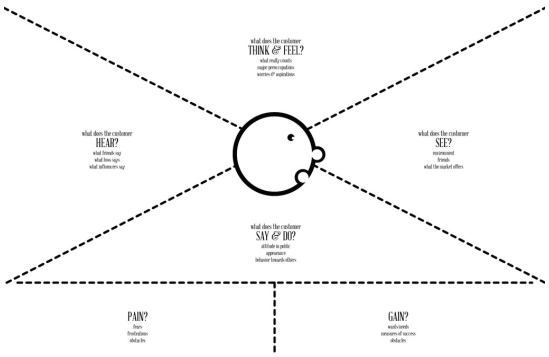
Shadowing is an observation methodology which aims to put the researcher as a witness to someone's daily routine at their own habitat during a certain period of time. By doing that the observer will be able to gather meticulous information about the person's life, therefore creating empathy with the observed. "Data from shadowing are grounded in actual events rather than reconstructions of previously occurring events as in focus group and interviewing collection techniques." (Quinlan, 2008)

Example

EMPATHIC DESIGN CREATES A NEW BABY BOTTLE LINE http://www.icsid.org/news/year/2006_news/articles267.htm

Empathy Map

Empathy Map is a collaborative tool to gain a deeper level of understanding of the needs and behaviors of customers within a given context such as using a product. Like a persona, it can represent a user group. It is usually labelled and divided into six sections, Think & Feel, See, Hear, Say & Do, Pain, and Gain. During the 'empathy' part of the exercise,



XPLANE (n.d.) Empathy Map

the designers fills each section with sensory experiences that a real user may have. (Osterwalder, A., & Pigneur, Y. 2010)

Goes By

During this research we were able to find two techniques that have similar characteristics to Empathy Tools, even though they are not exactly identical. It would be even possible to consider them variations of Empathy Tools. What made us define the following techniques as related and not variations, was the fact that all three techniques share most of their main characteristics. All of them put the designer in the user's position giving them the opportunity to empathize by role playing.

Bodystorming

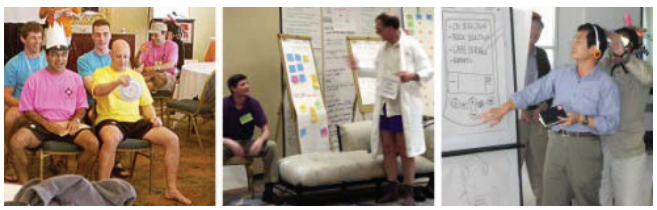
There are two variations of Bodystorming. One doesn't requires acting, where the designers are asked to visit the user's real environment to observe and collect data, followed by a brainstorming on site. The second variation is very similar to Role-playing. Despite having a strong focus on putting the designer in the real scenario while Roleplaying are usually staged in the office. In this second variation, the designers have to act as the user and perform a specific task. The test results should be brainstormed on site as well.

"...bodystorming should be seen as a way of working (and playing) with data in embodied ways, 'being there'. Bodystorming seems particularly suitable for getting familiar with unfamiliar activities in easily accessible locations. Embodiedness and creative problem-solving onsite will enhance understanding of the problem domain." (Oulasvirta,Kurvinen, Kanjaunen, 2003)

In addition, some authors (Simsarian, 2003) define Bodystorming as one of the steps (Understand – "Where to look", Observation: "Re-creations", Visualization: Bodystorming, Evaluation & Refinement: "Debugging", Implementation: "Informance") in the process of the Role-playing technique.

Role-playing

Role-playing is a technique for designers to test out an idea or experience by assuming characters and scenarios and acting them out. The process is supported by props, mock-ups, and rapid prototyping. It allows designers to empathise with users and study interpersonal behaviors.
Role-playing can be applied to all phases throughout the design process. It is slightly different from Empathy Tools, where it can be applied to any kind of the project and it focuses more on the interaction between user and product, whereas Empathy Tools are often used in projects regarding users with impairments and has a strong focus on testing how the user's disabilities may affect his or her experience towards the product. IDEO is known for using this technique on their projects and for being a core defensor of it. (Simsarian, 2003)



Role Playing at IDEO (Simsarian, 2003)

Using the technique

Steps

1. Collect as much information from the target audience as possible. It is highly important to have a deeper knowledge of the user before starting the next steps. More qualitative data being collected in this phase will lead to a more accurate and successful simulation. Data collection can be carried out using research techniques such as shadowing observation and/or direct interviews.

2. Determine the level of fidelity the simulation will have. Remember, the degree of fidelity has a direct impact on the final results. Lower fidelity means lower cost but less accurate information in the results. Sometimes the level of fidelity depends on which phase of the project the technique is being used. Imagine that a simulation has already been done using Empathy Tools early in the project. It can be applied to test out the project already in-progress or to get data to start an iteration process.

3. Based on the data gathered in the first step, the team must define tasks to be performed and design scenarios where this tasks will be performed at. For the simulation, It is extremely crucial to reconstruct an environment that resembles the reality to match what have been discovered during Step 1.

4. Considering that, by this time, it is already clear which kind of impairment your target audience has, the team should choose which techniques and tools will be used to simulate the limitations to create the immersive experience. For mental impairments, it is much harder to replicate the mental status or performance. You may need to create your own techniques to get a closer feeling of it. For example, if you need to simulate the experience of an intoxicated user, you may ask the participant to perform distracting mental tasks, like counting

backwards from 100 in steps of seven, while trying to use a product. It may be interesting to consider how much foreknowledge the participant has on the project because it may affect the accuracy of the results. (Hoss, Roopani)

5. Run the simulation. During this phase it is very important to have a script that keeps track of everything to be tested. One person from the team may act as the director who gives out specific tasks to the participant, so the participant can focus on performing the tasks.

6. Record the results, including feelings, behaviors and reactions of participants, through notes, videos, and/or photos.

Risk and Limitations

Simulations and experiments are designed to gain insights from a user's day-to-day experience. In the case of simulating an impairment, it is controversial how effective the tool is in giving measurable outcomes, without putting the participants in a given reality.

The adaptation to disabilities

Since people with disabilities adapt to the inconvenience in their daily lives, it is difficult to simulate such adaptation and chronic effect. However, it is possible to run dedicated experiments that take considerable amount of time that allows the designer to empathize to a greater extent.

Physical Simulation has risks of causing injuries orunpleasant experiences.

Participants may be injured if the environment is not well controlled or the experiment is not overseen with caution. Depending on the techniques or types of impairment and the techniques being used, simulating mental impairment simulation experiences can generate negative feelings such as tiredness, anxiety or frustration (S.,& Doe, T.)

Real users cannot abandon the impairment.

The designers must be aware of the fact that target users cannot simply walk out of their impairments like in the simulation. Apart from carrying out the tasks, the participants should try to empathize with such mindset. Since the simulation focuses on a particular impairment, it does not necessarily provide a whole and contextual experience. (S., & Doe, T.)

Not all the details of an impairment can be simulated.

For example, certain sensory impairment such as loss of hearing in a particular range of frequency can be hard to simulate.

An impairment can have varying levels of severity.

The designers and participants should also not stereotype about an impairment. For example, the negative experience from a simulation tend to encourage impressions that disabilities prevent people from carrying out basic tasks by themselves such as working or attending schools.

The discrimination against the disabled rooted in the design of the environment.

The simulation tends to consider the disability at an individual level; is neglecting the lack of adoption of universal design principles in existing built environment and social policies.

Input
The complexity of requirements may vary based on the level of fidelity and the type of impairment being simulated. In a simple role-playing scenario, a specific task may be tested using only paper prototypes. However, if a severe impairment must be tested, as in the case of a mental impairment, it may be necessary to build specific tools or hire a specialty company to do so. Refer to Case Studies and Examples in this document to find some of these services offered by these companies.

Output
The simulation results are recorded by designers or observers. Unstructured data including thoughts, feelings, behaviors and reactions may be recorded through notes. Videos and photographs can also be used to capture specific moments.

Next Steps after Exercise
All the data should be carefully analyzed and translated into do's and do not's for the project. The results will also provide detailed insights of user activities. Designers will be able to reflect from what they recorded or observed and better empathize with the potential constraints for their target audience. They should incorporate their findings into further research or optimization of the existing design.

Case Studies and Examples
Ford Third Age Suit and Pregnancy Suit, Ford Motor Co.
Ford engineers designed a Third Age Suit that reduces a person's motor skills, vision and sensibility. After driving their cars using the suit, the young engineers could have a deep understanding of what kind of limitations and difficulties they need to build solutions for. The data collected in this experiment was used in the development of the New Ford Focus.

Ford South Africa designed a pregnancy suit, called the empathy belly, which aims to help young female and specially young male designers to understand the limitations a pregnant woman has to deal with while driving a car.
For more information about these projects, please

Basic, R (2012) Ford Third Age Suit

watch these videos: Third Age Suit: https://youtu.be/CEDF9ut7iCc, Pregnancy Suit: https://youtu.be/ium40oAs1qY.

Disguised, Pat Moore
Patricia Moore, while working as an industrial

designer, decided to experience the limitations and difficulties elders face in their daily activities. She spent three years walking the streets of New York, using a special suit to reduce her movements and to keep her posture bent, wore glasses with limited visibility and ear plugs to simulate hearing impairment (Moore, Conn, 1985). Consequently, her work inspired other designers to create Third Age Suits and similar techniques that increase empathy for impaired users.

To understand and get to know more about Patricia Moore's work, it is highly recommended to watch the lecture she gave at California College of Arts. https://www.youtube.com/watch?v=Xr3ibtQuf2o

Xtreme Aging - Senior Sensitivity Program, Macklin Intergenerational Institute.
This is a workshop that uses exercises and techniques to simulate difficulties and impairments that elders have while performing ordinary tasks. As a result, the participants will have their empathy increased towards elders and any possible stereotypes reduced. This workshop is offered to professionals who don't have the tools and means to perform Empathy Tools themselves.

For more information about this workshop, check their website at http://www.mackliniginstitute.org, and watch this video published at YouTube: https://youtu.be/9nbVdSNexww.

Walk in my shoes , Illinois 4-H.
This is a workshop that aims to engage participants an immersive experience to better understand the aging process, changes, and limitations they may face in the future. The target audience of this workshop are usually people who live with or work directly with elders and want to get a deeper

understanding of their feelings. It is not developed to train designers and researchers, but can be used as such.

For more information about this workshop, check their website at http://extension.illinois.edu/wims/index.cfm.

Agelab , MIT.
Created in 1999, its main purpose is to create and test ideas that may improve people's health. They work in partnership with business, governments and NGO's to develop and design many projects with a strong focus on elders. One of these projects is called AGNES (Age Again Now Empathy System). It is a suit that reduces physical ability simulating an elder. Using this suit, they conduct research to better understand elders and their needs. Their suit has been adopted by many companies during the design and development of new products.

To get to know more about Agelab and the projects being developed, visit http://agelab.mit.edu.

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The Flâneur

Egill Rúnar Viðarsson
Jordan Shaw

Introduction
The word flâneur has its origin in the French language. Translated to English, the meaning of the French noun is "a man who saunters around observing society" (Oxford Dictionaries, n.d.). Adopting the flâneur mentality and using it as a creative ideation technique and as a problem solving solution method, flânerie can be a useful, and perhaps slightly unorthodox tool, for online and offline creativity.

The history of the flâneur, its rise in popularity and its relationship to the arts, culture, society and creativity will be discussed along with its theorised demise. The birth of the cyber-flâneur and also its potential demise will be addressed.

To sum up, we will look at the work of the contemporary artist and poet, Kenneth Goldsmith, who is using the currently available resources on the internet to demonstrate its influence on society and popular culture.

Continuing on, we discuss the future of the flâneur and ask: Is it really dead? How does one become a modern flâneur; a platform or medium independent person fostering creativity and knowledge, problem solving by slowing down day-to- day pace, observing the surroundings and letting mind and body wander on paths that would not have otherwise been travelled?

History of Paris

To fully understand the rise of the flâneur, a better understanding of Parisian society, culture, architecture and its atmospheric environments is needed.

The flâneur is a byproduct of larger changes that were taking place in Paris in the late 19th and early 20th century. Paris was going through change; there was the rise of a larger bourgeois class. The creation of this new class brought about the development and integration of new technologies to support and meet the needs in terms of public spaces, such as the Paris Arcades.

The Arcades in Paris, in terms of architecture, were "a series of arches supported on piers or columns […] usually with shops on each side"(Woodward, 2007). They were "iron-columned, glass-covered structures which shot up around the city in the 1820s and '30s, they were visionary pieces of industrial-age technology" (Woodward, 2007).

It was in these public spaces where the emerging bourgeois class of consumers were introduced to unheard of amenities including: gas lighting, heated shelter from rain and mud, goods and services in a contained space, cafes and restaurants where you could rest and observe fellow lingerers. The draw to these arcades for the Parisians were that all of these amenities were available while still being "part of the fabric of the city with interior-exterior qualities and characteristics" (Woodward, 2007). It was these circumstances which allowed the behaviour of what the flâneur is most known for to flourish.

Figure 1: A crop of Gustave Caillebotte's Paris Street, Rainy Day from 1877. The painting is the strolling Place de Dublin, known as the Carrefour de Moscou, a road intersection to the east of the Gare Saint-Lazare in north Paris.

Figure 2: A picture of one of the Arcades in Paris at their peak.

History of the flâneur

The changes happening in Paris set the stage for the cultivation of the flâneur. The first iteration of a flâneur was only associated with the city of Paris where it originated in the mid 19th century. The flâneur was predominantly male and usually a part of the bourgeois class or of the artist-poet communities. These were the circumstances that allowed the flâneur to be able to afford the time to participate in flânerie.

The term flâneur was first used by a French poet named Charles Baudelaire in his book Les Fleurs du Mal (1857) which translates to "The Flowers of Evil". Baudelaire was also cited as having a body of reputable work as an essayist, art critic, and was the pioneering translator of Edgar Allan Poe. His book

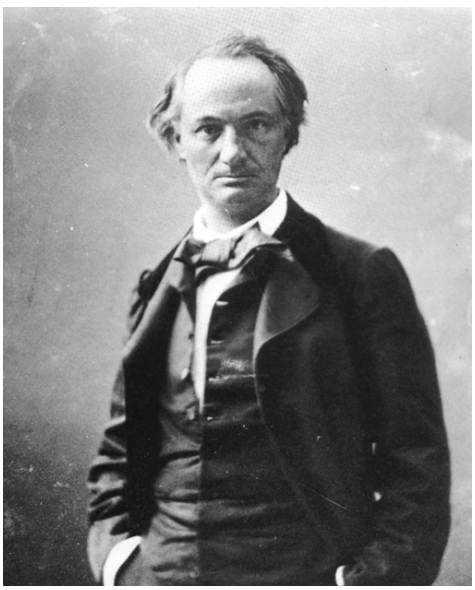


Figure 3: Charles Baudelaire

Les Fleurs du Mal was an important influence with the symbolist and modernist movements happening in France at the time. In his work Baudelaire states… *[The flâneur's] passion and his profession are to become one flesh with the crowd. For the perfect flâneur, for the passionate spectator, it is an immense joy to set up house in the heart of the multitude, amid the ebb and flow of movement, in the midst of the fugitive and the infinite. To be away from home and yet to feel oneself everywhere at home; to see the world, to be at the centre of the world, and yet to remain hidden from the world.* (Baudelaire, 1857-1983)

Without the work of Baudelaire, there might not have been anyone to include the next iteration of philosophers which took the idea and concept of the flâneur to a more concrete, influenceable place.

To name one, the work of Baudelaire inspired a German Jewish philosopher and cultural critic named Walter Benjamin. Benjamin was obsessed with social life and the public dynamic observed in its streets, arcades and public spaces of Paris. This interest of his is obvious by his work that was translated into a book after his death; *The Arcades Project*. The work focused on Parisian city life in the 19th century and therein the term flâneur started to become society in vogue. Benjamin's definition of the flâneur was that…

[The flâneur] was a figure of the modern artist-poet, a figure keenly aware of the bustle of modern life, an amateur detective and investigator of the city, but also a sign of the alienation of the city and of capitalism. (Benjamin, 2002)

To better understand the personality type and creative style of a flâneur, and people who would find the act of flânerie a possitive experence, one must first figure out what their creative problem-solving style might be. To define such a thing one can do the The Basadur Creative Problem Solving Profile (CPSP) Inventory. The Basadur CPS Profile measurement tool was developed by Dr. Min Basadur, Professor Emeritus of Innovation in the Michael G. DeGroote School of Business at McMaster University. Dr. Basadur is also the founder of Basadur Applied Creativity to help organizations determine the ways their employees gain and use knowledge. The Basadur CPS Profile breaks categorizes problem-solving styles into four main categories; Generator, Conceptualizer, Optimizer and Implementer (Basadur.com, n.d.).
There were two beliefs about the flâneur; those who thought of them as a positive figure in society and others who considered them as, frankly, useless.

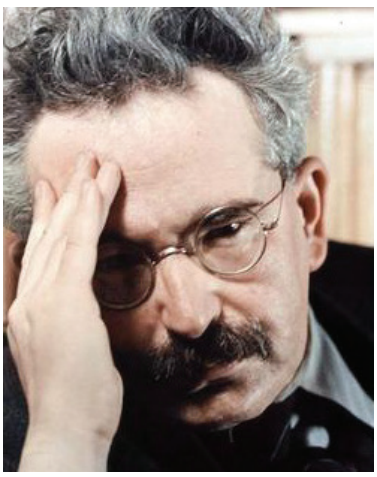
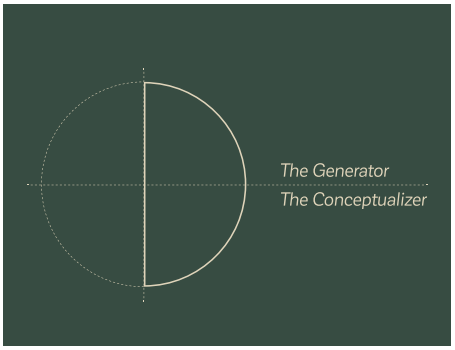


Figure 4
Walter Benjamin



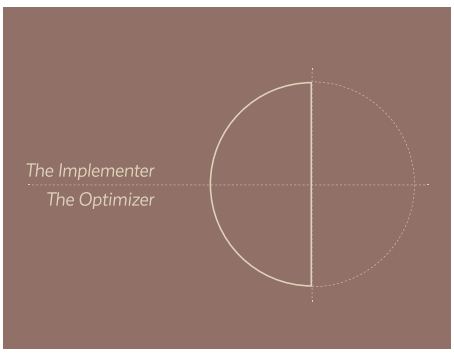
The people who might see the flâneur as a positive entity seem to understand the following traits…
– "a man who saunters around observing society" (Oxford Dictionaries, n.d.)
– finding ... without searching
– an appreciation of absorbing the surroundings
– largely related to the creative class

The people who see the flâneur as a negative contribution to society might recognise the following traits…
– "idler; dawdler; loafer" (Dictionary.com, n.d.)
– viewed as a form of procrastination
– a loss of time
– only applicable to go on a flânerie when on holiday

By referencing the Basadur Test we're able to make the assumption that the people seeing the flâneur's traits as a good thing could be categorized as being Generators or Conceptualizers. By same logic, the "nay-sayers" could fall under the The Implementer or The Optimizer paradigms.

The Flâneur's Demise

With the changes in Paris affecting day to day life, Benjamin declared the demise of the flâneur. He said that this was caused by the introduction of automobiles and department stores in Paris (Shaw, 2014). One such such store in Paris was Galeries



Lafayette, pictured below, which opened its doors in 1912. "If in the beginning the street had become an intérieur for him, now this intérieur turned into a street, and he roamed through the labyrinth of merchandise as he had once roamed through the labyrinth of the city" (Benjamin,1969/1997, p. 54). The department stores were no longer a public space for the flâneur to silently partake in city life while observing the hussle and bussle of the surrounding environment.

The Cyber Flâneur

Mirroring what happened in Paris in the late 19th century, another new technology was introduced globally in the middle of the 20th century and has only gained in popularity since; the internet. As the internet became more accessible to the public, similar behaviours started to develop between the original flâneur and the those surfing the internet. In 2014, Debra Benita Shaw wrote about how Web 2.0 and mobile devices liberated the digital world as if removing the restraints of walls to allow people to stroll and browse online more freely. She noticed the similarities to flânerie saying…

[a]ctivities associated with the flâneur; strolling, lingering, changing direction at a whim, gazing at commodities for sale and a kind of detached inquisitiveness about fellow citizens and their social status are all provided for by Web 2.0. - (Shaw, 2014)

Figure 5 Galeries Lafayette

Hence, the rebirth of the flânuer started was afoot, labeled as a cyberflâneur. As the internet grew, there were more ways for users to interact with, participate, in and observe society and culture. Not to mention that our public space, culture and society were expanding into the digital realm as well. With the expansion of ways for people to interact online, it could be considered a form of cyberflânerie to, for example read reviews on Amazon, scroll through Facebook and Twitter feeds, search for the perfect GIF, click through links on Wikipedia or by browsing Reddit. All of these actions lead us to be able to connect the similarities between the traditional flâneur in the streets of Paris and the first adoptions of the Internet.
Just like with the flâneur, as society and technology changed, the cyberflâneur's inevitable demise soon followed. The idea of this event could be explained by the changing state of the internet itself.

The internet started as a place to share information and have it be accessible to everyone with an internet connection. At its birth, the internet society was still trying to figure out what the internet was; how to use it – could it even be monetized? The one thing almost everyone could agree on though, was that this new technology was most likely going to change the world. William J. Michell said it perfectly, "I am an electronic flâneur. I hang out on the network, [...] the keyboard is my café" (Shaw, 2014).

Note the screenshot, overleaf, for the Apple Computer, Inc. from 1992 and notice how basic it seems. The site has the expected information a computer company might have on their homepage but there's a different feeling compared to Apple's current website. The '92 version is a little rough; what and why is there a "Smorgasbord" link on their home page? What does it link to? What is its purpose? The other difference is that it's largely information based. The goal looks like it is trying to communicate with the visitor very openly. The user is presented with five navigation options ordered by priority; top to bottom. There is nothing about e-commerce or anything trying to directly get the user to purchase an Apple product. What Mike Featherstone said in 1998, about the "cyberflâneur [being able] to 'jump out of the street' into another street at whim, rather than waiting to pass an intersection" is very in-line with the '92 version of Apple's homepage (Shaw, 2014). The site is a perfect example of a website that is frictionless to surf while knowing you are free of any ill intentions.

If we then contrast Apple's website from 1992 with a current day screenshot, overleaf, there are very stark differences. Yes, the current website looks more modern and therefore might be more appealing to current users, but there is nothing on the home page which isn't strategically placed in a specific location. Every piece of information is placed there for a reason; to inadvertently or directly get you to purchase one of their products. Debra Benita Shaw wrote:
Morozov pronounced "the death of the cyberflâneur," mourning the "funky buzz of the

modem" which announced access to the relatively uncharted wilderness of Web 1.0. He further states the "frictionless sharing" afforded by social media which forces both the pace and character of web engagement and where strolling is replaced by a forced march in the direction of experiences for sale. (Shaw, 2014)

Shaw pushes Morozov's view further by stating that: *Geotagging via mobile devices, instantly correlated with data mined from social networking sites makes an open secret of journeys across and within global cities, of use to marketers and promoters of consumer products as well as government agencies concerned with security.* - (Shaw, 2014)

This idea complements Eli Pariser's concept of a user "filter bubble". A filter bubble is when internet and technology companies construct user profiles about their users based on previous search histories and physical locations and are able to deliver tailored information to those users. This creates "filter bubbles" that are very difficult for a user to escape from; to get exposed to new ideas and concepts online and be able to truly roam the internet freely (Pariser, 2011).

This technique could have been similar to that used by department stores such as Galerie Lafayette. Presently, for example, consider the IKEA experience. The whole store is designed to control the visitors' journey from the entrance through all of the store's departments through to the cashiers and checkout. During this journey, there's no easily visible quick escape. The experience it involves a sense of disorientation; you get lost in the experience. This is what the modern web has become.

Flânerie as a creative technique

In 2013 there was media attention on Kenneth Goldsmith, a contemporary artist and poet who also taught at Penn State University. The cause for all of this media attention was that Goldsmith was teaching a creative writing class called Wasting Time on the Internet where students would on a weekly basis attend this three hour class in total silence and browse the internet.

Communication was allowed between those in attendance as long as it was through an internet service like Facebook Messenger, IRC (Internet Relay Chat), email, etc. The idea came about from his "frustration with reading endless indictments of the Web for making us dumber" (Goldsmith, 2014). These critics echo the critiques of the original flâneurs who believed that flânerie was a waste of time. Goldsmith hoped that the class would: *"enter a collective dreamspace, an experience out of which the students will be expected to render works of literature. To bolster their practice, they'll explore the long history of the recuperation of boredom and time-wasting, through critical texts by thinkers such as Guy Debord, Mary Kelly, Erving Goffman, Raymond Williams, and John Cage."* - (Goldsmith, 2014)

Goldsmith goes on to say that he believes that his students
will use Web surfing as a form of self-expression. Every click is indicative of who we are: indicative of our likes, our dislikes, our emotions, our politics, our world view. Of course, marketers have long recognized this, but literature hasn't yet learned to treasure – and exploit – this situation. - (Goldsmith, 2014)

Figure 6: Apple web page 1992

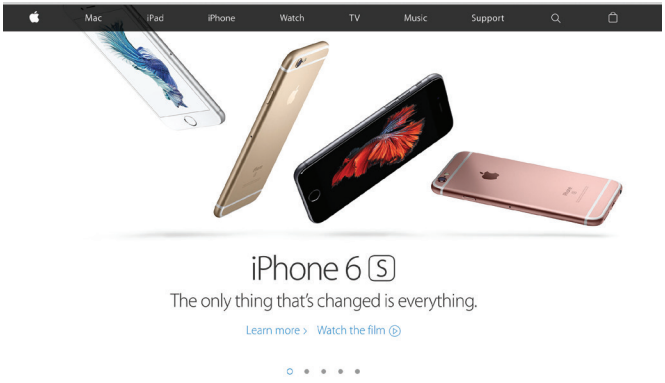


Figure 7: Apple web page 2015

Interestingly enough, Goldsmith references Benjamin's The Arcades Project where he notes that:
in many ways, the way we read The Arcades Project points toward the way we have learned to use the Web: hypertexting from one place to another, navigating our way through the immensity of it; how we've become virtual flâneurs, casually surfing from one place to another; how we've learned to manage and harvest information, not feeling the need to read the Web linearly, and so forth. - (Goldsmith, n.d.)

Figure 8: Kenneth Goldsmith

Conclusion

By re-tracing the history of the flâneur and understanding their initial connection to art, culture, society and technology it is possible to connect how with certain environmental circumstances the need of observation is required in society. When these circumstances change, inevitably the needs of society change and causes the demise of of what once was the flâneur. When society evolves the resurrection of the flâneur happens in the form of a cyberflâneur. With the pattern of the rise and demise the flâneur, it can be debated if the need of the observer is ever truly lost.

The work done by Kenneth Goldsmith with his class, *Wasting Time on the Internet* helps reinforce the ideas that creativity comes from the unexpected and that knowledge can be gained when you do not expect it. Making yourself available to new experiences, observing and your surroundings opens up opportunities for the mind to connect unexpected ideas and concepts. It doesn't seem to matter whether the act of flânerie happens online or in real life – the concepts of what makes up a flânerie are the same; an open public place and the introduction of a new technology.

The internet and technology are evolving so rapidly that the cyberflâneur may never again truly experience demise. Because of this, the ideas generated and posted online create another iteration of development to be observed and experienced by the modern flâneur.

In its current state, the internet might continue on forever, offering a place for innovation, public space, behavioural observation and creativity, where new ideas will be posted and reposted and shared which will restart the cycle all over again. As Chun Wei Choo states in her article, *The Art of Scanning the Environment*, the idea of environmental scanning is a form of undirected viewing. Undirected viewing can be used by organizations to search out and "detect signals of change early" to help "develop effective responses that secure or improve their positions in the future" - (Wei Choo, 1999).

This concept maps very closely to the idea of the flâneur and flânerie. The activity once perceived as a form of wasting time is now starting to be recognised by organizations as a tool to help identify and react to changing external environments and help them plan for future growth.

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Picture of Walter Benjamin. Retrieved October 5, 2015, from https://en.wikipedia.org/wiki/Walter_Benjamin

Screenshot of Apple 1992 (made on October 4, 2015, from …) Screenshot of Apple 2015 (made on October 4, 2015, from http://www.apple.com/)

Scenario Planning Technique

Alex Rice-Khouri
Hammadullah Syed
Nimrah Syed
Ling Ding

PART1: INTRODUCTION

1. Definition

Scenario planning, also called scenario thinking or scenario analysis, is a strategic planning method that some organizations use to make flexible long-term plans. When the method started, the word "scenario" typically referred to futuristic Hollywood movies. (Bishop, et al 2007).

The term 'scenario planning' represents all of the capabilities, processes, resources and tools involved in identifying, analyzing and communicating future scenarios selected for their likelihood. Organizations or individuals use scenario planning to support decision-making, predict possible future events and imagines the possible states their system or enterprise could fall into. It helps scenario planners to open their minds and rethink the blind spots we all ignore, to better plan for the future, and safeguard against potential challenges. Because it is more flexible, adaptable and capable, practicing the technique provides both short-term and long-term planning horizons.

"In preparing for battle, I have always found that plans are useless but planning is indispensable."
-Dwight D. Eisenhower

Figure 1: General Dwight D, Eisenhower (1943)

2. Scenario planning innovators

The practice of scenario planning originated in the 1950s when government agencies in the United States and France started using it to make policy decisions whose effects would last for decades (Bradfield et al.,2005; Grant,2003).

Herman Kahn first used the term "scenario" to describe the future stories that he and his research colleagues developed. In the early 1960s, as a military strategist and system theorist, he worked at RAND (Research And Development): a non-profit company that helped the US air force develop the practice of scenario analysis and prepare for potential attacks from the enemies. Gradually, he refined the process so it could work for business forecasting as well.

Mr. Kahn gained his fame from famously unclear strategies. He encouraged people to 'think the unthinkable' and stressed that scenarios were not predictions of the future, but approaches to explore many possible futures. Pierre Wack gave the first big push to launch scenario planning as an organizational model for foresight planning. As a scenario planner in the London office of Royal Dutch, later renamed to Shell Oil Company, he and his colleagues scanned the environmental factors and did in-depth research to see what might influence the price of oil in the future and face the challenges of uncertainty. In October 1973, Shell was the only oil distributor prepared for the oil price shock, driven by OPEC oil embargoes and a 400% price hike. With the help of scenario planning, Shell became the second largest, but most profitable oil company a few years later. Shell's success with the scenario planning process encouraged numerous other organizations to begin planning for the future. By 1981, 38 percent of the Fortune 1000 companies reported using scenario planning as a foresight strategy approach. (Linneman and Klein, 1983).

Scenario planning is a discipline for rediscovering the original entrepreneurial power of creative foresight in contexts of accelerated change, greater complexity, and genuine uncertainty.
– Pierre Wack

Figure 2 : Interview with Herman Kahn, author of On Escalation, May 11, 1965

Where Wack transformed the technique, Jay Ogilvy brought Scenario planning into public attention. A professor at Presidio School of Management, he taught the methodology in its current state. As the co-founder of the Global Business Network, Ogilvy and his colleagues Peter Schwartz and Napier Collyns, former heads of planning at Royal Dutch Shell working under Wack, Stuart Brand, creator of the Whole Earth Catalog, and Lawrence Wilkinson, former president of Colossal Pictures, leveraged the Global Business Network to expand the scale of the practice of scenario planning to a range of people, from artists and musicians to business leaders and philosophers.

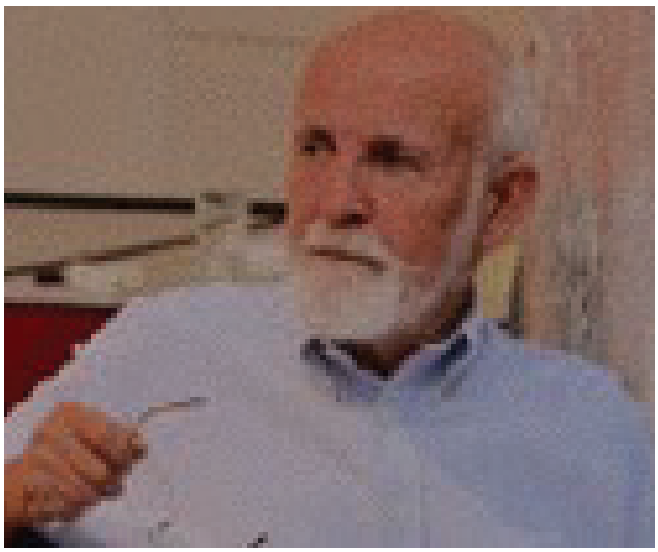


Figure 4: Jay Ogilvy. Former Dean of Presidio Graduate School & Co-Founder of Global Business Network

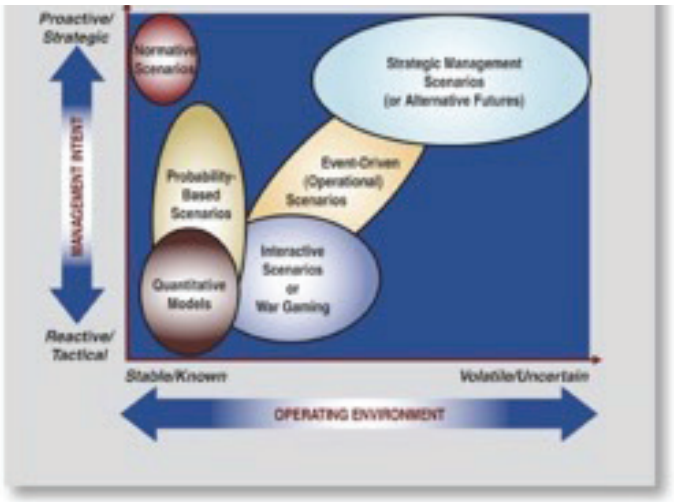


Figure 5: Categories of scenario planning

3. Scenario planning categories

According to the KPMG Managing the Future report, scenario planning can be divided into four different categories:

- Quantitative
- Multi-Dimensional
- Event Scenarios
- Strategic Scenarios

Quantitative scenarios describe the future in terms of relatively hard facts and numbers. They typically embody potential best and worst case outcomes. They can reflect a short-term planning horizon or analysis of high impact/low probability events over a very long term amount of time. They are often derived from situations or events that have already occurred, or are still in process.

Quantitative scenarios usually address financial models, either implicitly or explicitly, and involve concepts like return on investment (ROI). Examples of quantitative scenarios include the effect of weather delays on a project or impacts on a supply chain when the cost of raw materials increase. These scenarios also include stress testing of financial models.

Multi-dimensional scenarios depict futures in terms of multiple, interrelated events and drivers. They are typically economic in nature, using historic data as a guide for future outcomes. The planning horizon is usually short. An example of a multidimensional scenario is the effect on the economy or an organization's revenue performance if, say, unemployment, interest rates and oil prices increase at the same time.

Event scenarios seek to explain how a single significant event can determine the future, often emerging from the organization's external environment. Planning for event scenarios takes place on a near distant horizon, and require proactive thinking over reactive. The emphasis is on learning how to avoid, manage and/or exploit a future event. Examples include the Icelandic volcanic eruption and the oil spill in the Gulf of Mexico.

Strategic scenarios describe possible futures in broad terms. They are essentially proactive and reflect a long-term planning horizon. Strategic scenarios could include, for instance, the effect of the introduction of the iPhone on a mobile phone manufacturer.

PART 2 METHODS
A How-To Guide

1. INSTRUCTIONS

You can run a scenario planning exercise on your own, but pooling many people together with diverse perspectives, can paint a more accurate picture. Gather a team of 3-6 people, with a representative spectrum of different disciplines, technical expertise, and objectives. Either vote or have experts and leaders frame the exercise; the group will rally to a singular, carefully selected goal. You can include as many people as you like, if you have a structured way to organize feedback. Collaborative documents, web forms, and simple databases work well, depending on your scale e.g. Google Sheets, fillable PDF's, Google Forms, myPHP, etc.

Decide whether you want to brainstorm together or independently (there is always a risk of groupthink from more vocal or senior team members), but log your data independently when ranking factors.

Remember, scenario planning is flexible. You can base your ratings on opinions, informed guesses, or hard data and research, depending how robust you want your prediction to be.

The Process

1. Define your Problem Scope
   (Decide the two most important dimensions)
2. Write a Problem Statement
3. Brainstorm Challenges
   (Around your Problem Focus)
4. Rank those Challenges
   (Across the two dimensions)
5. Plot a 2x2 Scenario Matrix
6. Write a summative Scenario Statement for each of the four cells

1. PROBLEM BOUNDARIES

Before you begin forecasting future scenarios and factors, you must first define the scenario boundaries. Outline the scope of your organization, the time frame, and the evaluators around a problem or theme, to help fit your predicted scenarios. You are honing a general area of focus. As a group, or through leadership, take these threats and decide the most obvious, precise question that addresses the problem area, and summarize the factors that everyone can agree are either highly likely or devastating. You can incorporate several themes, but it's important to decide on the two most important factors. You will use these to construct a matrix later. Consider whether your two factors are more influential than "Impact" and "Certainty"

Group Think: Group Think happens when one outspoken member in a working group with more authority or volume, expresses their opinions more loudly than quiet members, and sways everyone to the same opinion, regardless of whether it reflects group consensus.

2. WRITING THE PROBLEM STATEMENT

You've structured your problem. Now you need to write it. Frame the problematic scenario to your context and your organization. And frame your scenario as specifically and as completely as you can. Phrase your statement as a question and remember that it is a lens to look through and is dynamic. Other problems will emerge from this problem statement, and you need to be able to refer back to it later to focus your results.

For example, we asked:

Imagine you are a leader at Sony. How could DIY circuit prototyping and 3D printed devices disrupt your segment of the home electronics market share?

Alternatively, we inverted the problem statement.
As a Digital Futures graduate, and creator of a fresh startup, how could you compete with the production and maturity of much larger, multinational electronic manufacturers like Sony, Samsung and LG?

In both these cases, a traditionally correct answer might include "exploit the weaknesses/strengths of supply chains," i.e. larger manufacturers can outproduce and out-market small businesses and smaller startups can update products faster and focus more acutely than a multinational corporation can..

An unlikely and equally effective answer could include: "cooperate with" or "acquire" the other company; or "build sustainability" and "build goodwill", to hone a niche advantage.

Tips
Don't: Let the question restrict your generative thought
Don't: Answer your question too conclusively or too immediately

Remember, driving factors change with time. Both obvious, predictable factors, and well researched wildcards can come into play. It is important to think flexibly.

3. CHALLENGE BRAINSTORMING
The next step is generative problem brainstorming. Think of this exactly like normal mind map brainstorming. Prominent ideas will emerge first, and sub-related topics will branch out from these major challenges. You don't need to visualize these as a mind-map, but it could be helpful to do so.

In most cases, you can organize most challenging factors under these key categories:
- Environmental
- Political
- Legislative
- Financial
- Technological

Generating more ideas now means more work later on, but no ideas are bad. No single idea is more important than another, as of yet. Save judgments and pragmatism for the next stage in the process ("Ranking").

If volunteers are doing this process independently, you can always automate it, and collect overlapping answers as a simple estimate of importance. Remember, however, that the unexpected fringe ideas that come true, will surprise most people, and domain knowledge helps to generate expert predictions of rare events.

Tips
Think of both obvious and unusual problems
Don't: Overemphasize any one person's ideas

4. CHALLENGE RANKING
Now that you've generated an exhaustive list of possibly relevant factors, you need to distill them by two major factors. In our Sony vs. DIY example, we

could have chosen company size, ranging from home businesses and startups to multinational. We could have, chosen profitability, technological advancement, or consumer independence as other factors.

Instead, we chose disruptiveness and relevance: impact and probability, the two pillars of scenario planning. Scalable, technologically invasive, profitable, even massively disruptive innovations mean absolutely nothing, if they aren't likely to happen. Human cloning, flying cars, and planetary colonization are simply not a threat. They're not impossible - we're slowly building frontiers in their foundations of genetic sequencing, magnetic rail travel, and astrophysics. However, these issues pose little immediate threat in the short term, outside of popular interest and diverted funding. Conduct a quick ranking by huddling your team of evaluators together. Have them individually rank each item, rating it on the two dimensions you've selected.

E.g. A seasoned lawyer may argue that corporate intellectual property royalties, well kept trade secrets and IP legislation may hold clout over time. A new industrial design graduate may argue that foundation shaking innovation and subtle product variating can overcome these hurdles. One rater ranks IP a 9 for impact while the other is skeptical whether IP will hold up and votes 5. They both agree that IP will definitely come up in the future, and rank it 10 for probability.

When you run scenario planning, your relevant factors are:
(N) Number of evaluators *(t)* Time

How much time will you allocate for Scenario Planning? How many people will you involve?
$t \times N$ = Productive working hours allocated

Running a light, 10 person scenario rank-sort means trading accuracy and thoroughness for quick turnaround responsiveness, catching low-hanging fruit immediately. Running an exhaustive, representative, expertise and data-driven ranking means catching outliers that take competitors by surprise. Either way, don't worry. The four cells are robust enough to help you prioritize items that your team may have misranked. You can always choose one of the remaining three scenarios later, to divert time and effort on.

Tips

- **Accuracy matters:** Assuming you picked a representative group of people not prone to groupthink:
  - 20 people means a significant ±22% margin of error
  - 10 people means a massive ±32% margin of error
  - Use a Sample Size Calculator for any research or forecasting technique you do
  - e.g. http://www.surveysystem.com/sscalc.htm

• **Ratings:** You can rate your dimensions Low-Medium-High; 1-10, or any scale you like.

• **Costs:** You lose a fixed amount of wage hours in the employees you involve, but:
  • Net ROI varies between the costs of running an accurate investigation, versus catching all of the most obvious and second most obvious damaging obstacles.

• **Protection:** Scenario planning pads you against the losses anticipated threats would have cost you.

• **Solidarity:** Like any solid research, Scenario Planning pays for itself in group effort, individual engagement and the intelligence it shares and unifies across a team.
  • **Speed:** Opinions > Expert Reviews > Analysis Opinions take hours; Experts take days; Analysis takes weeks

• **Objectivity:** Analysis > Expert Feedback > Opinions: Trade speed for accuracy wisely

• **Automate:** Automate any data collection you can
  • Google Forms / Survey Monkey
  • Fillable PDFs
  • MyPHP / MySQL

If you need both speed and accuracy, run a lot of people through the exercise quickly at first, get interim results, and then continue through to an exhaustive assessment.

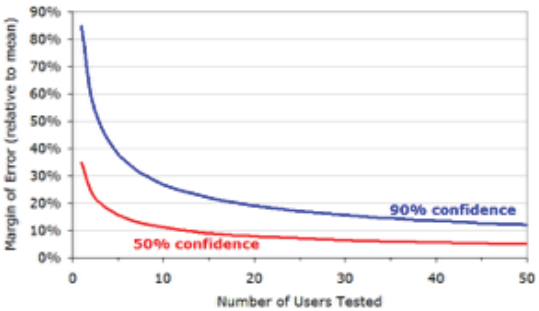


Figure 6: The more people you involve, the more certain your predictions can be.

5. SCENARIO MATRIX

Prepare yourself for a surprise. No matter how intuitive your guesses are, someone will surprise you with a major factor you ignored, and everyone else will weigh in accordingly to round out what makes the most sense.

Plot your points along the two axes, based on how you ranked them in the last step.

Use the ratings your team generated across your entire dataset, to set your minimum and maximum values. Choose either the mean (average), median (middle value between the max and min), or relative or absolute halfway point, and divide into two quadrants.

Note: This is an informal method to normalize the data and account for rater bias. Rater bias is the tendency people have towards extreme (e.g. 1/10 or 10/10) or neutral values (e.g. 5/10), that skews their responses away from their real opinions.

e.g. Our rater averages biased towards results of 6-10, so we chose a range of 5-10, and selected a relative halfway point of 7.5. If we ranged 1-10, 5 would be a logical median.

Identify which factors fall into each of the four buckets.
The top right quadrant in figure 6, scenario one, represents the highest values for each factor, the most probable scenario; scenario two represents likely, trivial events, and scenario four represents unlikely, disruptive events. Scenario planners classify scenario worlds 1, 2/3 and 4 as Probable, Plausible, and Possible futures, respectively.

You can use your graphing software to automatically label individual data points with their cell labels (i.e. find the checkbox to label your points, and select the column of factor names to use for your range). Otherwise, manually label the key driving factors that fit into the scenario world you're assessing first, most often the cell that is high for both factors. You will need to write a succinct sentence, summarized from all of the data points that fall in the grid cell. You will repeat the process with each of the other three scenario worlds.

Tips
The maximum (10.0), and minimum (5.0) ratings in these charts were determined from the ratings we used. You can also normalize your data in a spreadsheet using the 'Average', 'Standard Deviation', and 'Standardize' functions in Microsoft Excel. You would do this to remove any bias in your group towards high values (5-10) or low values (0-5), and to make your data comparable to other evaluations, by making all ranges 0.0-1.0.

Calculate the average and standard deviation of your values, using AVERAGE (A1:AX) and ST.DEV (A1:AX) (where x is the number of values). Then in a column beside your values, in each cell enter "STANDARDIZE(A1,C1, C2) (or wherever you've put your average and standard deviation cells).

6. SCENARIO STATEMENTS
Once you have a world to describe, combine all the probable driving factors into a single cohesive statement about the future. This is your scenario story. Be creative and thorough. This is the main statement to use to pitch new ideas and drive changes in your organization.

In our hypothetical case study, we wrote that:
In a world where social entrepreneurs can use crowdfunding to vet new products blindingly fast; where every device is internet enabled, and technology cycles faster than ever, Sony needs to take advantage of their powerful distribution channels to stay relevant and out-compete startups. Sony must maintain lower prices and better recyclability than custom devices, and start working with big data vendors to prepare for the next inevitable market crash.

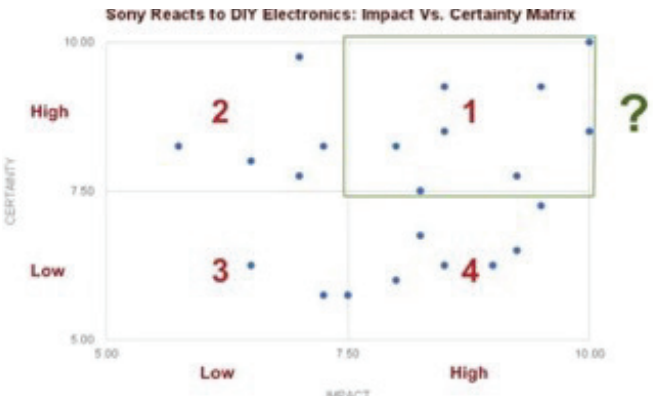


Figure 7: Our sample scenario matrix explores how major electronics manufacturers like Sony are threatened by, and compete with startups and hobbyists in the 3D printing and electronic prototyping movement.

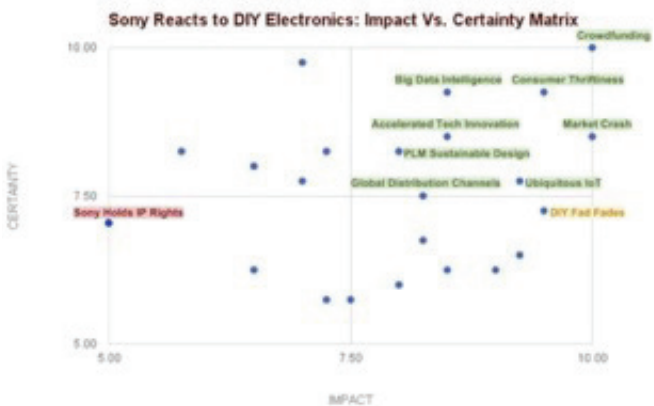


Figure 8: This completed chart describes that crowd funding, consumer thriftiness, big data intelligence, etc. are going to be high impact, highly probable obstacles that will affect Sony in their future relationship with DIY communities, while their ownership of electronic intellectual property (shown in red), will come into play in the future, but won't hold much power (impact) against small, adaptive DIY companies.

PART 3 SHOWCASE STUDY

The most famous, successful case of scenario planning comes from Shell Oil. When experts discuss scenario planning as a foresight method, it is the first case presented. In 1970, world oil prices hit record lows and were expected to remain low. Shell scenario planners considered that oil prices could rise, contrary to both market expectations and the opinions of Shell executives. Traditional forecasting techniques left the team unsure how this rise could occur, so they strategically organized their investigations of the global oil markets into scenarios. They identified a number of tensions and production limits in oil-producing countries and concluded.that, at some threshold volume of oil production, Shell gained more by keeping the commodity in the ground than selling it. This suggested a number of possible changes in the status quo.

"Scenarios give us lenses that help us see future prospects more clearly, make richer judgments and be more sensitive to uncertainties."
– Shell Oil CEO

One of these scenarios envisioned a world in which a coalition of oil exporting countries limited production, driving oil prices higher. This scenario seemed radical, but it was plausible—almost more so than scenarios that did not include a disruption. The scenario planning exercise led Shell to adjust its business management practices to hedge against potential oil price hikes by increasing the efficiency

of its refining and shipping operations. These changes in business practices allowed Shell to respond to fluctuations in oil prices, and more specifically, adapt to a world of expensive oil faster than its competitors.

However, not all scenario foresights address plausible or probable futures. Sometimes, just one or two possibilities stay in the imagination. Consequently, you must control and champion the process of scenario planning to establish more than a guess on paper.

Scenario planning does not set out to predict the future. Instead, it considers a range of possible futures and their potential consequences for the organization, operationally and strategically. Much of its value comes from the planning process itself – encouraging participants to 'think the unthinkable', become intimate with the external environment, and break free of rigid, internally focused mindsets.

PART 4 STRENGTHS & WEAKNESSES

Scenario planning demonstrates many of the positive attributes of group thinking and strategic planning. However, it has its drawbacks.

4.1 STRENGTHS

Scenario planning expands your thought process. Scenarios help justify strategic planning by exploring current trends and future obstacles. It proves that basing research solely on the past may not always yield the best course of action. It divides the future by likelihood, organizing predictions into possible, plausible and probable futures, and forces you to consider how quickly obstacles emerge and how to tackle them.

The broader the scenario planning, the further away the incentives become. Some driving factors are already developing and will branch out predictably. In the long term, these factors have an unstoppable momentum, inevitable outcomes, and can be considered understandable through current observable trends. In emerging scenarios, companies should always look for these predetermined conclusions – especially if they are otherwise largely unknown and unexpected.

It is not known for sure when something may occur or what it may be, however it is guaranteed that we will hit major milestones where you need to re-evaluate the threat.

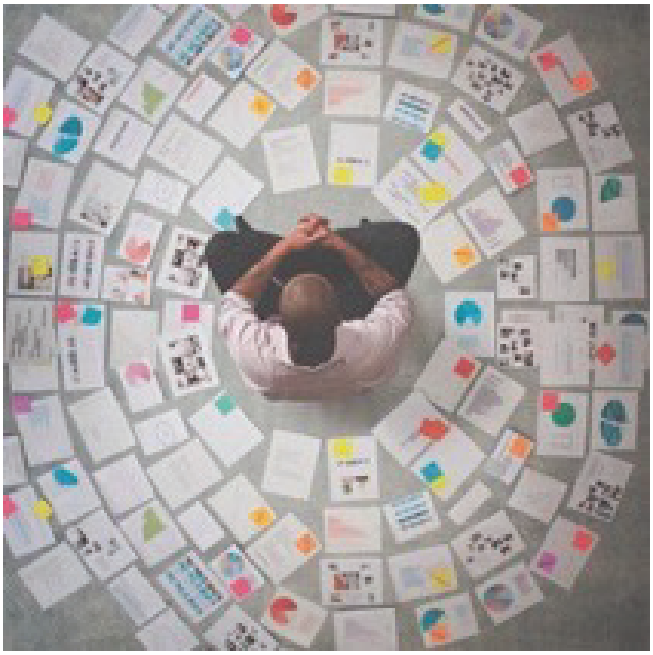
Scenario planning also flattens hierarchical standings. If someone of executive status gives the first opinion, most will usually end up following. With scenario planning, however, it provides everyone within the group the ability to have a voice without the constraints of a seniority driven intervention.

4.2 WEAKNESSES

Creating too many scenarios can obscure the correct action to take. It can sabotage the certainty and clarity you want to distill, creating confusion and conflict of leadership. The performance of the company remains unchanged in the face of the still uncertain future. Leaders who honestly admit this uncertainty, while well-meaning, convey less vision and instill less confidence in their workforce than the foolhardy leader who commands a clear, but misguided, view of the future.

Narrowing your problem scope too much, or succumbing to groupthink in ranking, can ignore critical obstacles. In an effort to be practical, efficient, harmonious, or consistent, small gaps can bring down an entire company based on an ironic lack of foresight. It is difficult to translate the priority of various factors, into several projects and preparations, without overstretching resources.

The eventualities can seem too distant to allocate resources for, and the least likely outcomes seem too farfetched to worry about.



The 'option' to discard potential scenarios as impossible probabilities can lead to a dangerous state of willful ignorance. Never discard a scenario based solely on it's (un)likelihood. Push it aside for more likely outcomes, but draft plans to handle the outliers, and put these plans on a back burner.

ReScenario planning is not an exact science. It is a semi-quantitative art, where "practice makes perfect." Planners must hone their judgment to the kinds of probabilities that can emerge, rather than

just generating as long a list as possible. This knack for educated guesses, and informed, forward thinking is so powerful, some of the wealthiest venture capitalists have made their entire fortune by second guessing common knowledge.

"Venture capitalists with a knack for 1,000x [ROI] know that true innovations don't follow a pattern. The future is always stranger than we expect: Mobile phones and the Internet, not flying cars…"

"The biggest outcomes come when you break your previous mental model. The black-swan events of the past forty years—the PC, the router, the Internet, the iPhone—nobody had theses around those."
– New Yorker Journalist Tad Friend, interviewing capital investor Doug Leone

PART 5 RELATED METHODS

1.MIND MAPPING:

Mind mapping is a creative tool for building a radical structure around a central subject from many scattered concepts and subtopics. Mind maps represent associations in terms of words, images, numeric values, or graphics to develop and explore an idea. Since pictorial representation combined with words has six times better information retention than words alone, the visual thinking behind mind mapping is more effective than Brainstorming or other linear note-taking methods. This critical technique used for ideating and iterating expands the focal point and branches out graphically to more vague concepts. Groups and individuals can both use this method to achieve a deeper understanding of a subject. According to Tony Buzan and Chris Griffiths, co-authors of the book, "Mind Maps for Business", Scenario Planning embodies a powerful application of Mind Mapping. It maps out future scenarios, identifies potential risks and opportunities and generates ideas to prepare and act accordingly.

This intuitive way to organize the thought process leads practitioners to classify ideas, and assist in problem solving, decision making and writing. This time consuming process helps in clarifying, organizing and processing the information in an effective way.

SEQUOIA

2. EXTRAPOLATION:
Extrapolation is the projection of a known data set into the future, unknown territory as a means of forecasting. It assumes that future events will conform to the trends that existing data suggest. For example, if it was 32 degrees celsius today, 31 yesterday, and 30 the day before, we expect tomorrow to warm up to 33 degrees.

"A trend is a trend is a trend. But the question is, will it bend? Will it alter its course through some unforeseen force and come to a premature end?"– Alex Cairncross

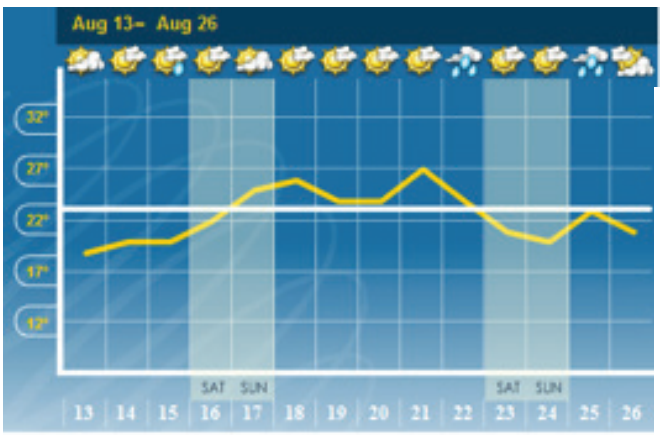


Figure 9: A weather forecast showing a short term warming trend, and an eventual cooling, based on an algorithm of local, seasonal trends and moving weather systems. Weather forecasts are notoriously inaccurate in the longterm.

The further you backlog the data you use, the more accurately you can model your data and predictions. However, Cairncross suggests that for long range forecasting, errors increase the further forward you extrapolate past trends. Extrapolation is best to predict short term futures. By contrast, Scenario Planning offers the forecaster more flexibility to derive various possible future scenarios, and create a farther sighted and open approach to tackle what may come to be.

3. WILD CARDS:
"A wild card is a future development or event with a relatively low probability of occurrence but a likely high impact on the conduct of business" (BIPE et al. 1992, p. v)

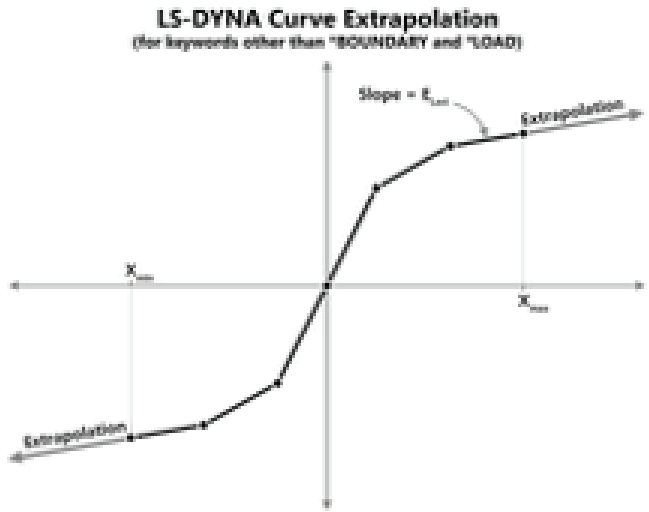


Figure 10: an example of extrapolation, projecting forward and backward past x

A Wild Card is an effectively open ended technique that takes counter-intuitive system behaviour into account. The technique estimates the susceptibility of a fixed (usually current or consistent) scenario to external disruptions. It is more of a group approach to help brainstorm and elicit an imaginative plausibility that stays as close to the original reality as possible. Although Scenario Planning devises multiple scenario outcomes, Wild Cards, on the other hand, prompt you to recognize alternative solutions and broader horizons of one potential future. It is considered to be a "Strategic Surprise" by Igor Ansoff, Father of Strategic Management, and asks you to role-play how all parties might react to the unlikely wild card scenario.

4. SWOT:

A structured planning method, SWOT offers a useful tool for Brainstorming and Strategic Planning. This method puts the strengths, weaknesses, opportunities, and threats of a business into a holistic perspective. It provides businesses a clear view of the advantages they have over their competitors and their possible vulnerabilities. Based on the analysis, SWOT helps to identify the strengths and weaknesses of the organization to capitalize on the opportunities and minimize the risk of threats. It is used by business owners and managers to provide the organization with a clear focus.

SWOT works best when the trend lines actually predict the future. It does not work as well when faced with disruptive innovation, regulatory upheaval, or unexpected competitive actions. It is a business planning tool, while a strategic plan is an overall business proposal.

Scenario planning and SWOT analysis should be viewed as complementary with each process informing the other. Scenario planning emphasizes many of the same Weaknesses and Threats in SWOT, projecting them further into the future. Scenario planning better serves long term goals whereas SWOT promotes reactive thinking towards the near future. Comparatively, SWOT can be a short sighted approach when it comes to practical applications in a business.

PART 6 CONCLUSION

Most scenario planning does not try to explicitly predict the future, but outlines the most likely of possible futures. The Scenario Matrix, and its main components - *driving forces, critical uncertainties, plausible scenarios, paths and solutions* - helps to organize your approach to future planning, and opens your mind to any blind spots in how your project fits in the larger world context.

Prioritized incorrectly, scenario planning can pull you in unnecessary directions, and dilute the clarity of your project. Combining loose mind mapping, creative problem solving, and thoughtful ranking, scenario planning helps you divide predictions into possible, plausible, and probable futures. It forces you to consider how you'd tackle otherwise unanticipated problems.

Scenario matrices are more subjective than the algorithms and data behind extrapolations and forecasting, and more structured than SWOT analyses, offering a middle ground between the two. Scenario plans (42%) are in the top four most

Figure 11: A SWOT analysis, with its four elements in a 2×2 matrix.

popular foresight methods, along with literature reviews (54%), expert panels (50%), and trend extrapolations (25%) (Popper 2008). They offer intelligent, consensus based future scenarios, parcelled into meaningful, narrative vignettes that can bring entire teams on the same page.

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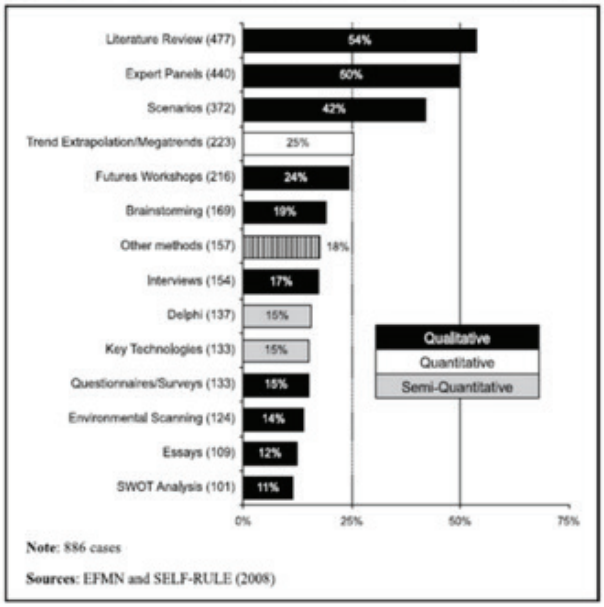
Appendix

A. Natalie Wippel, a researcher at Volkswagen (2008), cited this chart from Rafael Popper's international research on the most popular foresight techniques across countries. It highlights that the majority of forecasters conduct scenario planning almost as frequently as they consult published research journals and panels of experts; almost twice as often as they run analytical trend extrapolations.

B. Our research group addressed the question: "As a corporate electronic manufacturer, spanning a wide range of appliances, smartphones, and computers, how would Sony prepare for the disruption of the do-it-yourself rapid 3D and electronic prototyping boom, and the startups it generates?" We came up with a list of 23 factors, categorized them by their sphere of influence (organizational, industry, world), and ranked them to generate the scenario matrices in Section 5. The highlighted yellow factors represent the most probable and impactful factors.

C. We polled the 2015 cohort of first year Digital Futures students to list driving factors, they thought could be relevant in the DIY vs corporate electronics manufacturing case study. Many of the challenges generated added to our scope, while some overlapped with our list (eg. Brand reputation, sustainable design/materials, and material shortages). We did this exercise to teach the concepts of scenario matrix planning, and to demonstrate how adding more scenario planners can generate a more exhaustive set of obstacles.

Figure 5 Nature of most commonly used foresight methods — Popper (2008)



	Imagine you are working at Sony. How will DIY arduino electronic prototyping and rapid 3D prototyping startups disrupt your market share of home electronics in 2040?											
	Scenario 1: Key Factors		Impact					Certainty				
			Alex	Ham	Ling	Nimrah	μ IMPACT	Alex	Ham	Ling	Nimrah	μ CERTAINTY	Combined
Organizational	**Driving Factors**	**Category**											
	Employee Salaries require change (cuts/hiring)	Economical	10	8	5	5	7.00	9	5	10	7	7.75	14.75
	Store closures	Economical	6	10	7	6	7.25	8	8	9	8	8.25	15.50
	Professional Expertise	Technological	7	10	3	3	5.75	7	8	9	9	8.25	14.00
Industry													
	Brand Status/Exclusivity (sony has it)	Social	6	3	10	7	6.50	8	6	10	8	8.00	14.50
	Consumer Thriftiness (Value/Price expectations)	Economical	10	9	10	9	9.50	10	9	10	8	9.25	18.75
	Supply chain / Distribution (sony has it)	Economical	9	8	3	8	7.00	10	10	10	9	9.75	16.75
	Manufacturing costs bottleneck sales/production	Economical	8	4	7	7	6.50	9	3	7	6	6.25	12.75
	Sony holds Intellectual Property rights	Legislative	4	5	5	4	4.50	9	7	5	7	7.00	11.50
	Artificial Intelligence develops	Technological	4	7	10	9	7.50	7	6	3	7	5.75	13.25
	Devices integrate (e.g. personal robots)	Technological	9	8	10	9	9.00	6	9	3	7	6.25	15.25
	Ubiquity of Internet of Things	Technological	10	9	9	9	9.25	10	7	5	9	7.75	17.00
	Big data market intelligence	Technological	8	8	10	8	8.50	10	8	10	9	9.25	17.75
	Social entrepeneurs / Crowdfunding	Social	10	10	10	10	10.00	10	10	10	10	10.00	20.00
World													
	Global distribution of customers	Environmental	10	9	5	9	8.25	10	7	5	8	7.50	15.75
	Economic crisis / market crash	Economical	10	10	10	10	10.00	9	10	5	10	8.50	18.50
	Accelerating Technological innovation	Technological	10	9	5	10	8.50	10	7	7	10	8.50	17.00
	PLM Sustainable design (recycling; Product Lifecycle Mgmt)	Environmental	7	8	8	9	8.00	8	8	8	9	8.25	16.25
	Social interest in DIY prototyping decreases	Social	8	10	10	10	9.50	5	10	4	10	7.25	16.75
	Product life cycle stays short / decreases	Social	9	10	7	7	8.25	9	8	3	7	6.75	15.00
	Customers independent of manufacturers	Social	9	9	6	10	8.50	3	9	3	10	6.25	14.75
	Material engineering: revolutionary new material	Technological	9	7	5	8	7.25	7	6	3	7	5.75	13.00
	Dwindling resources	Environmental	9	7	7	9	8.00	8	6	3	7	6.00	14.00
	Product Demand decreases	Economical	9	10	8	10	9.25	5	8	4	9	6.50	15.75

Brand Reputation	Conflict Minerals	Toxic Trash
Geopolitics	Surveillance	Electricity Shortage
Part Replacement	Warranty / DIY Voided	Product Recall
Hacking	Piracy/DRM	Open Source Development
Agile Methodology	3D Printable Components	Company Focus
Modular Design	Brain Computer Interaction	

Semiotic Analysis

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Overview
Semiotic Analysis is a study of symbols, colours and images as a part of communicative behaviour. It is regularly used by marketing and design practitioners to communicate ideas in a more thoughtful, provocative, and meaningful manner. From an academic perspective, Semiotic Analysis helps decipher cultural trends through a tangible frame of reference in the form of images, pictures and visuals. It provides us with a deeper understanding of collective thought based on how people assimilate visuals.

From the offset, it is critical for any practitioner to understand that any sign or symbol has significance only when put in a certain context. Experiences, knowledge and existing thought provide a framework for individuals to derive meaning from signs, symbols and images.

"The meaning of a sign is arbitrary. In principle, anything could stand for anything else. It is cultural context that frames the interpretation of signs with localized meaning"

Historical Background
Ferdinand De Saussure (1857-1913), a noted linguistic was one of the first scholars to explore the notion of signs and it's relationship to social life. An assembly of his numerous lectures in linguistic studies was published in 1916 by the name of "Course in General Linguistics" where he speaks about the dualistic notion of signs.

He differentiates signs into a "Signifier" and a "Signified". The "Signifier" stands for a sign or symbol that is representative for something else. It is used by a person wanting to communicate while the "Signified" is what the sign or symbol represents, which is interpreted by the receiver of the communication.

Hackley, Chris (2003) Doing Research Projects in Marketing, Management and Consumer Research. London. Retrieved from: http://www.slideshare.net/archanarsingh/semioticanalysis-35643036

Semiotic Analysis

"[…] the key to understanding the structure of the system lies in difference. One sound differs from another sound (as p and b); one word differs from another (as pat and bat); and one grammatical forms differs from another (as has run from will run). No linguistic unit (sound or word) has significance in and of itself. Each unit acquires meaning in conjunction with other units. We can distinguish (p. 29) formal language (Saussure calls it langue) from the actual use of language (which he calls parole)".

According to Saussure, there was no necessary connection between the sign and a single meaning. This sets him apart from previous philosophers such as Plato or Scholastics, who suggested that there must be some connection between a signifier and the object it signifies.

Both terms, *signifier* and *signified* are the key elements in understanding the complete idea. However, it's understanding may differ by the different meanings or considerations given empirically by a person or group.

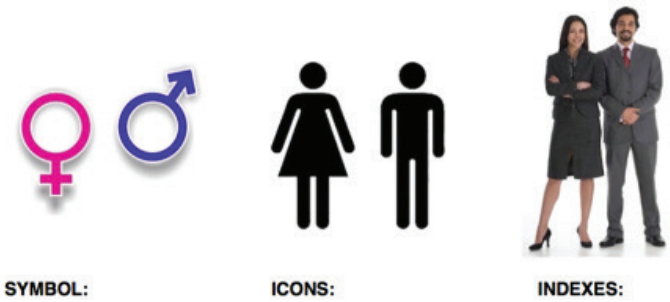
American philosopher Charles Peirce (1839-1914), published his theory around the same time as Saussure in the early 1900's, he proposed semiotics to be the relationship between three different kinds of signs: Symbol, Icon and Index.

Wikipedia. (2015) Charles Sanders Peirce. Retrieved from: https://en.wikipedia.org/wiki/File:Charles_Sanders_Peirce.jpg

- A "Symbol" is sign where the relationship between the signifier and the signified is purely conventional and culture specific.

- An "Icon" is a sign where there is a strong resemblance between the physical and visual representation of the idea. An icon's graphic representation may vary by it's level of abstraction but the abstraction of the idea must be understood by the audience regardless of cultural relevance.

- An "Index" is a sign based on the sensorial characteristic that implies the idea. This can be perceived by our senses. They are signs where the signifier is caused by the signified.



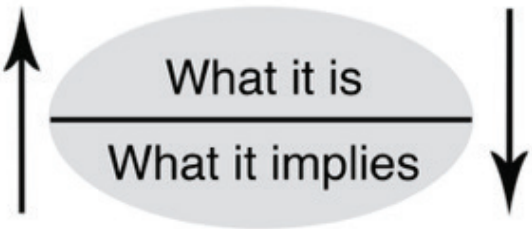
Signs, icons and symbols reference. Retrieved from: https://iceman57.wordpress.com/2014/11/16/week-3-signification-andlanguage-metalanguage-in-context-symbols-icons-indexes/

Signified and Signifier
Saussure defined these 2 terms as

The ***signifier:*** a sign or symbol that can stand for something else. By definition, all words are signifiers as they always stand for something else. A signifier is used by a person wanting to communicate.

The ***signified:*** what the sign or symbol represents - what it is interpreted to mean by the receiver of the communication.

The diagram may be interpreted as the following:

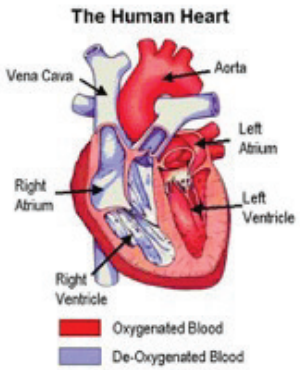


In the following interpretation of the diagram, the signified is a red octagon, this image as the signifier is a well-known stop street sign.

Signifier and signified reference adapted from: https://iceman57.wordpress.com/2014/11/16/week-3-significtion-and language- metalanguage-in-context-symbols-icons-indexes/

Connotation and Denotation

Connotations are the feelings, ideas and cultural meanings associated with a word or object. The interpretation of it's meaning may be empirical or generated and may have positive or negative associations but not literal meaning.



Connotation and denotation reference adapted from: Slide 8. http://www.slideshare.net/MediaStudiesSaltash/semiotics-forbeginners- as-level

Denotation:

A chambered muscular organ in that pumps blood through veins and arteries, maintaining the flow of blood inside the body.

Connotation:

A very popular and well known visual representation of feelings, such as love, passion, romanticism or friendship.

The Connotation of an object or symbol may be arbitrary or empirical; this may be interpreted differently based on cultural context.

A Denotation is the literal or primary meaning of a word, in contrast to the feelings or ideas the word suggests. The meaning of the word is strictly a dictionary definition.

A word or image may have both connotations (suggested associations) and denotations (literal word meanings).

The word heart can be represented in both ways as shown above, even if the meaning and significance of both may be completely different.

Analysis

According to María Acaso (2009)3, the most effective mode of communication is coded through visual language. This system allows people to perceive information through their own point of reference.

This is completely different from verbal or written language as it is self-taught and based on personal perception from cultural background, past experiences and a person's outlook on things.

Semiotic analysis may be conducted by a practitioner to better understand the impact an image might have on an audience by: identifying different aspects within an image, attaching significance to parts of the image and understanding its significance from the point of view of the observer.

Steps followed for visual analysis:

1. Establish the signs within the image.
2. Analyze the current social significance of these signs.
3. Decipher meaning of these signs with relation to social context.
4. Establish precedence by citing examples which use similar signs.
5. Postulate a hypothesis of the possible message.

Movie Poster Shop. (2012) Mirror Mirror. Retrieved from:http://www.moviepostershop.com/mirror-mirrormovie-poster-2012

1. The example shows the image of 2 women, one looking at the other. A predominance of red colour, an apple, a crown, elegant victorian gowns are suggested.

2. The red colour represents virility and the crown and gowns depict royalty. The position of the eyes of one of the female characters represents a sense of envy or confrontation between each other.

3. The position of both female characters at the left and right side of the poster, indicates a subtle tension or antagonism between the 2 characters, the colour red and apple is a clear indicator of feminism, beauty or even health.

4. There is a relation with other fantastic stories, princesses and witches.

5. The poster is advertising the plot of Snow White, the story about a princess and an evil jealous queen.

Acaso uses similar examples to illustrate how best to understand a message through semiotic analysis of visuals. This is best conducted by a practitioner along with a diverse group of people with different backgrounds and perspectives. This helps to create a more comprehensive understanding of the visual through the decodification of the message within the visual.

Case Study : Colour Emotion relationship

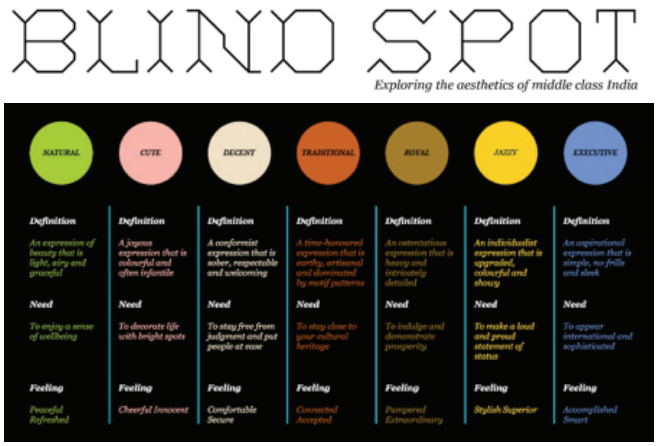
Colour emotion guide. (2013) Retrieved from: http://visual.ly/color-emotion-guided

Brands have always tried to cultivate a certain 'brand voice' through visual language and be able to identify themselves as unique. This is based on a loose understanding of semiotics and an understanding of what other competitors in the market stand for. People understand symbols based on their past experiences and the visual communication they have been exposed to.

Brand image is created over time through various points of communication which repetitively troy to propagate what it stands for. This is represented by a brand logo and the colours associated with the brand.

The understanding of logos and, in turn, their meaning, is based on local understanding. However in a global village scenario, collective meaning transcends local knowledge to a certain degree.

Case Study : Blind Spot



Blind Spot. (2013). Exploring the aesthetics of middle class India. Retrieved from: http://www.blindspot.in/

Blind Spot is a research project which explores the relationship of middle class India with colours and the emotional connotation that every palette of colours and textures have with people. This was done by studying different aspects of homes in middle class India.

Over an extended period of time, the findings pointed to a pattern which connected certain palette of colours with particular feelings and emotions.

They were able to derive 7 categories based on colour palettes and related emotional perception. These were 'Cute', 'Natural', 'Decent', 'Traditional', 'Royal', 'Jazzy' and 'Executive'.

Blind Spot. (2013). Exploring the aesthetics of middle class India. Retrieved from: http://www.blindspot.in/

Conclusion

Semiotic analysis is a qualitative or semi-quantitative method used to better understand visual communication by studying symbols and colours along with their related meaning to a community. It is used extensively by communication and graphic

design agencies to communicate ideas, in an atmosphere where people have extremely short attention spans. From an academic perspective, this technique can be used to gain a nuanced understanding of culture through a breakdown of visual meaning. However, this technique by itself is, to a degree, incomplete because it is based on arbitrary perception of a group of people which does not always correctly represent a community. As a research method, it should ideally be paired with other research techniques such as group discussions and discourse analysis to verify or counter insights based on semiotics.

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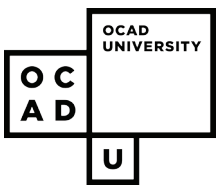

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