

## Chapter 6 BIOPIC INVESTIGATIONS

### Introduction

*Chapter 6* presents the qualitative data analysis and findings of the workshops, as biopic investigations. The analysis is conducted with reference to the research questions and the analysis process described in *Chapter 5*, Yin's (2016) qualitative data analysis cycle without coding. The narratives and findings to follow are derived from the keywords in context (KWIC) analysis (Bernard & Ryan 2010:192) and an adapted recursive abstraction (Polkinghorne & Arnold 2014) to support Yin's analysis stage (disassemble). An example of detailed analysis sheets, including data matrices and biopic narratives are included in Appendix C as empirical evidence of the process.

The chapter is structured in two parts. Firstly, (*Section A*) condensed biopic narrative details that provide background and overview of the four individual workshops by reporting on the main considerations and themes emerging related to impact moments, threshold concepts (Meyer & Land 2003) and the degree of engagement. The analyses situate the plug-in workshop as a disruption onto the active running design project of each biopic. Primary data as evidence include workshop activities, field notes during the workshops and reflective notes thereafter, documented by the researcher and research/workshop assistant(s). Secondly, (*Section B*) the relational biopics that highlight the results and findings as an integrated discussion across the four workshops. As thematic narratives, the discussion searches for 'sense-making' that traces the chronological sequence of the workshop activities in order to highlight the transformative journey of students. The individual threshold concepts identified for each biopic are reassembled as seven thematic narratives emerging from the detailed investigations. Readers who are less interested in the detailed data analysis and considerations of evidence are welcome to skip to *Chapter 7* for the discussion or *Chapter 8* for the conclusion.

#### **The sub-questions inform the analyses in the following ways:**

**sq1:** *How does the insertion of a disruptive action by dissociation as designer, influence meaningful connection and design engagement?*

Shifting the focus from designer perception to user understanding, in an attempt to connect deeper to design challenges, is informed by the problem statements, keywords and vignettes.

**sq2:** *How can the adoption of a human-centred approach expand an empathic understanding when dealing with complex spatial design issues?*

By deliberately considering not only the users' tangible needs, but also intangible or unspoken needs within a specific contextual understanding, by focusing on the making of critical artefacts using second life materials and obtaining peer feedback.

**sq3:** *How does the shift to the insider perspective transform design thinking in students to reveal other design agendas?*

The reflective essay forces students to critically consider different modes of interaction during the workshop engagement. The analyses trace the potential impact on the trajectory to completion of the active studio project and reflects on the post feedback students provide.

## SECTION A – Detailed biopics overview

### Biopics in context

The biopic investigations represent four tertiary institutions, purposefully selected for their spatial design programmes in interior architecture, interior design and architecture. Three South African institutions are included: public university – University of Pretoria (UP), a comprehensive university – University of Johannesburg (UJ), a private college, Greenside Design Center (GDC), and an independent school of art and design, The School of the Art Institute of Chicago (SAIC) as the international institution. Background information of each workshop provides the context for the in-depth analyses, which considers the research settings in the following ways (Morrison in Cohen et al 2018:543), as summarised in Table 6-1.

- Human setting: details and characteristics of participants
- Programme setting: ethos and values of the school, design studio brief, pedagogical context
- Physical setting: description of space, organization and contextual conditions
- Interactional setting: group dynamics, peer interaction and the role of the researcher

Table 6-1: Detailed biopic comparison

	<b>b1</b>	<b>b2</b>	<b>b3</b>	<b>b4</b>
<b>Qualification</b>				
<i>Faculty; Department; Programme</i>	Faculty of Engineering, Built Environment and IT, Department of Architecture (UP)	Faculty of Art and Design, Programme of Interior Design (UJ)	Programme of Interior Design (GDC)	Department of Architecture, Interior Architecture & Designed Objects (SAIC)
<i>Qualification</i>	Bachelor in Interior Architecture Degree	Bachelor Degree Interior Design	Bachelor of Arts Degree in Interior Design	Bachelor of Fine Arts in Studio (Architecture and Interior Architecture Pathways)
<i>Ethos of school</i>	Eco-systemic approach; relationship user-object-space; nested systems; human-centred; practical community engagement; regenerative design; environmentally responsible design	Sustainability, technology and human environmental needs; practice into the city; role of design to improve the world; innovative spatial solutions	“different by design “ philosophy; innovative creative; workplace simulations; functional, user-centred, technologically driven; sustainable; positive impact	“Provocative thinking and Making”; interdisciplinary; self-directed; symbiotic with city and diverse communities; contradictions of living and complexity
<b>Human setting</b>				
<i>Student group</i>	Third year Interior Architecture Students -16 students	Third year Interior Design students -13 students	Third year Interior Design students -19 students	Third and Fourth year interdisciplinary group (IA, A and Fine Arts) -8 students

Programme setting – active studio brief details				
<i>Programme;/typology</i>	<b>Corporate office - workplace design</b>	<b>Neighbourhood convenience store</b>	<b>Energy efficient luminaire</b>	<b>Critical artefact for public display</b>
<i>Context</i>	Virtual office building in Pretoria CBD	Self-selected suburban neighbourhood	Self-defined domestic space	Exhibition context
<i>Project details</i>	Client derived from context; interdisciplinary urban block vision, agile office design principles	National client – real-life simulation; integration of context in design	Prototyping process and detail; PPC concrete material; effect on mood/space	Abstract representation of issues, artefact as provocation; pluralistic research methods
<i>Duration</i>	14 weeks (1 semester)	4 weeks	4 weeks	16 weeks (1 semester)
	<b>b1</b>	<b>b2</b>	<b>b3</b>	<b>b4</b>
Plug-in workshop				
<i>Date</i>	16 August 2018 8:30-12:30	18 September 2018 9:30-13:30	18 February 2019 8:00-12:00	19 March 2019 18:00-20:00
<i>Timing</i>	Beginning of week 3	Week 3	Week 2	Mid-term/semester
<i>Activities</i>	As listed in brief	As listed in brief	As listed in brief	Adapted procedure
<i>Trajectory</i>	Final integrated November exam	Project presentation end of week 4	Project presentation end of week 4, prototyping phase	Final examination and public exhibition
<i>Assistants</i>	Studio assistant as research assistant	None	Studio coordinator as research assistant	Studio-coordinator (co-supervisor) as studio assistant
<i>Data analysis</i>	1-Compile: Sep 2018, Feb 2019 2-Disassemble: Feb 2019, Aug 2019 3-Reassemble: Feb 2020 4-Interpret: Apr-June 2020 5-Conclude: June 2020	1-Compile: Sep 2018, Feb 2019 2-Disassemble: Feb 2019, Aug 2019 3-Reassemble: Feb 2020 4-Interpret: Apr-June 2020 5-Conclude: June 2020	1-Compile: Mar 2019, 2-Disassemble: July 2019, Sep 2019 3-Reassemble: Mar 2020 4-Interpret: Apr-June 2020 5-Conclude: June 2020	1-Compile: Apr 2019, 2-Disassemble: July 2019, Sep 2019 3-Reassemble: Mar 2020 4-Interpret: Apr-June 2020 5-Conclude: June 2020
Physical setting				
<i>Physical setting</i>	Shed-like structures; access to outside; water; dedicated workspaces	Shared model building room; access to outside; group layout	Studio on second floor; shared studio with cluster layout	Shared group studio; multi-level scenario
Interactional setting				
<i>Students</i>	Spontaneous informal engagement	Spontaneous informal engagement	Little interaction between students	No interaction between students
<i>Workshop relation to studio practice</i>	Workshop focus aligns with pedagogical approach of studio master; other ways of engagement expected	New pedagogical approach to studio practice; disruption of the familiar process	New pedagogical approach to studio practice; disruption of the familiar process	Continuation of pedagogical approach to studio practice; workshop used to clarify ideas
<i>Role of the researcher</i>	Trusted insider	Outsider / visitor, students tolerated and embraced unfamiliar process	Intruder / stranger, outsider	Intruder / stranger, outsider (apprehensive to researcher's interaction)

Below is an overview of the main narrative journeys of the detailed biopics, highlighting the major aspects students consider during the workshop, including the influence in the active studio design projects. The researcher's descriptive and experiential narratives contextualise the discussions (in italics). An outline of the disciplinary themes (*what*) *emerging* from the discussion is mentioned to illustrate how the various studio projects focus and guide the nature of the interaction. The four biopics demonstrate that the variety in the active studio projects offers opportunities for threshold concepts (Meyer & Land 2003) to emerge and that these can be different depending on the particular design discipline in which the plug-in workshop is inserted.

## Biopic 1 Condensed biopic journey

*It is 4pm on a cold winter's afternoon. We all meet at the State Theatre's open square for a walkabout through the streets of the inner city of Pretoria. The day is slowly ending, a busy time for city life as people are packing up and storing away sidewalk activities and goods of informal trade. Some streets require us to navigate the high density of people and vehicles, constantly moving, for the last sales of the day must still happen before sunset. Bargaining, negotiation, a fluid state of interaction and transaction. The sounds of the city creep into your being. The last rays of sun disappear as we make our way back to our starting point. It is cold. The city shuts down. In the dark, we contemplate the observations we made – the inability of the city to cater for these basic needs. How static architecture stand unresponsive to the transient nature of life and living.*

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*This first encounter with the immediate context of the workplace design project provides a direct emotional reaction, due to the embodied experience of the context and site. An overwhelming meeting, an assault on the senses, for students unfamiliar with the CBD, but an everyday occurrence for those at home in the city.*

## WALKABOUT experiences and emotional connections

**The walkabout experience is at the heart of the workshop engagement, causing an emotional disruption related to the students' embodied immersion in the context.** The strong impressions elicit very personal responses showing biases and emotional reactions when re-living the encounter. It sets the scene for the unfolding of the workshop investigation. The analysis reveals the preconceived ideas students hold when reliving the event, which is either a positive response, being at home in the city, or an unsettling and unfamiliar experience. Students relate in different voices of dissociation (disconnected or connected) and reveal certain issues as themes, by expressing these as metaphors, with focus primarily on the potential the immediate contexts holds.

### **Themes emerging (WHAT) as conduit for engagement**

- Socio-economic, political and cultural challenges expressed in the city
- Psychological urge for social interaction, emotional well-being
- Inequality and concerns around accessibility, human agency and appropriation
- Small scale encounters – interrelationships between people, identity formation
- Dynamic and social considerations – human focused, over object / solutions

### **What is difficult to transfer from workshop to design project?**

- Links are mostly intuitive without the richness and complexity expressed in the workshop

- Maintaining the connected knowing perspective throughout
- Empathy as driver for design decisions, focus reverts to practical considerations
- Transferring a connected understanding from:
  - o 'empathy to users in context' to deeper understanding of user of the office space
  - o Emotional connection beyond contextual absorption, to programmatic relevance
  - o Ability to relate complex problems beyond selection of client into creative spatial design
  - o Interpretation of own abstract thinking in workshop critical artefact, into spatial strategy for office design with meaning

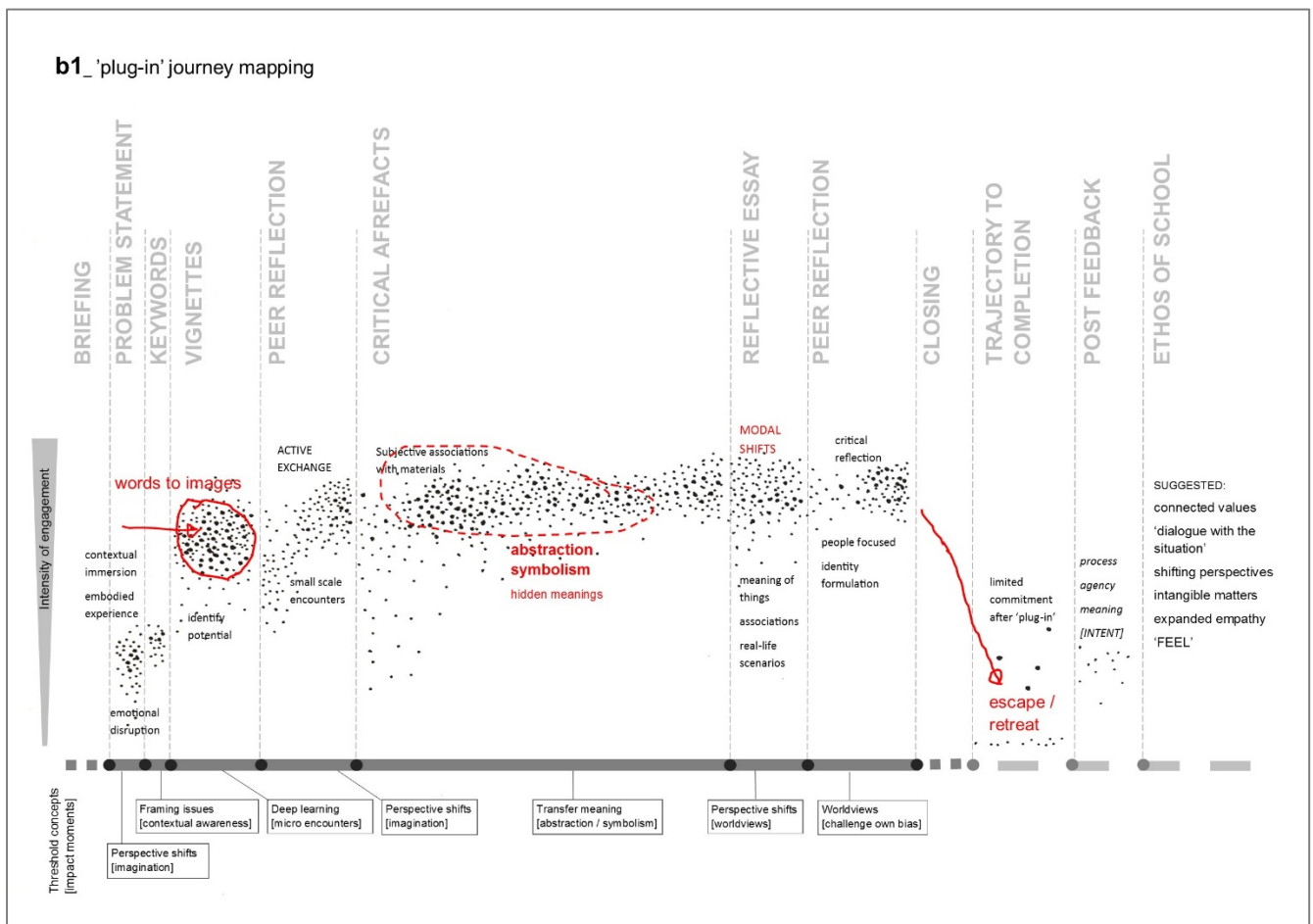


Figure 6-1: b1\_narrative journey

## Summary of Biopic 1

Biopic 1 exposes students to other types of activities through which they can question design aspects, compared to the familiar design process. The four-hour workshop is an 'accelerated' way of finding immersion in design challenges and contextual understanding. The emotional disruption assists with the connections students make during the process, but also causes some to distance themselves emotionally from the matters arising. The workshop engagement shows that students who make critical connections immerse themselves in the activities by imagining themselves as users or urban dwellers.

During the process, emotional detachment leads to objectivity. This attaching-detaching process appears to be the key to completing the larger design project with commitment to difficult design issues, and to integrate the workshop approach and attitude. However, only a quarter of the class demonstrate this path of action. Second life materials introduce opportunities for associations and connotations to extend meanings during the workshop. The challenge remains to transfer a connected design approach to the design project at large. Biopic 1 demonstrates that students, when exposed to other ways of design engagement, embrace the new attitude. The question then arises, how to transfer the newfound attitudes and design agendas into studio projects. The duration of the engaged activities, the time spent on engaged learning, is a topic for further discussion. Could such a short intervention foster true immersive experiences, enough to shift students' thinking and personal worldviews? Perhaps not, as is the case here. However, a quarter of the class show commitment to make the transition.

## Biopic 2 Condensed biopic journey

*I waited outside, until called into the lecture. Today, I was giving the introductory talk to the students for biopic two. As the talk progressed, they listened attentively, and made notes in between. We paused every now and then for a question, or to unpack an issue. The students were engaged and intrigued by the prospect of a workshop, focusing on other ways of design inquiry. The workshop could only be scheduled for two weeks after the lecture.*

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*Students were hesitant when the activities started and I had to put them at ease that this is a speculative and exploratory workshop where there are no 'wrong' answers or responses. It only became known at that point, that the larger design project was entering the last week before the final presentation.*

## PROGRAMMATIC issues and intangible conditions

**During the workshop, especially with the drawing of the vignettes, the emphasis shifts from pragmatic concerns to emotional matters regarding the convenience store.** Initially, the workshop attention is primarily on the typology and programme of the convenience store. However, when students start to imagine themselves as convenience store customers and they consider their own personal experiences as informants, the emphasis shifts. The critical artefact making brings the realisation that issues can be explored abstractly to achieve a deeper level of understanding and subjective associations to the second life materials are actively explored, expressed and shared. The emphasis is repositioned from object representation, to process of inquiry and emotional needs of consumers resulting in deeper understandings into matters not previously considered in similar studio projects.

## Themes emerging (*WHAT*) as conduit for engagement

- Customer focused thinking – physical / tangible (layout, wayfinding, display) and emotional / intangible aspects (social interaction and behavioural issues)
- Experiential design, emotions and subjective meaning-making
- Pragmatic convenience store design concerns

## What is difficult to transfer from workshop to design project?

- Maintaining the connected knowing perspective into the studio design project
- Sustaining empathy as driver into design project – reverts back to pragmatic matters
- From pragmatist to constructivist perspective – students finding emotive voice?
- Is there merit in disruption?
  - o Students acknowledge other ways as valuable, despite their apprehension at the start of the workshop
  - o 'Making' of critical artefacts changed students' experiences from anxiety to an engaged process

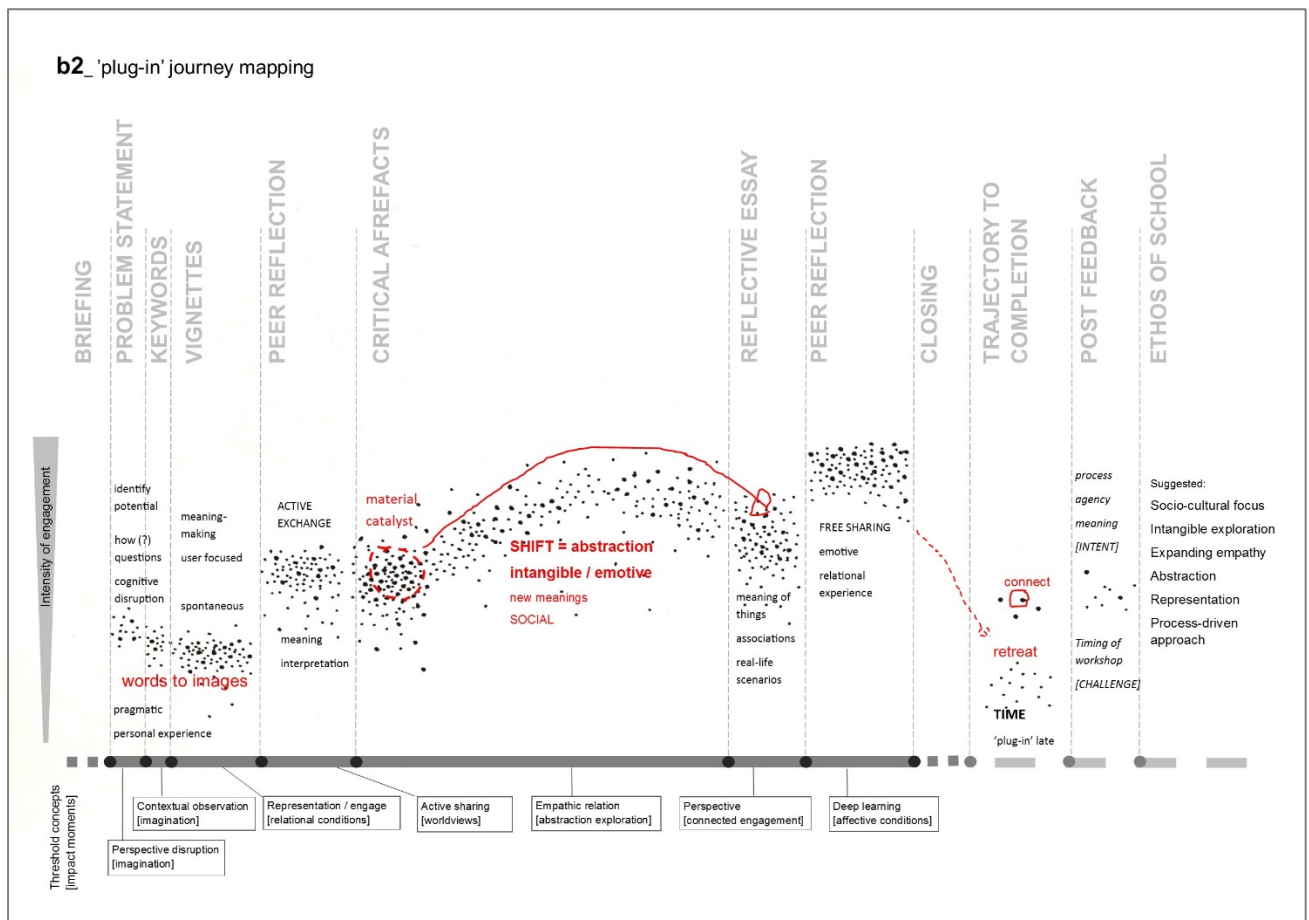


Figure 6-2: b2\_narrative journey

## Summary of Biopic 2

Biopic 2 unlocks hidden design considerations that would not be revealed in the students' normal studio process, by refocusing on emotional and experiential qualities. The challenge in this biopic investigation is to determine the depth of influence of the workshop on the studio project's design interpretation, as the timing of the workshop is not ideal. This compromised the potential transfer of the design approach to the larger design project. What is evident though, is the students' critical reflection at the end of the project, in which they identify that the workshop could offer them more if timed well. This shows that there is merit in the value of the disruption or 'plug-in addition', as students point out awareness of pitfalls of predictability and superficial responses. Although the research does not aim to develop a method, theory, tool or guideline, the sequential activities provide and facilitate moments of pause and focus on specific matters, as a process of breaking down complexities into relatable aspects.

## Biopic 3 Condensed biopic journey

*On a clear summer's morning, I make my way to the studio on the third floor, equipped with four containers, filled with a random collection of second life materials. It is early and the students are still to arrive. I unpack the objects on the centralised table, while the students make their way one by one, commenting on the heavy traffic. They seem comfortable in their own space; I noticed snacks and eats as if it could be somebody's birthday.*

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*I reflect on the week before, when I gave the introductory talk in this same studio, where students did not really have any questions. This morning, with the briefing of the workshop, there also were no questions. When we started the activities, there was no response, students remained stunned and nobody moved – I realised in that moment, the magnitude of the disruption. The next ten minutes, we discussed the events of the weekend, and attempted to relate their personal experiences with the activities of the workshop in the context of the design project, an energy efficient luminaire.*

## PROTOTYPING focus and meaning-making potential

**The initial anxiety is replaced with a quiet intrigue to participate in activities that 'force' other ways of critical and creative engagement.** The immersion in the workshop of biopic 3 increases exponentially from beginning to end. The impact of the energy efficient luminaire project brief is noteworthy, as students are confronted with complex environmental matters, together with the project focus as object creation and as a result, students find it challenging to make connections to the process focus of the workshop. Activities where shift in modes of engagement are required (vignettes and critical artefact making) serve as the catalyst for students to connect deeper and to see the value of

another process emphasis. Students that connect deeper, show evidence of small transformations in individual aspects of the workshop.

### **Themes emerging (*WHAT*) as conduit for engagement**

- Pragmatic focus with material, manufacturing and prototyping of the actual objects
- Inclusivity, well-being and quality of life
- Agency and control over use of luminaires
- Emotive and atmospheric conditions possible through light

### **What is difficult to transfer from workshop to design project?**

- Maintaining the connected knowing perspective
- Empathy and situational awareness as drivers into design project
- From pragmatist to constructivist perspective – students finding emotive voice?
- Is there merit in disruption?
  - Evidence of value in another way to design inquiry becomes visible, albeit understated
  - ‘Making’ changed their experience into an engaged one, with less anxiety
  - Intense cognitive disruption challenge, due to experienced ‘disconnect’ between workshop and the luminaire design
  - Creative disruption experienced as a spontaneous and engaged process

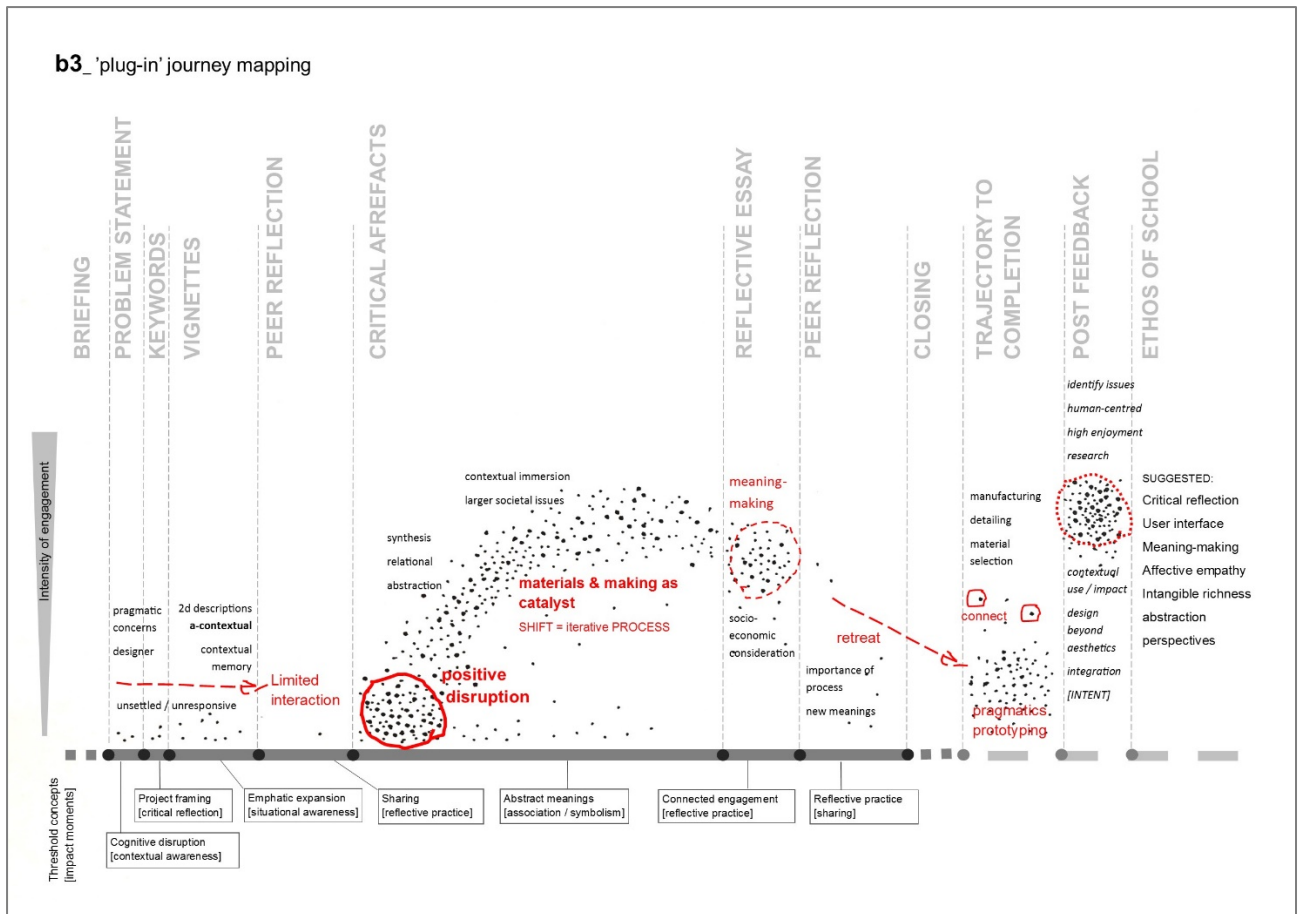


Figure 6-3: b3\_narrative journey

### Summary of Biopic 3

Biopic 3 shows that students experience the disruptive practice intensely, especially at the start of the workshop. It is challenging to make connections between the workshop and the energy efficient luminaire design focus and students delay taking action, due to hesitation, feeling uncomfortable with the unusual design process, or retreating to what they already know and trust. The critical artefact making itself unlocks new energy by shifting modes of engagement (from thinking to doing), which opened the door to exploring deeper meanings and larger contextual considerations. Their situational awareness increases and a connection in the learning becomes visible. The students' reaction through the eyes of the studio master brings another layer of understanding post workshop, that the influence of the workshop need not be 'visible' to make an impact on the trajectory to completion. He observes that students assimilated the workshop attitude into the design project, through research and development 'behind the scenes'. In this way, they internalise an aspect of the approach to design that reaches deeper than the surface. The students consider the design of the luminaire beyond its expression as an object by addressing the spatial effect and affect, by considering not only the physicality of user control, but also the intangible conditions of user agency in design and meaning-making through human interface with the object.

## Biopic 4 Condensed biopic journey

*Chicago, mid-March, it is still very cold and I just missed the freezing polar vortex of two weeks earlier. The many faces of the city is a direct introduction to its contrasts and diversity. The workshop was scheduled for an evening studio session. I found my way to the Sullivan Building, got an entry pass and made my way up to the studio. Thick coats and jackets hung from the coat hooks and hot water awaited any eager takers for a cup of infused tea. Students, already seated, were ready to participate in the activities of the evening.*

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*I transported with me, across the oceans, a collection of second life materials (to be honest, they were simulations of second life materials, newly bought, as not to raise suspicion of strange objects at the airport). We had an open discussion to get the session started, and each student situated their discipline in the interdisciplinary studio, and in short, gave an outline of their project focus. The disruptive project students are grappling with appears to be an agitator. I am eager to see how this workshop will unfold, and what my role in this process will be.*

## ARTEFACT exploration and revealing issues

**The purpose of the active design project emphasises the need to only reveal complex societal matters, instead of solving problems or proposing architectural responses.** The biggest disruption is the provocation of the larger design project, upsetting the students' familiar way of engaging with design. The workshop is absorbed in the project intent, as cognitive, affective and creative agitation to the conventional design process (solving design problems). Students demonstrate two distinct voices during the workshop duration, firstly through complete immersion as a member of a particular community (insider), and secondly, as expressing a distinct opinion and response as a designer (outsider). In the former, students find a personal connection to design issues, which becomes a hindrance, as they struggle to disconnect from the emotional link and with the latter, students express a detached voice and remain distanced from the challenges and never really connect on a deeper level. The notions of under and over immersion, both seem potentially detrimental to the process and impact negatively on the framing of the projects. When a student appears much immersed in a cause, the danger exists that perspective is lost and design potential is not explored. In comparison, when students keep their emotional distance and remain detached, they fail to connect deeply to the issues and as such, only investigate on the surface, as a commentator or observer.

### **Themes emerging (*WHAT*) as conduit for engagement**

- Liminality and transience – the urban condition, connections and thresholds
- Power and control – spatial agency and revised spatial constructs

- Territoriality and presence – to belong, various perspectives
- Making concerns visible

**What is difficult to transfer from workshop to design project?**

- Translating issues into tools for provocation and objects for interaction
- Not solving problems, but only to reveal issues
- Finding the focus of the project and appropriate media for representation

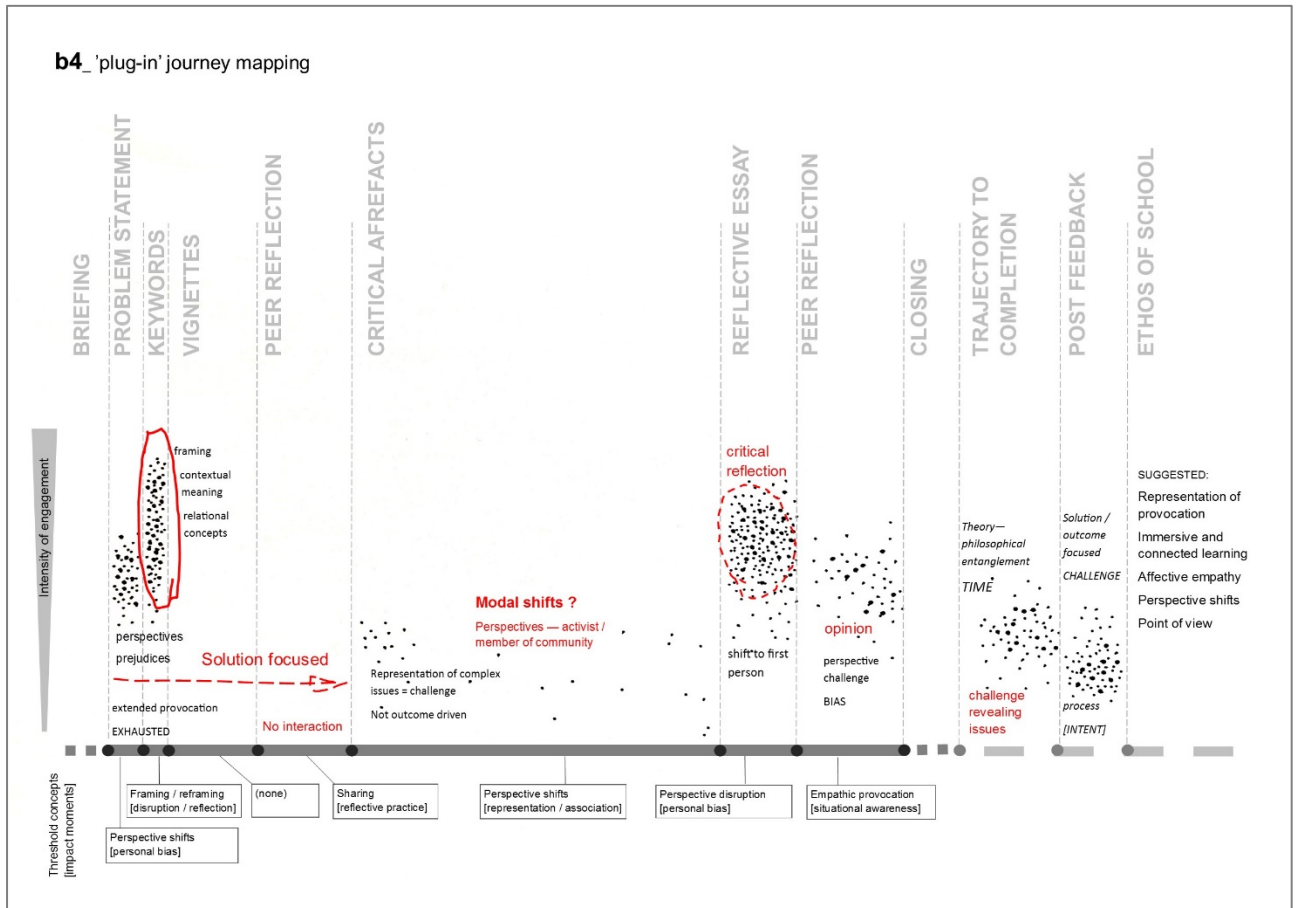


Figure 6-4: b4\_narrative journey

**Summary of Biopic 4**

**Biopic 4 reveals that the workshop has no significant impact on the active design project, which is already a disruption and provocation.** Students trust the unfamiliar process, initially introduced by their own studio leader, although the translation of complex matters into critical artefacts is not a smooth transition. The data reveal students find the shift in thinking from solving problems, to revealing issues, challenging. However, they produce objects or tools as provocation (according to the design brief), instead of solving a problem, which would naturally have been their response. According to students, they experienced a shift; however, it was not always that clear to the external review panel. Aspects

that stand out above the rest in terms of transformative thinking is engagement with the issue, the students' relation to the topic and the frame of reference of the students individually.

The students, who could find an emotional connection to the issues, seem to have internalised the matters more individually (although they could not detach from the process to gain objectivity), compared to those students who remained emotionally detached and disconnected. Furthermore, the question of time and duration is highlighted again. For a project running for 16 weeks, the degree of upset of the familiar design process is significant. It opens the question – which is more conducive to transformative learning, a short four-hour disruptive workshop, or an extended studio project. At the end of the *Critical Artefacts Project*, half the class present the work in a first person connected voice.

## SECTION A – Summary

### Threshold concepts and biopic narratives

The threshold concepts emerging across the four biopics demonstrate a variety of issues in the data produced by the students, which are integral to the transformative learning process. The analyses show a broad scale of exploration, from large contextual meaning, to small-scale situational awareness. The data demonstrates that a disruptive practice unlocks concerns and opportunities not previously considered in the conventional design process. Table 6-2 highlights the main concepts according to Meyer & Land's (2005) categories and show that by challenging existing worldviews and perspectives, new design agendas through connected design potential as small signs of new ways of engaging with design becomes possible. For the consolidated impact moments and threshold concepts of the individual detailed biopics, refer to Appendix D.

*Table 6-2: Comparative threshold concepts across biopic investigations*

<b>threshold concepts</b>	<b>b1</b> <i>SPACE</i> Context specific Self-assigned client	<b>b2</b> <i>SPACE</i> Self-assigned context Real-life client	<b>b3</b> <i>OBJECT</i> Functional Domestic context	<b>b4</b> <i>OBJECT</i> Abstract / provocation Exhibition context	<b>summary</b>
<i>Transformative</i> (shift perception, values attitudes)	Contextual meaning Connected knowing	Customer focused Expand empathetic horizon Critical reflection Peer interaction	Situational awareness Reflective practice	Frames of reference Worldviews, ontological change	Contextual meaning Situational awareness Entry into projects, different scales -user (micro) -worldview (macro) -context (meso)
<i>Irreversible</i> (concepts change)	Perspectives Spatial agency 'feel' and 'act' modes of engagement	Perspectives Choice and agency	Dialogue with self, situation, challenges, process	Spatial agency New design agendas	Process of inquiry - ways of engagement Project focus Frames of reference

<i>Integrative</i> (not previously known, new information or meanings)	'forces' students to confront issues Worldviews Perspectives	Emotional and experiential conditions Abstract meaning-making	Perspectives Meaning-making through engaged learning	Connected-separate knowing Expanding empathetic horizon	Intangible meaning-making Empathy Dissociation -connection to user Engaged learning
<i>Troublesome</i> (reveal previous preconceptions)	Contextual meaning Emotional disruption	Immersive, imagined experiences Programmatic contextual knowing / meaning	Modes of engagement; process-driven Disruptive practice	Disruptive practice – ways of design engagement Discursive design; abstraction without solving problems	Disruptive action -activator, stimulus of positive change Contextual meaning Process of inquiry and understanding -abstraction
<i>Bounded</i> (reconstruct worldviews)	Refocus design agendas Citizenship designers	Awareness of preconceived ideas ['acting on' not yet visible due to late timing of the workshop]	[Spatial agency; citizenship]	Citizen designers Holistic learning	Design ethics New design agendas Citizen designers Agency

Figure 6-5 represents an overview of the plug-in workshops as a visual indicator of the activities across the four biopic investigations, indicating threshold concepts, shifts and modes of engagement

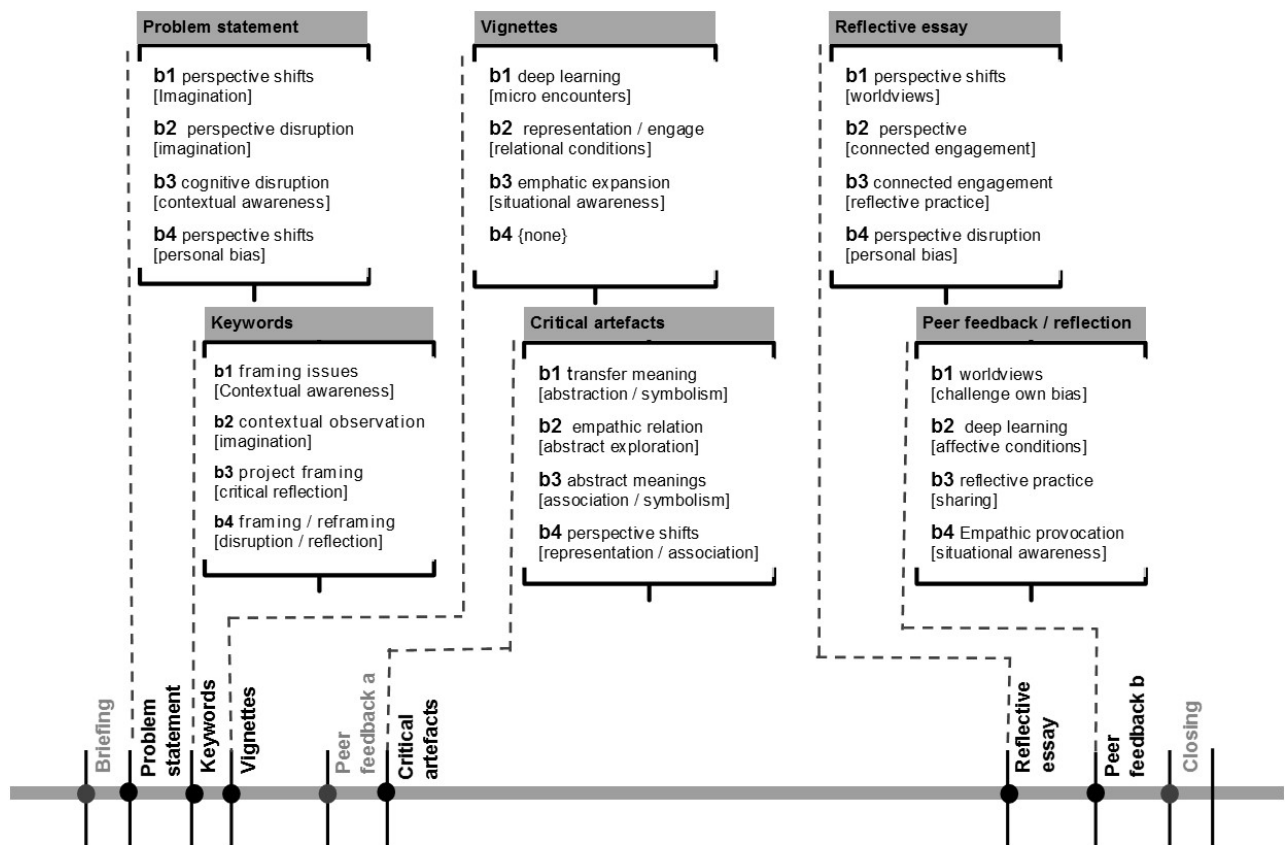


Figure 6-5: Biopic narratives – threshold concepts [impact moments]

## SECTION B – Relational biopics

### Comparative biopic investigations

We therefore need to find an alternative paradigm to problem-solving as the basis of the architectural practice. In an eloquent paper, the planning theorist John Forester suggests that we should replace the normative metaphor of design as the search for a solution with the idea for design as “sense-making” (Till 2009:168).

Relational biopics are discussed as thematic narratives in the search for ‘sense-making’ that trace the chronological sequence of the activities across the four workshops. The individual threshold concepts identified for each detailed biopic are reassembled as thematic narratives in the discussion of the relational biopics to follow. Seven thematic narratives are identified from the summary of the individual detailed biopics’ threshold concepts as points for the relational biopic discussion:

1\_disruptive modes; 2\_levels of dissociation; 3\_empathetic routes; 4\_ways of thinking; 5\_process in action; 6\_developmental transformation; and 7\_challenge : shift.

The workshop activities (problem statement, keywords, vignettes, critical artefacts, peer feedback, reflective essay) form the structure for the discussion. Trajectory to completion of final project, post feedback and the alignment with ethos of the school is added to the analysis to contextualise the findings. In addition, the trajectory to completion of the design project, post feedback, role of the researcher and the ethos of the school are included to contextualise the findings.

### Relational biopic thematic narratives

#### 1\_disruptive modes

The disruptive modes discussion integrates all the experiences that cause some form of disturbance in the students’ familiar studio practice. It includes emotional, cognitive and creative upsets and details how students respond in the context of the workshop.

[problem statement]

*RELATE.* The unfamiliarity of the activities and the need to imagine the voice and experience of another, proves challenging. The need to detach (dissociate) from self as designer is therefore an essential part of the disruptive mode – representing the adopted voice with a conscious awareness and connected authenticity. The emotional disruptive mode relates to a contextual immersion prior to the workshop, where the embodied experience of an environment shows evidence of expanding empathy (b1). Cognitive disruption can be seen where a way of thinking is challenged (b2 and b3) where students consider intangible qualities, and not only pragmatics. The creative disruption has a twofold nature, firstly causing anxiety and apprehension to another way of working that is not part of the daily studio

activities (b3) and secondly, responding to the studio project to create critical artefacts as provocation and not solving a problem (b4), which is opposite to the designer's normal response and practice.

*I'll never feel at home in my city; between all the hustle-bustle of everyday life, where we're all running through spaces, we never get a chance to give a wave and utter a word. I'm alone, always on the run to get away from home and go home... (b1\_Christi).*

*My main concern is how the customer interacts with the space provided / designed for them. How they take to the space and their worries and concerns about the space. Another concern is the location, because the user might feel familiar with the store and what it offers ... (b2\_Suphumelele).*

*What are the main things I as a person look at when I experience something? Is it actually a concern? Or just something we have to take under consideration? (b3\_Lisa)*

*My greatest difficulty is to think abstractly. My personality and background usually push me to suggest solutions rather than just pointing out the issue (b4\_Alba).*

Regardless of the nature of the disruption, responses are related to the specific studio projects in which the workshop is inserted. Be it a new and unsettling experience (b2 and b3), or unknown, but strangely familiar due to prior exposure to abstract association (b1), or the continuation of a longer disruption within an educational context where provocation is part of the ethos (b4). In the case of the latter, the workshop has no disruptive impact, since the studio project is unsettling in itself.

[keywords]

*REFINE.* Distilling the essence of the problem statement relates to a critical reflection, by refocusing using certain keywords. This is a significant cognitive disruption where the initial interference causes anxiety and apprehension (b3). Keyword identification also leads to seeing potential by seeing beyond apparent problems (b1). In the case of a continued disruptive practice, reconsidering the essence of concern is related to refining the problem. It becomes an iterative process (b4) (Table 6-3).

- *isolated, detested, dead, the past TO mind-set, transcending, spirit, equality, fairness, community*
- *vulnerable, isolated, absence, escape, dilapidated TO support, kindness, co-exist, vital, enlighten, stitched, hub, activated (b1)*

Table 6-3: Keyword refinement (b4)

Initial keywords	Revised keywords
<i>tolerance, reflection, quietude</i>	<i>acceptance/tolerance, identity, presence</i>
<i>enabling, disruption, control</i>	<i>control, power, subversion</i>
<i>contingency, folding as framing, liminality</i>	<i>rhythm syntax, typology</i>
<i>standardization, regimes of desire, fear and power</i>	<i>control, truth, identity</i>

[vignettes]

*CONNECT.* Vignette drawings present a creative disruption and require making critical links between the thinking modes preceding the representation of scenarios described in text, with illustrative vignettes. Students primarily relate words and images through their contextual understanding of the various studio projects by illustrating the interrelation between people, object and space. The vignettes express

experiential qualities, social and contextual matters, meaning making, conditions of being and small scale scenarios (b1, b2 and b3). In contrast, students showing hesitation or superficial engagement, express a-contextual, two-dimensional diagrams and shapes with no relation to people (b2 and b3). No vignettes are considered in b4. Refer to Figure 6-6.

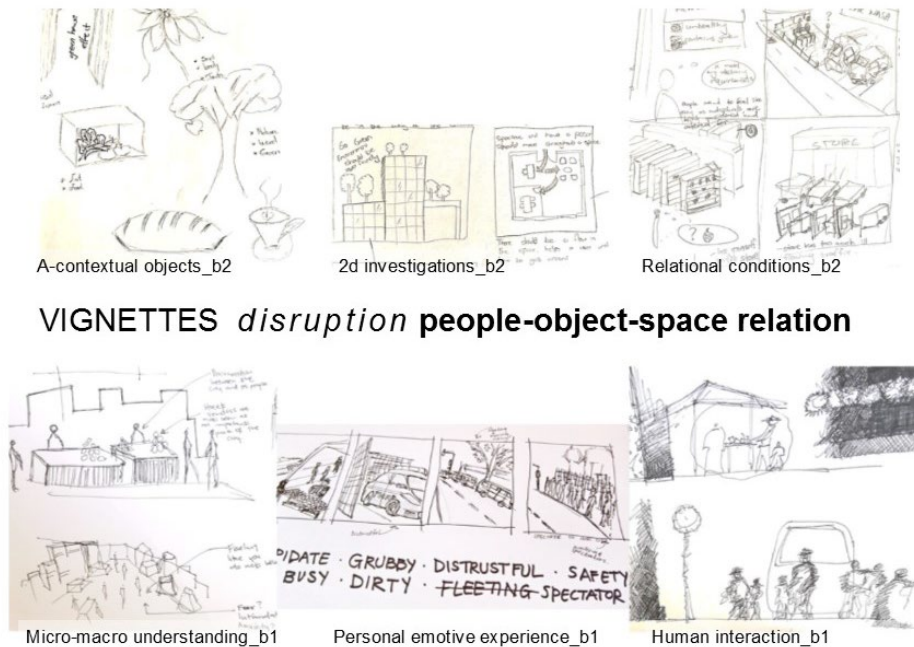


Figure 6-6: Vignettes and disruption

[critical artefacts]

*IMMERSE*. The making of critical artefacts poses two challenges: ‘what’ and ‘how’ to make – what is the message and how to represent it. Those familiar with abstraction find intuitive links to material associations, albeit spontaneous and expressive, or hesitant and unsure (b1). Students are exploring deeper interpretations with increasing confidence, as second life objects become a catalyst for engagement, where symbolic representations are emphasised (b2). Where students are anxious and apprehensive at the start of the day, the ‘making’ process becomes an icebreaker, a positive disruption, a relief – due to the intrigue and potential of the unfamiliar materials students feel ‘forced’ to use. As creative disruption, it opens a new way of design inquiry, to find their own voices (b3). ‘Making’, as part of a continued disruptive practice, speculates about what materials could represent: metaphor and /or analogy (b4). Refer to Figure 6-7.

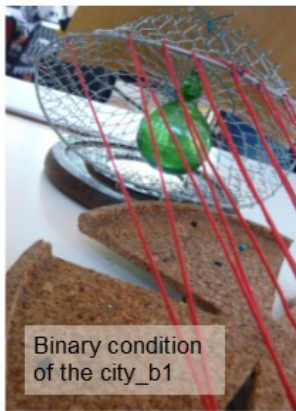
These cognitive and creative disruptions are embedded in the workshop requirement for the critical artefacts to be abstract in nature, revealing issues considered thus far. As provocation, responses are charged with direct metaphor and explorative analogy, using second life materials embedded with prior meanings. Students embrace the opportunity to create new meanings and to re-interpret old objects and materials, in dialogue with one another, revealing new associations and connotations.



**CRITICAL ARTEFACTS** *disruption* **second life materials**



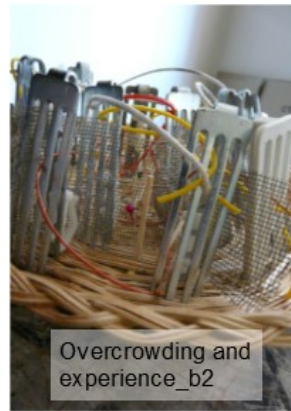
*Process of abstraction*



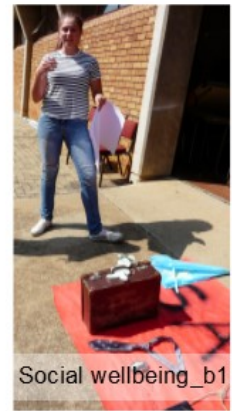
Binary condition of the city\_b1



Self in the city\_b1



Overcrowding and experience\_b2

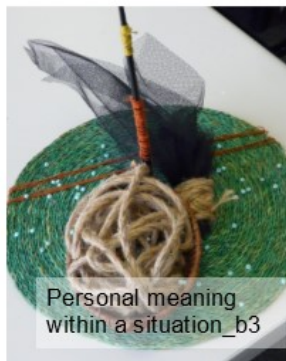


Social wellbeing\_b1

*Representation of issues*



Personal meaning of home\_b2



Personal meaning within a situation\_b3



Meaning of a wall\_b4



Safe community\_b3

Figure 6-7: Critical artefacts and disruption

[peer feedback]

SHARE. Noteworthy in the peer feedback is reference to deeper meanings, symbolism and abstraction, as the biggest provocation. Especially where the representation of abstract thoughts as continued disruption becomes strained. The process in itself then becomes a disruption (b4). Another explanation for this occurrence is the new and unfamiliar process, which stifles student engagement (b3).

[reflective essay]

DISTILL. Reflective essays consider the workshop as a whole and are informed by the larger context of the various studio projects. Disruption as emotional upset emerges when students are faced with socio-economic and other contextual issues that are real-life scenarios and conditions. These experiences are either embodied or imagined and reveal aspects to students not normally part of a studio project. The ways in which students connect or detach from these experiences become important to how they relate to the workshop and the studio project. Students are able to assume a position of the user, albeit through observation (detached), or immersion (connected). The challenge remains for the articulation of problems beyond problems, especially when the experiences are intensely personal (b1 and b4).

*The workshop assisted in creatively consolidating how one feels within and about the CBD from an outer-designer perspective. The lack of parameters allowed for the much needed awakening of creative juices. It provided a means to understand and reflect on critical elements that have been avoided with the CBD. With the creative approach it manage [sic] to create clarity (b1\_Wraz).*

The issue of representation remains a point of discussion, translating ideas into abstract objects (b4). Student responses reveal that when the critical artefacts are used as a process to explore, without any expectation to achieve something, the result is more spontaneous and beneficial to the learning process (b1, b2 and b3). Comparatively, when the studio project criteria already require the making of critical artefacts as objects for public display, the workshop process is not as conducive for investigation. The process of representation and the exploratory process become forced and engagement becomes predictable and superficial, as students are trapped in the issues (b4).

*The project work will begin to explore the answers to these questions without attempting to fixate on a single architectural solution. This work also aims to make the question and speculative propositions visible (b4\_Derrick)*

Students reflect on cognitive and creative disruption as ways of thinking and acting. The workshop requires other points of departure, other perspectives, to what is traditionally known to students in the spatial design studio. The 'out of the ordinary' modes of inquiry therefore enable various other 'pivots into' or 'handles onto' the workshop to broaden the mind and foster a connection to issues (b2 and b3).

*The design process / workshop for me was a step-by-step process of enquiry and curiosity and following that up with exploration without the end goal of finding a solution, but rather with the end goal of seeing where my hands would naturally take me. This gave me some clarity ... (b3\_Neo).*

## [trajectory to completion]

*INTERPRET.* The disruptive workshop process does not have a deep influence on the trajectory to completion of the studio projects. The embodied experience and emotional disruption of the inner city immersion and the workshop activities assist students to select clients for the workplace design project. Limited further evidence is visible, except for three students reported by the external examiner (b1). The cognitive disruption furthermore addresses design problems in b3, focusing on the purpose of the luminaire design to make small differences in the life of the user, beyond task light or atmospheric lighting, as noted by the studio coordinator. The main disruption in b4 is to reconsider the goal and aim of the studio project – critical artefacts as provocation. In the process, students ask critical questions in order to bring issues to the surface. As such, their attitudes and understanding of the issues shift on paper. However, according to the external examiner, the built artefacts for the exam demonstrate a stagnation in the trajectory of development (b4). Students share that the requirement for abstract interpretations proves challenging at first, but then becomes a way of informing the creative expressions in the active studio design projects in small ways (b2).

## [post feedback]

Students embrace the creative and cognitive disruptions as ways of dealing with complex problems, providing new avenues for abstract representation, impelling them to find another way of expressing themselves on behalf of others (b1). The realisation that things can have different meanings and not only have a physical representation, opens up an understanding and realisation that objects can be used and interpreted in different ways to what it was originally intended. This is evident where students use abstract material associations to create meaning in critical artefacts (b2).

*The materials used in this process made me think about them in a different way and understand that I should not limit myself to what I know and what they are made from. We can change the uses of a material and make something amazing out of them (b2\_Lyse).*

Initial apprehension and anxiety were replaced by an awareness of other's views and perceptions. The workshop shows that other ways of thinking and making are possible in the context of a design studio, which are enriched by the views of users and peers (b3). The provocative nature of the engagement proves the most perplexing. The recurring factor in b4 remains, to consider no intension for solutions, instead, only to reveal issues or give social commentary through the artefacts.

## [role of the researcher]

The presence of the researcher and the acceptance of such a presence in the workshops has a direct effect on the unfolding of the biopics, and responses vary according to the students' association with the researcher. The effect of these interactions on the nature of the engagement with the process is noteworthy, and summarised from field- and reflective notes and data as evidence in Table 6-4.

Table 6-4: Role of the researcher

<b>b1 – trusted insider</b> known to students as studio master:	<b>b2 – outsider</b> students tolerate the activities and give gratitude and acceptance in the end
Spontaneous participation, peer discussion	Researcher introduced, and presents introductory presentation of workshop purpose (two weeks prior) Interactive engagement
<b>b3 – stranger and intruder</b> initial apprehension and mistrust	<b>b4 – stranger and outsider</b> researcher treated aloofly and with apprehension
Researcher introduced, introductory presentation (one week prior to the workshop); studio master engaged on behalf of the students Students express enjoyment replacing their earlier apprehension to the studio master.	Researcher introduced as workshop facilitator (mid-term informal evaluation), in conjunction with trusted studio master Researcher experienced feeling like an outsider/intruder; students did not acknowledge and consider input and interaction

[alignment with ethos of school]

The disruptive practice within a familiar project setting reveals the plug-in as a positive action or insertion, even though the immediate results of the biopics might show only a small number of students responding well to it. The fact that small but notable shifts are visible, means that some students are able to re-orientate and reflect on their actions. This might be noticeable throughout the process and not necessarily only at the end. The main points of significance in the biopics relate to small, incremental change and impact of abstraction. The effect of abstraction proves to add additional value to the existing ethos of the schools in b1, b2 and b3. B4 already has provocation as part of the school's ethos and integrated in the studio project, however, representation as part of provocative work is an aspect worth considering.

## SUMMARY 1\_disruptive modes

Representation and challenges with abstract interpretation can be considered further through discursive design (Tharp & Tharp 2018), which has the same aim as making issues of concern visible as provocation, and to activate dialogue. Furthermore, the representation of self as the user, through imagination, observation and immersion, is related to *normative dissociation* (Butler 2006), by adopting the perspective of someone other than the designer. Representation and normative dissociation prove to be the biggest personal disruptions during the workshop in all biopics.

## 2\_levels of dissociation

Levels of dissociation show a continuum in the students' engagement, moving between *attention* (observation – separate) and *absorption* (immersion – connected) (Butler 2006:46). The various workshop activities elicit different responses and students find personal ways of attaching or detaching. Important to note is the 'voices' they adopt when documenting their expressions: first, second or third

person writing, which relate directly to the continuum of dissociation. Reporting on the findings below is a free narrative, without referring to theory concepts or including any literature references.

[problem statement]

Confronting students with the request to put themselves in the shoes of the user, reveals a continuum of normative dissociation due to the background and context the studio projects provide. The majority of students shows 'separate' or 'disconnected' voices through passive writing (third person) as observer or designer, identifying potential within various living scenarios (third in b1 and a quarter in b2), focusing on human-centred issues (quarter in b2) or pragmatic prototyping concerns regarding objects (quarter in b3). However, personal descriptions, connected to self as designer (first person), but separate to user, show an awareness of the requirements for abstract thinking and representation and focus to reveal issues rather than problems (b4). In this instance, dissociation cannot truly be considered, as students' responses revolve around personal issues dealing with self as designer and the interpretation of the issues, instead of the users themselves. Personal descriptions as connected spectator or visitor (but separate to user) are also noted (third in b1).

Only a minority of students finds a connection as user / customer (first person writing). A third of the class in b1 (emotional disruption leading to dissociation) and a quarter in b3 identify meanings and relationships between people and space through personal experience and observation.

Table 6-5: Disconnected and connected experiences

<b>b1</b>				
<b>Fully disconnected</b>		<b>Disconnected, with personal description</b>	<b>Fully connected</b>	
-as designer/observer -'imagine' how people are able to shift perspectives <i>Third person or passive voice</i>		-personal, but self as outsider, spectator or visitor  <i>First person or active voice</i>	-as user or participant -some acknowledge self as observer, but expresses potential <i>First person or active voice</i>	
<i>The vision for the community is one where various people groups become knit together, interacting, elevating one another and work together towards a common goal through producing [sic] (Marené).</i>		<i>Looking at the people around me, I notice a sense of uncertainty and disorientation (Amoné).</i>	<i>I live in the <u>city</u> but I am not part of it I have a <u>story</u> like everyone in the city but nobody to share it with. We are all different but similar in a way, yet we are disconnected. I wish (to tell my journey) to belong and to be part of the city (Thabi).</i>	

<b>b2</b>				
<b>Disconnected (negative )</b>	<b>Disconnected (positive observer)</b>	<b>Disconnected (identify potential)</b>	<b>Disconnected (as designer)</b>	<b>Connected (as user)</b>
<i>Third person -one student</i>	<i>Third person -quarter of class</i>	<i>Third person -half the class</i>	<i>First person -one student</i>	<i>First person -one student</i>
<i>Convenient stores are generally and typically small and therefore there isn't enough space for movement as well as display of products resulting in people not able to find... (Naelly)</i>	<i>The matter of a convenience store is centred around CONVENIENCE. People want to come and get what they need/want as fast as efficiently as possible (Nadene)</i>	<i>...when one designs a place you need to place yourself in the users' shoes to understand what is needed and how to design better (Kaushal)</i>	<i>My main concern is how the customer interacts with the space provided / designed for them. How the take to the space...(Siphumelele)</i>	<i>The biggest thing for me is a spot to sit and take in life while my car is being washed. An enclosing that will become more than just what it is to me (Khethiwe)</i>

The data shows that it is difficult to put aside the designer's / architect's hat in order to assume the role of the user. The continuum therefore shifts between observation as separate understanding and immersion as connected relation. The latter 'out of the ordinary' request of the workshop presents as a provocation. This poses the question about the likelihood of shifting between 'connected' and 'separate' modes of spontaneous / involuntary, to deliberate action.

#### [keywords]

Keywords show that observation or experience as designer relate to words identifying pragmatic matters (b2 and b3). Observation of design problems in the urban context (which students feel strongly about) shows that they approach these as activists (b4). Keywords also allow the experience of a contextual meaning to be distilled through immersion (b1) within a particular community as a member of the group (b4).

- Contextual – *resilience, ritual, closeness, inviting, isolation, vulnerability, memory* (b1)
- Pragmatic – *convenient, customisable, efficient, accessible, variety* (b2 & b3)

#### [vignettes]

Vignette drawings reveal students making shifts in personas by immersing themselves as users by reporting on conditions of the city from an embodied experience. Drawings are relational by showing people-people and people-city connections, especially by identifying direct small-scale encounters (b1). A shift in personas can also be seen in the context of observation-based dissociation regarding wayfinding and typological layout matters (b2), and user-interface with luminaires as objects (b3). (Refer to *Figure 6-6* in the previous thematic narrative, *Disruptive modes*). B4 produced no vignettes.

#### [critical artefacts]

Empathic responses are shared in the critical artefact making process, showing a shift in thinking from designer to user. Through the use of second life materials, connections to users are represented through symbolism and metaphor (*Figure 6-8*). Dissociate understandings increase when students zoom in on the relational conditions between people-people and people-place (b1).

*This object represents a "giant" (city) that has been broken / cut but stitched up back together. As a form of healing. But the people (the sewing needles) have already infiltrated into the body there are embedded in different places on this giants body indicating how people make their own sence [sic] of settlement and place making (b1\_Nina).*

*If you visit a maze then we get to know the maze more and more, as you would get to know the history and the mysterious [sic] of the city ... therefore you discover how the secrets are made. How the city was created. Get more welcome [sic]. Discover how its make you unravel ... (b1\_Kirstin)*

In this way, social commentary is given about inclusivity in the city, the impermanence of it and the meaning of home (b1). Immersion and observation prove to be entries into a dissociative perspective where students place themselves in the shoes of the user, by focusing on both emotive, interactive and meaning-making issues and pragmatic use concerns (b2 and b3). A continued disruptive practice shows

that dissociation becomes an obstacle in two ways instead of a manner to associate and connect. Firstly, when students remain disconnected and do not assign meaning to objects and materials, the critical link between thinking and feeling does not appear. Secondly, in contrast, when the immersion is too intense and students lose perspective in the personal association, which eliminates the balance in the designer-user continuum. Disconnected and connected voices become challenged, which is brought on by the provocation to only reveal issues, instead of solving problems (b4).



**CRITICAL ARTEFACTS *dissociation* abstraction**

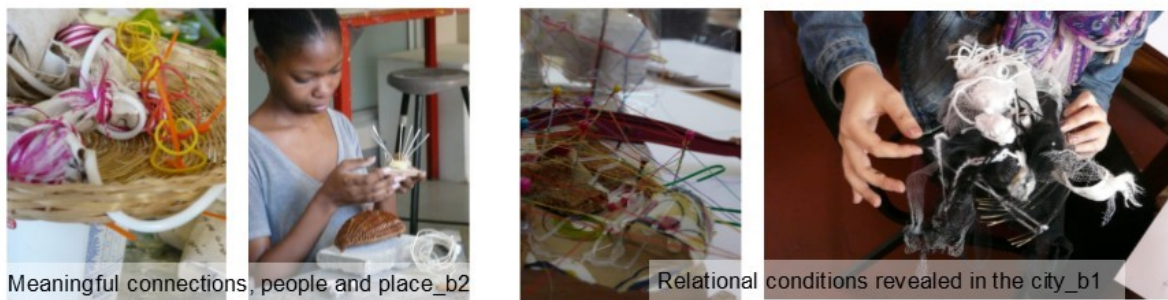


Figure 6-8: Critical artefacts, dissociation and abstraction

[peer feedback]

Peer feedback reveals various responses related to human-centred approaches across the various biopics: b1 makes direct associations with identity formation where the importance of relationships between people and interconnected intimate encounters is highlighted. B2 directly addresses a human-centred approach by means of emotive, relational, experiential matters, but also practicalities. Noteworthy in b3 is that no pragmatic or functional concerns are mentioned anymore, only considerations regarding mood and atmosphere. Lastly, b4 shows how challenging shifts towards various points of view are – a refocus considering observation and immersion, and not being trapped in one of these modes.

[reflective essay]

The reflective essays reveal an important observation – a shift towards connected first person voices as compared to the problem statements at the start. However, the responses are not related to users directly, but report on experiences of the workshop process. Honest accounts as full descriptions are shared, ranging from rollercoaster experiences in emotions during the various activities, discomfort, apprehension and expectation, humility, gratitude and enjoyment. Students also mention the use of

second life materials, meaning-making, peer input, preconceived ideas and engagement in the process (half in b1, quarter in b2 and two-thirds in b3).

*The process of creating a conceptually driven artefact pushed me out of my comfort zone. Creating with abstract ideas drove me to create for the sake of it, without overthinking it and the resulting complexity is more than I thought it could be (b1\_Marené).*

*Seeking the problems first allows ones eyes to open to what others are going through and allowing us as designers to empathise and to have compassion (b3\_Andreana).*

*The focus on users behavioural settings allowed the designer to not only sketch and understand the user, but to become the user. By becoming the user, one could understand the conventional problem much easier by being able to respond to it in a much deeper and more complex manner. This approach extracted the essence of what exist, how in relation it exists and why it exists in the form we understand it (b2\_Christene).*

First person connected voices in b4 revolve directly around immersion in design challenges (half the class); however, the abstract translation poses a challenge. Connected immersion and disconnected observation are under scrutiny. Through direct association, as members of a community, immersion is very intense and causes flux in the student, losing perspective from the aim of the project, where an insider understanding relates to the connected understanding. In this light, a relation between dissociation and detachment can be made.

*Immersion: Taking as a starting point the coffee plant and its associated ritual – central to my own immigrant identity – I seek to show the accumulation of information that characterises all places today. I am curious about how to bring this layered complexity of information to the surface ... (b4\_Jovana).*

*Observation: Although we would hope that all societies are in agreement that systems which perpetuate inequality are abject fraud, we still see persistent evidence that certain groups in contemporary society are excluded from the opportunities of urban life (b4\_Derrick).*

With observation, the activist voice shows limited dissociation, where students remain very disconnected. As separate second person voices, immersed in design theory and societal problems, they remain emotionally detached (half the class, b4). Complex understandings are visible in separate or detached third person responses with an acute awareness (half the class in b1) and as designers related to human-centred issues (third of class in b2). An outsider understanding can be related to a separate voice as the activist, or detached observer.

*We are spectators with set views, routines, ideas of the space which clouds potential. Reputation plays a big part (b1\_Rebekah).*

A noteworthy observation in b3 is a shift toward connected engagement where the critical artefact making proved the catalyst – transformation from disconnected voice (three quarters of class) to connected voice (all but one student) during the four-hour activities.

### [trajectory to completion]

The trajectory to completion reveals an unexpected phenomenon to counter the researcher's experience of the workshops, evidence consolidated from external observations, student feedback and exam work. The decline in dissociation where the connection with the user fails to be sustained is only evident in b1. A quarter of the class retains a connected voice with normative dissociation transforming into an 'objective' stance or empathy as cognitive understanding, related to the initial emotional response / empathy in the problem statement. The remainder of the class shows a decline in disconnected knowing.

B3 shows that the ratio between connected and separate voices remains the same; a quarter of the class. In b2, the transformation is visible in shift from one to three students in the trajectory to completion, where students describe their connection in dissociation as objective or pragmatic (functional issues) and subjective, related to meaning-making and social interaction. The largest transformation in shift is in b4, where the designer voice is only one in the problem statement, shifting to half the class connected to societal problems in the exam presentation. In these cases of immersion, students adopting the role of a member of society, respond in a most connected way, regardless of the success of the project according to the external examiner.

### [post feedback]

Various observations regarding dissociation are made in the post feedback data, especially in b4. It questions how perspective or objectivity can be achieved when affective qualities are overwhelming. The opposite is also to be questioned, namely how connections can be made when cognitive detachment becomes a barrier. Is dissociation thus limited due to over attachment or over detachment? How could it then be useful? In some cases, students become entangled in theoretical discourses when the project duration is long (semester duration) and thus overshadows normative dissociation. In b2 and b3, the use of observation proves useful in identification of problems and functional matters. Immersion assists with identification of meaning to and impact for the consumer, as a human-centred approach.

### [alignment with ethos of school]

The inclusion of dissociation to each of the school's ethos descriptors will extend the scope and focus of students' connected engagement, especially through subjective immersion. In this way, intangible qualities can be identified to make deeper connections and find more complex and richer understanding of issues, contexts and scenarios of living.

## SUMMARY 2\_levels of dissociation

The question then remains whether dissociation and perspectives can be controlled and purposefully 'switched on' in order to serve design actions. If it can be learned or an awareness thereof be nurtured, then it could be a useful way of creative inquiry in the spatial design studio. The designer's prescriptive intent is therefore replaced by a deeper understanding of the unspoken needs of the user.

## 3\_empathetic routes

The notion of empathy is criticised in literature (Bloom 2016) and in practices of design it is not always perceived to be rigorous (Heylighen & Dong 2019). In this thematic narrative, its usefulness is traced. The discussion shows benefit and challenges when considered in the realities of the studio projects' contexts, the workshop and in the design project at large. The narrative to follow integrates concepts from Kouprie & Visser's (2009) four phase empathy framework, 1-discovery, 2-immersion, 3-connection and 4-detachment. These are not referenced, as the researcher identified these stages through the data analyses process as part of the inductive study and confirmed its academic validity and content in literature afterwards. The integration of theory will continue in *Chapter 7\_Provocations and postulations*.

[problem statement]

Both cognitive and affective approaches to empathy are present in the biopic investigations. Through affection, students in b1 reveal emotional empathy due to a real-life embodied experience where the contextual absorption is supported by discovery of and immersion in the city. In b2, students imagine a similar previous experience in context to the convenience store. Students in b3 focus on pragmatic matters regarding luminaire design as an entry into empathy, although here it remains mostly objective, as they move from a discovery mode to an immersion one, albeit pragmatic. The conceptual posters prepared for the workshop in b4 (Figure 6-9), show a continuum: cognitive, where students remain detached, but as an objective activist for a societal cause, and affective, by assuming the role of an active member of a specific community group.



Figure 6-9: Empathic continuum

Students individually emulate or echo experiences and reveal personal bias due to their own preconceived judgement in various contextual understandings. Furthermore, students recreate through imagination prospects or potential of ‘what can be’ as a positive outlook in challenging scenarios. In b2 students point out problems using pragmatic imagination. In both b3 and b4, students express individual bias, taking an egocentric view as designers regarding lighting design, and as designers / architects regarding societal matters, respectively. In instances where students are emotionally attached to an issue, students are oblivious and show ignorance to consider other opinions (b4). These observations highlight the extremes as observed in the data, but the study does not advocate these stereotypes as dualities. It is noted that complexity is compulsory for richness; sometimes a simple realisation can reveal hidden nuances.

Students show sensitivity in contextual and pragmatic understanding. The two spatial design projects (b1 and b2) revolve around place awareness where b1 shows indications of both personal embodied experience and challenging of own assumptions. B2 mostly relates to pragmatic matters and students’ personal experiences. Superficial and complex understandings are in balance in b4, where students consider contextual and societal matters from their own opinion, and projecting needs of others. B3 is fixed on a pragmatic approach and own perceptions regarding people-object interface.

*Everyday I travel back to the city in the taxi with my extended family. We are all unable to live our lives with our real families ...my extended family (b1\_Anneline).*

*A space where the user can access informable [sic] products. A space and place that thinks for you. A space where more time can be spent on the useful and useable ... (b2\_Christene).*

[keywords]

Keywords reveal a human-centred focus in all biopics taking an affective empathetic response towards societal issues (b1), cognitive empathetic view in b3, and a combination of affective and cognitive empathy in b2 and b4.

- *Simple, efficient, convenient* (b3)
- *Utility, variety, enjoyment, ownership, temporal, occupation, memory* (b2 & b4)

### [vignettes]

No vignettes are attempted in b4, which proves problematic later in the interpretation and translation of issues from ideas founded in theory and philosophy, towards an abstract expression to represent issues as provocation. The remainder of the biopics reveal an expanded empathic understanding, with focus on pragmatic matters in b2, and a combination of objective aspects and a subjective immersion in b3. As part of a discovery mode, students show receptivity and awareness to context in b1 and b2. Students use imagination in drawings to re-enact contexts and scenarios that become visible as a recollection of spatial conditions. In this light, thinking and making are interrelated as they demonstrate shifting between user and designer to formulate an increased understanding. B3 demonstrates evidence of observation, where discovery is limited and students remain focused on formal expressions and pragmatic concerns. Refer to vignette drawings in Disruptive modes, Figure 6-6.

### [critical artefacts]

In the critical artefact making process, students refocus to create subjective connections (b1-4). Emotional empathy drives the making process in b1 where feelings in relation to meaning-making are explored. Through a cognitive approach, students associate meanings and make relational links between second life materials and representations of design challenges regarding people, context and place. Noteworthy in b2, is that students connect with deeper issues than pragmatic and wayfinding concerns in the making process, by focusing on social and interrelation matters. Similarly, b3 also shows a shift in focus from concerns regarding manufacturing towards larger societal issues on the one hand, and meaning-making through second life materials on the other. Limited engagement in the artefact making in b4 results in students missing opportunities for abstract exploration, especially when the studio project is midway through (eight weeks). Students who have strong emotional connections to issues actively participate in the 'making' (immersed as members of a community), whereas, students detached from issues (as observers, although seeing themselves as activists), remain disconnected.

*Through being abstract I was able to consider an emotive response to design. Now that I have represented my context and human experience I feel that I have a better and stronger base to build my design onto. I can respond clearly to the problems now that I have focused on them closely (b2\_Nadene).*

*The social aspects I considered were: What my model says about me, what my model says about society and how one would interact with my model. The degree of complexity resulted in the intertwining of thread and how that is symbolic of the complexity and intertwining of people (cultures, races, sexes) in our everyday life (b3\_Neo).*

### [peer feedback]

Active and constructive peer interaction is observed in the first two biopics, which makes a positive contribution to their understanding of different points of view and experiences. B1 reveals emotional, embodied and cognitive connections from personal experience of the inner city, through cognitive and

emotive empathy. In b2, personal experience of the convenience typology informs a connection to the workshop. Limited peer interaction and feedback comments are noted in the last two biopics. Students in b4 choose to work in isolation until the end of the session. Field notes indicate that although students show an understanding of societal problems, it appears as if they are going in circles, trapped in theory and philosophy and struggle to frame the project focus as abstract representation.

[reflective essay]

An expanded empathic range is revealed by tracing its routes through the reflective essays. In b1 and b4, students show a connected relation when they emotionally relate to complex concepts on a deeper level. In b4, some students remain detached without affective empathy. The cognitive approach to empathy results in students advocating for issues, but from a distance, compared to an affective approach, immersed as members of a community. An empathetic continuum becomes visible in b4. Limited emotional connections in b2 and b3, which are mostly pragmatic based, show little affective qualities in the response to experience and interface regarding space and object. However, social considerations are expressed. These are placed at the threshold between immersion into and connection with issues.

*The workshop helped me to see the city in a different light and also getting to see the growth and potential it holds Starting from the bottom up is how we see the city today, a fragmented city in need of guidance to link the community and cultures (b1\_Michelle).*

*Designing with a focus on the social should be inclusive, interrelated and interchanging. This allows designers to satisfy needs of end users (b2\_Nicole).*

In general, the consideration of empathy shifts from reflecting on issues to reinterpreting these during the making of critical artefacts. In b2 and b3, this is especially visible as students find abstract relations between intangible concepts and second life material properties and qualities. Shifts between different ways of thinking enable the transition in translation and interpretation beyond the obvious. This constructive process continues with the activities in b1, where students focus on the meaning of associations through metaphor and thus deepen the understanding of complex social issues.

*A ribbon (the user) is being suffocated by the fabric (the interior) in a spiral form. The user gets lost in the maze, the whole process is time consuming and stressful. There is no connection between the space and the user and no room for change. The whole process in the store is impersonal The user should not be an afterthought (b2\_Nadene).*

*The fact that it is a SALE, is iconic of the face that the city almost "sells" its people and the idea of loss and gain is a large aspect in the life in the urban wave (b1\_Loren, installation instead of an artefact).*

Field and reflective notes observe self-centred responses as designer instead of user, and proves challenging in b4, as evidence of personal bias and individual preconceived ideas in the meaning-making process has been a problem since the start of activities in b4. Similarly, students displaying oblivion towards other matters than their own focus, have difficulty to detach emotionally. Therefore, even though a continuum is visible, perspectives are not shifting. The question worth considering: what

if some people are unable to empathise? In response to this, a concern is expressed in the data – the notion of time to foster empathy in various situations. Some students express this in their own ways:

*How do we stop the city? A freeze frame to induce reflection. Contemplation and appreciation. How do we document the city? An observation of the people, the music, the food, the culture, the love, the hate. How do we see the city? (b1\_Loren).*

*The difficulty for me is with the duration of this project: with my project constantly evolving as the semester goes on, and my point of interest slowing shifting around, it is paradoxical to produce a finalised text that precedes my artefact ... its meaning would only start to surface after continued immersion in (or even after) making (b4\_Mijia).*

### [trajectory to completion]

The trajectory to completion exhibits noteworthy findings according to the external observations and the researcher's field notes. The quarter of the class in b1 that integrated the workshop activities in the design examination are able to detach emotionally from complex issues and to integrate their cognitive understanding with the affective understanding. They can imagine, re-enact and simulate an experience to address challenges contained in the scope of the design project, directly. This seems to produce empathy, compared to the remainder of the class did not achieve this expanded empathetic horizon.

Students in b2 find a way to connect, due to the immersive process in the critical artefacts making and as a result, some show signs of detachment in the final feedback after the project presentation. The comments show that even if the interpretation was not executed in full in this project (too limited time), intent is expressed for implementation in future projects. Detachment is not truly reached in b3, because meaningful connections did not reach full emotional immersion. Here, pragmatic and prototyping concerns dominate affective qualities and students remain in a stage of immersion only. The emphasis on the aspect of manufacturing the luminaire, by students as designers, concerns them.

Critically reflecting on issues in the framing of problems through observation and discovery poses a challenge due to personal bias of students' judgements (b4). An exploratory process enables constructive engagement. If students are entangled in an emotional trap, the danger exists that they could become caught up between a one sided opinion with preconceived ideas of the architect (*egocentric bias*) on the one hand, and ignorance of the designer preventing deeper design considerations on the other.

*... hitting on some very relevant and timely themes but needs to find a focus ... work is interesting but self defeating from a viewer's perspective. If he wants to continue this exploration I think he will need to decide whether he wants to be a trustworthy reporter or a trickster ... mission is unimpeachable but his artistic expression of that mission is as closed and bluntly unambiguous as the villains themselves. Engagement is probably the watchword for him ... (b4\_ external comments).*

### [post feedback]

Post feedback shows that the timing of the workshop as a disruption has a direct relation to the nature of empathy expressed. In b1, the group of students that reached a detached understanding, connected

deeper and showed deeper insight compared to those of their peers. They could convincingly and confidently communicate the integration of workshop and design projects. The connection fades in the remainder of the class. The late timing of the workshop in b2 has an impact on the expression of empathy, due to the insertion of activities three-quarters into the design. True connection and detachment cannot fully be reported beyond the intent expressed by students in the post feedback. However, one student actively made use of the workshop experience and integrated that in the design.

*It did add value but only to a small extent. Personally for me because we only did the plug-in addition to [sic] late (3 weeks) into the design. A week before hand-in did not work as successfully as it could've worked in the 1<sup>st</sup> week of conceptual development phases. It definitely gave me a new perspective towards design to some extent (b2\_Christene).*

*I do get stuck on designing something while closely regarding the aesthetic rather than [sic] for the user ...writing down the problems of my project from the consumers perspective helped me to come up with a more realistic and feasible solution to my clearly defined problems. I feel that in the end the users of my space would take something of value from the design (b2\_Nadene).*

In b3, no detachment is possible, due to the pragmatic approach and attitude to dealing with user interface problems on a cognitive level. A binary representation is visible in b4, where half the class stopped with immersion (cognitive empathy representing societal problems as disconnected activists for a particular cause). The other half became entangled in an immersed state and could as a result not detach to reach objectivity.

[alignment with ethos of school]

Empathic considerations expanded the students' understandings in all biopics: the eco-systemic approach of b1 can be furthered by including a stronger human-centred awareness, dealing with intangible matters. B2 could benefit from empathetic immersion to expand the students' horizon by looking beyond pragmatic matters and relating directly to user's unspoken needs. Affective empathy could bring deeper understanding and insight, especially in a context where students are exposed to prototyping, interface, and human-centred design by objects. There the conditions of use become important, to further human-centred design beyond object-centred priorities (b3). Extending the educational milieu of provocation with cognitive and emotional empathy could result in more deeply connected student responses (b4).

### **SUMMARY 3\_empathetic routes**

In instances where an embodied immersion is not possible, empathy becomes a challenge. This is where dissociation can support empathetic understandings by imagining or simulating real-life scenarios in particular contexts. In this way, deeper insights can be gained, leading to a connected awareness of intangible needs and requirements.

## 4\_ways of thinking / ways of knowing

Ways of thinking combines various modes assimilated from both paradigms and methodological approaches of design thinking and designerly thinking (Laursen & Haase 2019). The different ways of engagement by the students reveal the modes most useful in advancing transformation and development. The discussion to follow uses theoretical terms from the literature, as italicised concepts represented by the references in Table 6-6 with no citations integrated in the thematic narrative below. The terms are used to accurately describe the findings in the context of the study. However, the academic synthesis will be included in *Chapter 7\_Postulations and provocations* in a detailed discussion.

Table 6-6: Design thinking and designerly thinking sources

Designerly thinking	Design thinking
<i>Abductive reasoning</i> : (Peirce 1903, Cross 2006)	<i>Abductive reasoning</i> : (Peirce 1903, Cross 2006)
<i>Co-development of problem-solution</i> : (Cross 2006)	<i>Contextual meaning</i> : (Cross 2006, Krippendorff 2006)
<i>Contextual meaning</i> : (Cross 2006, Krippendorff 2006)	<i>Explorative learning</i> : (Brown 2008, Kelly 2001)
<i>Dialogue with the situation</i> : (Cross 2006)	<i>Phase models</i> : (Brown 2008)
<i>Framing</i> : (Schön 1983)	<i>Perspectives</i> : (Kelly 2001)
<i>Modal shifts</i> : (Cross 2006)	<i>Wicked problems</i> : (Dorst 2011, Rittel & Webber 1973)
<i>Reflective practice</i> : (Schön 1983, Buchanan 1992, Cross 2006)	<i>Appreciative inquiry</i> : (Stein et al n.d.)
<i>Solution-led goal analysis</i> : (Cross 2006, Krippendorff 2006)	
<i>Wicked problems</i> : (Dorst 2011, Rittel & Webber 1973)	

[problem statement]

*Contextual meaning* is the way of thinking emphasised in the problem statements of b1, with the immersive experience related directly to empathy with emotional emphasis. In contrast, no contextual reference is provided in b3, where the focus is on people-object interface. In both however, students identify positive aspects through *appreciative inquiry*, which is referred to as potential or prospect in the earlier thematic narratives, for example, integration between users and the city (b1) and the effect of light on space for well-being (b3). In all four biopics, thinking becomes a way into project *framing* and making sense of societal issues, or *wicked problems* by getting behind or into contextual problems (b1), understanding not only pragmatics (b2), asking critical questions (b3) and understanding larger societal challenges (b4). Students take a different *perspective* to the general designer view and focus on the urban dweller, customer or user, respectively (b1, b2 and b3), which assists with making deeper sense. *Dialogue with the situation* becomes a way of engaging actively in biopics where students struggle to make connections at the start of the workshop (b2 and b3). In contrast, b4 has been working on a disruptive project and the workshop becomes a way of *reflective practice*, to see the problem in a new light. However, the challenge here is the focus on *solution-led goal analysis* as attitude, which is stifling and contradicting an *explorative learning*, as the external examiner's comments observe in the previous thematic narrative. Students find it difficult to let go of preconceived ideas.

*However, the path of the flaneur / user may change as it is linket [sic] to the path of life. If the life of the flaneur changes (b1\_Kirstin).*

*Spatial design doesn't have to be constricted to four walls, but rather is resolving an issue and making interior space more comfortable and convenient for the user, and this project helped me think in that way (b2\_Sh-Chen).*

[keywords]

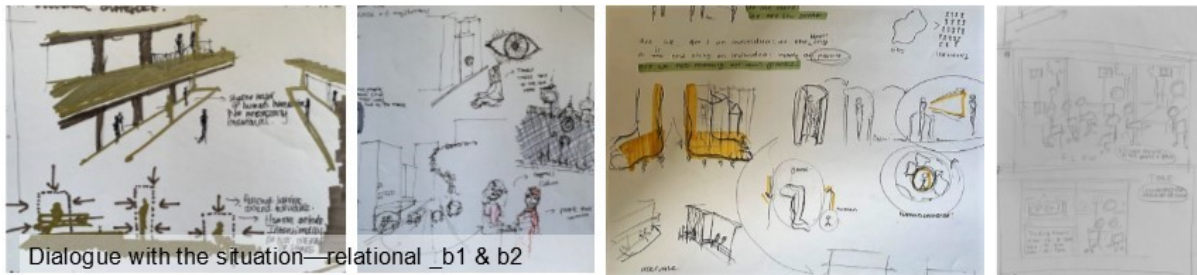
The keyword selection shows an increase in the reference to *contextual meaning* with words describing qualities and attributes of space and place (b1, b2 and b4). Only b3 still has no reference to context. However, *dialogue with the situation* is stronger with a shift from practicalities and anxiety expressed in the problem statement, shifting toward intangible qualities of lighting in the keywords. *Dialogue with the situation* in b4 becomes transactional between inquirer, the situation, and a way of *framing* the project. Both b3 and b4 show *reflective practice*, as the emphasis shifts in former, and a refocus in the latter. In b1 and b2, *appreciative inquiry* is used to identify potential in the contexts of the projects at hand to describe positive future conditions.

Table 6-7: Keywords and ways of thinking

b1	b2	b3	b4
Contextual meaning			
<i>dynamic; identity</i>	<i>uncomfortable; confined</i>	-	<i>ritual; recontextualisation</i>
Dialogue with the situation			
<i>alert; connection</i>	<i>movement; personal</i>	<i>convenient; bold</i>	<i>disruption; control</i>
Framing			
<i>memory; belong</i>	<i>interaction; simple</i>	<i>memorable; generous</i>	<i>identity; significance</i>
Appreciative inquiry			
<i>opportunity; resilient</i>	<i>sensitive; comfort</i>	<i>flexible; rejuvenating</i>	<i>contingency; acceptance</i>

[vignettes]

*Dialogue with the situation*, concerning context, people and self, becomes prominent in the way drawings represent *contextual meaning* in b1 and b2. In b3 however, students find it challenging to represent descriptions in the problem statement visually, which are highlighted in the keywords and show a lack of *modal shift* between different ways of thinking. *Co-development of problem-solution* in b1 aligns with the students' *reflective practice*, as visual references become more complex and enriched with *contextual meaning*, visible in detailed sketches. Vignette drawings assist in *framing* the problem, where students have to make relational links between aspects observed and experienced in the various contexts. No vignettes in b4.



## VIGNETTES ways of thinking relational conditions

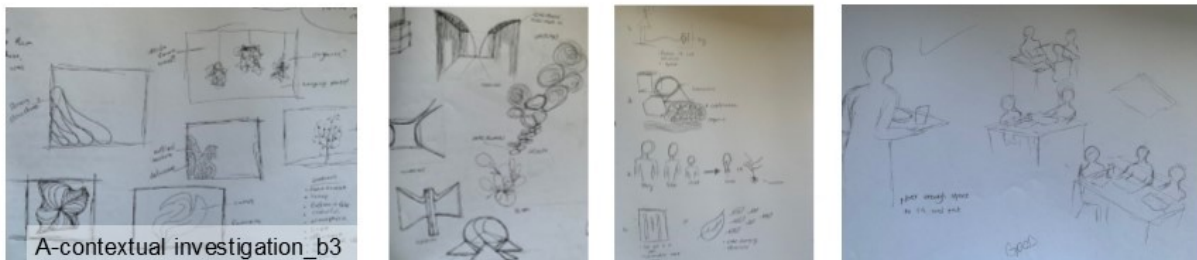


Figure 6-10: Ways of thinking and vignettes

[critical artefacts]

Critical artefact making reveals *dialogue with the situation* in all biopics as the main action for engagement. It allows students to engage in an interactive process of *reflective action*. Dialogue is not only with the situation, but also with the second life materials, posing new interpretations of meaning-making through association, metaphor and symbolism. Dialogue is also with the self, as the representation of *wicked problems* is internalised in a way not normally done in the spatial design studio.

*Today's design process was very different from what we do in our normal class ... It was interesting to write down key words of the problems in adjective adverb form. Drawing sketches that followed the keywords were a bit tricky, due to sketching it down I think the workshop was very different and I really enjoyed it because it helped us think and made us work differently from our every day work (b2\_Kaushal).*

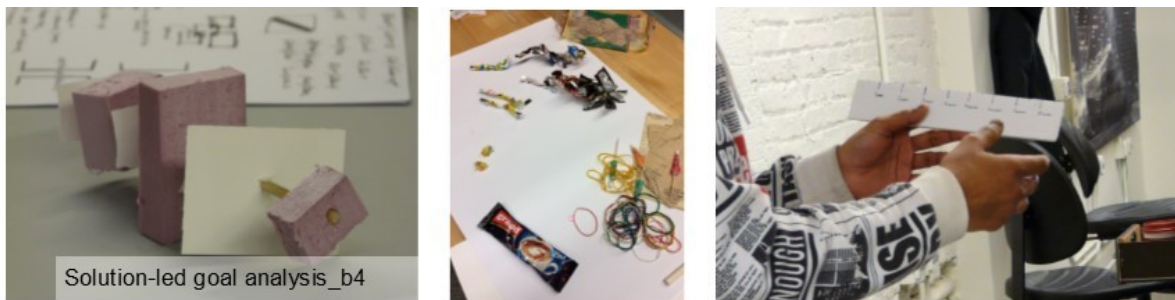
*Representing an ascending element, this 'object' is a compilation of various materials that come together in a quite unconventional harmony. There are elements in the composition that will change over time, contributing to the temporal 'being' reflect in the cities [sic] (b1\_Dhané).*

*Contextual meaning* emerges in b3 for the first time. Students explore contextual impact on the investigation, looking broader than the convenience store alone, by focusing on larger issues of concern related to lighting, access, inclusivity and interface. *Co-development of problem-solution* features in b1, b2 and b3, where the process of making allows for the clarification of problems in order to articulate possible creative responses. This is an interactive and engaged process. B4 is the only biopic where *solution-led goal analysis* proves to be a hindrance in some cases, where students become trapped in a never-ending cycle of repeating the same response in an attempt to find meaning and to make sense of issues. This is aggravated by a preconceived or set idea of an interpretation. As a result, the translation and representation of the idea becomes limited and predictable. The consideration of a situation-led potential analysis could prove more critical and productive. The challenge then becomes

clear – the making of *modal shifts* – in way of thinking, but also as a way of representation and finding an avenue towards new understandings. Imagining self not as designer, but as the user instead, adopting a different *perspective* is noted in all biopics. The selection of second life materials with the translation of new meanings, allows for *reflection-in-action*, as students have the opportunity to select, and reselect, share and discuss deeper meanings of issues they identify. In b4, the articulation of *wicked problems* is still broad, and the limited engagement and abstraction with second life materials becomes a missed opportunity for generating deeper insights.

*The transparent partition shows how the inhabitants have to force space for themselves. The red yard signifies the journey and the spirit travelling with the users. The basket represents the 'land' being an African country and also relates to African cultures weaving baskets. The green signifies the locations people travel from (Anneline\_b1).*

*It is interesting to use different found objects ... it forces our restricted minds to look at space and forms differently and resolve them differently as we usually would have, using positive and negative space to rethink, it gives us a different design perspective and opens our minds to more unique, unconventional and different ideas in terms of our design (b2\_Shu-Chen).*



## CRITICAL ARTEFACTS *ways of thinking* association



Figure 6-11: Ways of thinking and critical artefacts

*The alternative use of materials to the spatial expression ... allow for a different approach to design that goes beyond that static interpretation of an interior design but encouraged an abstract representation that showed that even unconventional methods can still portray design as needed and be effective : ) A line does not need to be drawn in order to function as a line (b2\_Qhawekazi).*

[peer feedback]

Through *reflection-in-action*, and *reflection-on-action*, students are able to consider and reconsider decisions (b1, b2, b3 and b4). *Reflective practice* revolves around the process of making, interpretations and meaning-making, abstraction, approach to the project and presentation of ideas. *Contextual meaning* within the two spatial design projects (b1 and b2) informs the workshops where students are considering scenarios and conditions that relate to people-space and people-people interfaces. B2 and b3 highlight *dialogue with the situation* through iterative actions. *Explorative learning* is noted by students in b3, as the workshop ‘forces’ them to think differently to what they are used to, also to participate in activities that are unfamiliar and adopting a user’s *perspective*. This is the first time that *phased models* appear in the analysis, where the focus on various activities provide clarity (b2 & b3).

*Starting with the workshop today, I ran behind not knowing and struggling to figure out how to draw my vision of the city. Some kind words and help from a friend got me back on track and I chose some materials that could represent my problem statement and vignettes (b1\_Michelle).*

*Although the concept of spatial design is complex, this workshop has taught me to break down the complexity and design (b2\_Sh-Chen).*

*The design process/workshop for me was a step-by-step process of enquiry and curiosity and following that up with exploration without the end goal of finding a solution, but rather with the end goal of seeing where my hands would naturally take me (b3\_Neo).*

[reflective essay]

Ways of thinking mostly represented in the reflective essays, are in *dialogue (or dialogues) with the situation*, *reflective practice* and *modal shifts*. *Dialogue with the situation* also becomes dialogue with material and context and relates directly to different modes of engagement, as a transactional process (b1). In b2, students relate thinking and doing with interaction when they create critical artefacts. In b3, *contextual meaning* combined with *dialogue with the situation* allow *wicked problems* to emerge. Through an active argumentative dialogue, students can make decisions informing design interpretation and representation of complex issues found in society (b4). Through *reflective practice* students find a deeper understanding, an enriched and increased complexity of the *wicked problems* they are dealing with, in the context of their own studio projects. The workshop offers ways of entering into these in other ways than normal. Students become aware of the meaning of things through *reflective practice* and challenge their own bias at the intersection between translation, interpretation and representation.

Table 6-8: Ways of thinking and reflective essays

b1	b2	b3	b4
<p>During the process, there were 3 different stages; firstly there was a stage of fixation where elements and their properties were analysed in depth; second there was the impression stage where the action applied to the material became important; and lastly there was a focused investigation of how the elements behave together (Christi).</p>	<p>In trying to create meaning I find myself creating meaning. The ideas and process of creating an abstract sculpture gave me the opportunity to consider my design problem from a new angle. Through being abstract I was able to consider an emotive response to design (Nadene).</p>	<p>Through the course of this exercise I realized just how much of an impact lighting can have on one's daily life and how important it is, when we don't have light our lives and daily tasks start to become chaotic. Lighting can influence how we feel in different spaces it can also help improve the way we react to a space ... (Jodi).</p>	<p>There are often contradictory and co-existing conditions in urban environments that only become visible during certain events or when social behaviours response to new technologies or altered protocols in how the urban environments we inhabit are controlled and subverted (Rachel).</p>

*Modal shifts* offer students expanded insights in two ways, firstly by shifting between different ways of thinking (textual, visual, making and sharing with peers), and secondly by adopting another person's perspective through *perspectives* and dissociation, where different understandings are explored (b1 and b2). *Modal shifts* in b3 revolve around the intersection between pragmatic issues and emotional or social matters in the making of luminaires, with interfaces explored from different angles. In b4, it is challenging to make *modal shifts*, to step outside the mind of the architect / designer (too detached), but also difficult to step outside the experience of the user (attachment too great).

*Co-development of problem-solution* in b2 provides students with a better understanding of the *contextual meaning* and in that way, they are able to *frame* the project holistically by also including emotional and experiential matters to the pragmatic concerns that featured by itself at the start. B3 shows noteworthy observations in the reflective essays – the potential of materials are explored and recognised through the potential meaning of things (*appreciative inquiry*). Through this *explorative learning*, the influence of lighting on *context* is considered and as a result, *wicked problems* emerge.

*Solution-led goal analysis* proves to be a hindrance to design as inquiry in b4. Where preconceived ideas overshadow *explorative learning*, responses become repetitive and predictable. Richness of expression is one-sided and *co-development of problem-solution* out of balance. This is because of the difficulty in making *modal shifts* between modes of engagement, and internalising different points of view.

[trajectory to completion]

Ways of thinking in the trajectory to completion highlighted in all biopics are *problem framing* and *dialogue with the situation*. These two modes become interrelated in the way students engage in order to delineate the boundaries of their project scope. In itself, it becomes an immersive experience of self in context as user (b1), and leading to complex design responses by means of the interrelation between

thinking and doing (b3). This is particularly evident in b3, as the studio master observes the prototyping and manufacturing of luminaires require a hands-on *exploratory and reflective practice*. He notes that this year, students considered the importance of *contextual influence* of lighting which was not the case in the previous year. In addition, the exposure to second life materials expands thinking about material opportunities in prototyping. Interactive *modal shifts* between different points of view reveal considerations of client and community, but also social and dynamic interface between user groups (b1). Where *modal shifts* become a challenge (b4), students are trapped in *solution-led goal analysis*, through their own bias. This relates directly to an expanded capacity for empathetic awareness. Bloom (2016) warns that in such situations, bias could lead to a limited view. If students become too self-centred it could cause detached engagements and predictable design responses. Complexity is narrowly focused and does not include the diversity of the design issues. This observation does not advocate a dualistic generalisation, but acknowledges the continuum of modal shifts, instead.

[post feedback]

Post feedback shows that each biopic has a significant way of thinking that influences the inquiry in a positive way. *Modal shifts*, enabling different *perspectives*, show that students are able to connect with the project on a deeper level, even if only during the workshop and not in the trajectory to the exam (b1). This is grounded in a deep *contextual meaning*, feeding the *exploratory learning* through analogies with second life materials as part of *reflective practice*. *Contextual meaning* is not a main consideration in b2, however, *explorative learning* and *dialogue with the situation* allow students to engage with the process without any filters. It allows new *perspectives* to develop in order to *frame* their project descriptions. In b3, *co-development of problem-solution* directly affects the making of prototypes in an iterative process, where materials and techniques are tested for manufacturing of luminaires. This process is further developed through *critical reflection* of own thinking processes, informed by added research and challenging preconceived ideas. *Solution-led goal analysis* proves problematic if only approached from one perspective. The fact that students struggle to adopt another view, results in ignorance of different perspectives considerations of empathy by only representing an emotionally charged message, or a self-centred designer interpretation that becomes predictable.

[alignment with ethos of school]

The various ways of thinking contribute to expand the ethos of each school, especially in the way students engage with design inquiry. Through *dialogue with the situation*, *wicked problems* are articulated and *framed* in that way, and the project descriptions are clarified (b1 and b3). Where students are able to adopt a user *perspective*, emotional empathy assists them to expand their empathetic understanding in situations that they are unfamiliar with (b1).

In instances where the focus of real-life projects relate to pragmatic matters, the insertion of a human-centred approach introduces intangible and experiential qualities to enrich design interpretation (b2). Human-centredness also brings an increased awareness of interface between people and objects (b3). Continued *critical reflection* from both cognitive and emotional empathy *perspectives* can bring a

balanced response in design representation. *Modal shifts* and *perspectives* are revealed in consideration for different contexts and situations.

## **SUMMARY 4\_ways of thinking**

The various activities in the workshop allow students to focus on one aspect at a time, connecting to the intent of the activity. It was never intended as a phase model nor a prescriptive and fixed guide or tool. The intent of the workshop is to offer ways of engagement through different actions that could open new avenues to connect with design inquiry. The engagement remains open-ended and it is important to note that the integration of activities proves to be influential in gaining a holistic understanding and deep insight.

## **5\_process in action**

Process in action is framed by suggestions for modes of engagement during the process of design inquiry. To contextualise the discussion, Reynders (2012:4) refers to a speculative framework to enable critical and disruptive practice through a “triangulated relationship that exists between *thinking*, *making* and *sharing*.” In addition, “think, feel and do” are modes promoted by a resource efficient design methodology and eco-systemic thinking (Fisher & Clarke 2012:72). Liz Sanders proposes the triad “say-do-make” as modes of inquiry concerning discursive design (Tharp & Tharp 2018:75). The discussion below suggests ‘feel-act-be’, to extend the already rich collection of modes of inquiry, when considering not only the sense of being as user, but also as designer. The findings are considered independent from the references, and will be consolidated in the discussion, *Chapter 7\_Postulations and provocations*.

[problem statement]

*THINK*. The problem statements are primarily concerned with a thinking mode of process in action. Three biopics note cognitive processes with thinking (b1, b2 and b4) with the inclusion of emotional overtones (b1). Critical reflection is one of the main modes, and relates to contextual awareness, human-centredness and spatial agency (b1, b2 and b4). Empathic thinking in b1 includes feeling connected, showing vulnerability, respect, inclusivity, and authentic responses, when students express the need to belong in the city. Many ‘how’ questions are posed in b1, b2 and b3 addressing pertinent issues ranging from complex problems, to meaning-making and pragmatic matters. The identification of potential is noted in b1 and b2, considering the two different contexts. Lateral thinking is visible in b2 and b3, where unfamiliar activities challenge students to ‘think outside the box’. B4 has a strong emphasis on abstract thinking to focus on framing projects clearly.

*The workshop helped me reflect on how I know the city, not only as a user but also as a spectator viewing the city from the outside (b1\_Thabi).*

*My main concern is how the customer interacts with the space provided / designed for them. How they take to the space and their worries and concerns about the space (b2\_Siphumelele).*

*How do we experience as humans? Why does it make us feel as happy? Can we even recreate this? (b3\_Kaanita).*

*How do I clarify my statement ... How do I translate my concern ... How do I pace the audience in liminal state they desire to stay in? (b4\_Dylan).*

*FEEL.* The second mode of engagement in the workshops relates to feeling. The embodied experience in b1 elicits a strong emotional response, which informs the remainder of the workshop activities. In b2, students rely on personal experiences of convenience stores, as reference into the problem statement. The manufacturing and prototyping challenges in b3 causes anxiety when the 'making' process is considered. In comparison, anxiety in b4 relates to the difficulty to define a project scope within the context of the already disruptive design project. In addition, feeling considers different views in the process. This is present in all biopics – extending an empathetic awareness.

*SHARE.* Due to the disruptive design project, students struggle with the representation of ideas, instead of solving a problem. The visual translations and communication of messages become an obstacle (b4).

*PROCESS.* One student in b4 expresses difficulty in working in a fixed sequential process. The need for a non-linear and random investigation is expressed.

[keywords]

*THINK and FEEL.* The modes of thinking and feeling are used to narrow the scope and understanding of societal / design problems, including contextual consideration. Cognitive thinking skills are combined with lateral thought to address not only pragmatic matters, but also experiential, emotional and intangible aspects and conditions.

[vignettes]

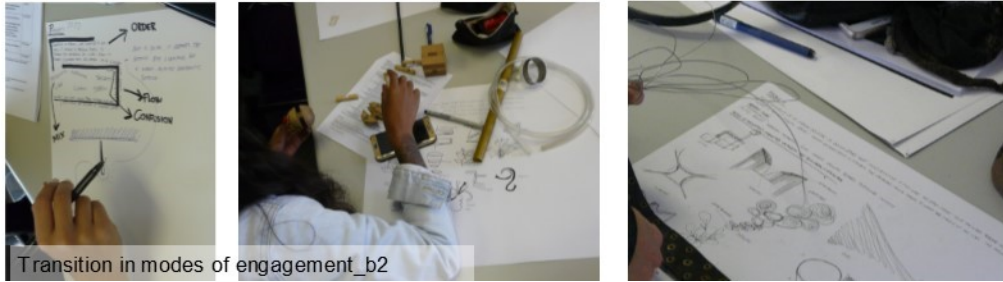
*THINK.* Vignette drawings require shifts in engagement, from thinking in words to thinking in images. An immersive process and critical reflection assist students to make the transition. This proves difficult in some instances, where some students produce vignettes representing two-dimensional diagrams (b3), or none at all (b4).

*SHARE.* Vignettes drawings require students to translate abstract and intangible concepts into physical illustrations, supplemented with descriptive annotations. The process is exploratory and spontaneous (b1 and b2), but in some cases students are hesitant and uncertain to share with peers (b3). Where no vignettes are created, sharing of abstract ideas is not possible (b4).



Abstract and intangible concepts\_b1

**VIGNETTES** *process in action* **words to image**



Transition in modes of engagement\_b2

Figure 6-12: Process in action and vignettes

[critical artefacts]

*MAKE*. Critical artefact making elicits a variety of responses. In b1, this process is intuitive where students choose second life materials for its symbolic representation potential. Physical qualities of materials connote associations for deeper and abstract meanings. Students in b2 find the process tricky and use the word ‘forced’, to express their experience of thinking differently to their normal studio practice. However, field observations reveal that second life materials are the reason they respond creatively, intuitively and hands-on. As an iterative process, students investigate mechanical connections, where detail becomes important. In b3, students also feel ‘forced’ to use unfamiliar materials in the action of making. As an exploration, they find freedom of expression due to the ‘random’ interpretations that become possible. Instead of following preconceived ideas, the process leads to narrative investigations that represents customer experiences in abstract ways. The limited number of students participating in ‘making’ (b4), also follow a process-driven approach and appear to be emotionally invested in a search for meaning.



Connections and expression\_b2

Associations and message\_b1

**CRITICAL ARTEFACTS** *process in action* **meanings**

Figure 6-13: Process in action and critical artefacts

*SHARE.* In b4, the challenge remains the representation of messages embedded in the artefacts, as the disruptive design studio project brief requires. However, the workshop assists students to explore theoretical concepts, but the overall translation into the different studio project brief categories are not yet developing. Students in the other biopics share freely and express hidden messages and abstract interpretations in the critical artefacts, relating directly to associations with second life materials.

*THINK.* In b3, the making process challenges students to expand their thinking to 'think out of the box'. Unfamiliar materials challenge them into a process of abstract interpretation, with associations and connections. This new experience stretches their understanding of complex design issues. This causes an unexpected surprise – a revelation and realisation that meaning can be created in many different ways. Obvious and predictable ideas are replaced with artefacts with depth and complexity.

*Using alternative materials really opened my eyes because some resources are not always available and a plan needs to be made with what is. This activity really showed me that anything is possible and the use of alternative materials may create solutions that is appropriate and out of the box (b3\_Andreana).*

[peer feedback]

*SHARE.* Noteworthy observations reveal different modes of peer interaction. In b1 and b2, students share freely and spontaneously with detailed comments recorded on worksheets (b1) and constructive criticisms for studio project consideration (b2). Limited sharing is observed in b3 and b4, with hesitation and discomfort (b3) and isolated seat selection (b4) limiting interaction. In b4, sharing happens at the end of the workshop as a formal session and feels more summative than formative, although students share freely.

*THINK.* Thinking expands the cognitive engagement of students in b2. Through reflection, different ideas surface and students identify and define problems with a human-centred approach. Similarly, students in b1 use empathic thinking to channel emotions and experiences to interpret abstract ideas into critical artefacts. In b4, critical thinking activates a speculative approach, however, the thinking process appears to be obstructed and it becomes a challenge to find an exit for discursive design translation and interpretation.

*MAKE.* The making process in b1, b2 and b3 is messy and hands-on, compared to b4, where limited explorations and preconceived ideas become a hindrance.

*FEEL.* Emphasis on meaning-making and considerations for people are seen in b1 and b2. Emphasis is on social inclusion and agency, but also pragmatic matters. In b4, students with a strong emotional connection to the chosen design problems, find it difficult to detach from the process on an emotional level, compared to students that show direct relation to users through the process of normative dissociation. They find it difficult to associate with issues on a deeper level and to translate ideas with a connected authenticity. As such, the voice of the architect / designer overpowers the voice of people who are represented.



## PEER FEEDBACK *process in action* sharing

*Figure 6-14: Process in action and peer feedback*

*PROCESS.* One student in b4 mentions that prescriptive ways of working are hampering her creative and exploratory process, negatively affecting her interpretation and representation. Free exploration, the iterative process, the investigation into problems and solutions as ways of engagement, is compromised in this way.

*DISRUPTION.* A noteworthy observation regarding the extended disruptive studio design project of b4 is whether such a prolonged disruption is conducive to well-integrated projects. Alternatively, does the entanglement in philosophy and theory cause students to get trapped or derailed in their responses to thinking and making? It appears as if an empathetic response becomes a hindrance – too detached, or too attached. This is problematic for creative engagement; however, students do not refer to duration themselves.

[reflective essay]

*PROCESS.* Comments regarding process reveal students' personal experiences and realisations of the workshop. In b1, students express a shift in their intentions, by refocusing on process instead of outcome-based solutions. It becomes a 'way of understanding' and identifying potential by sharing different opinions and finding new meanings through material explorations for abstract associations and symbolism. In b2, the workshop activities enable the understanding of underlying problems in the bigger studio project, as students call attention to two activities, keywords and vignettes. The former elicits responses regarding human-centred issues, and the latter reveals the importance of social interaction. Students in b3 relay individual experiences, realising personal judgements and perspectives related to larger design issues. Engaging with unfamiliar activities reveal that unexpected shifts are possible, even if they are small and seemingly insignificant. The challenge remains to represent intangible abstract qualities, when using unfamiliar ways of engagement, without an end-goal in mind. Students embrace the challenge. However, when thinking overshadows the other modalities of design inquiry, the creative and abstract interpretation suffers (b4).

*The design process in this workshop was a bit different from the usual design process that I go through when designing ... This process deals with how the designer uses objects, shapes and materials to express situations and problems. In the workshop we had to think out of the box ... (b2\_Naelly).*

*Good design is design that caters for 90% of people, at least 90% of the time ... how convenient / serves [sic] the end user that creates the meaning (b2\_Andi).*

**THINK.** The thinking mode reveals notable observations across the four biopics. It appears that reflection assists to identify and explore transactional relations between people-people and people-space (b1). Students consider ‘thinking outside the box’ essential in the process to shift from physical expression and regulation, to intangible meaning-making matters (b2). Students in b3 feel ‘forced’ to think beyond static and physical representations. As a result, a generic approach is replaced with responses filled with richness immersed in personal experiences. Through critical thinking and reflection, students in b4 find focus to define projects.

**MAKE.** Students that actively participate, find ‘making’ to be the catalyst for expression and finding meaning during the workshop (b1, b2 and b3). In b4, ‘making’ and free explorations are limited. The potential of an iterative and hands-on process remains locked. Explorative learning suffers, with obstacles to abstract interpretation and development of ideas. The question remains, how could active participation in vignette drawings enable modal shifts from thinking in text to images, guiding abstract interpretations to deeper insights? Instances of active engagement with material result in deeper associations (b1). Free, messy and hands-on explorations eliminate preconceived ideas because of the confrontation contained in the reflection process (b2). The making mode in b3, as the biggest positive disruption, enables abstract responses and allows students to ‘enter into’ another way of engagement. They challenge their preconceived ideas by physically ‘making’ things and interpreting abstract potential of second life materials, a transformation through ‘thinking’ and ‘acting’. The identification of descriptive keywords as verbs also focuses on relational and complex concepts. Initial anxiety and apprehension at the start of the workshop is replaced by active participation.



## REFLECTIVE ESSAY *process in action* thinking

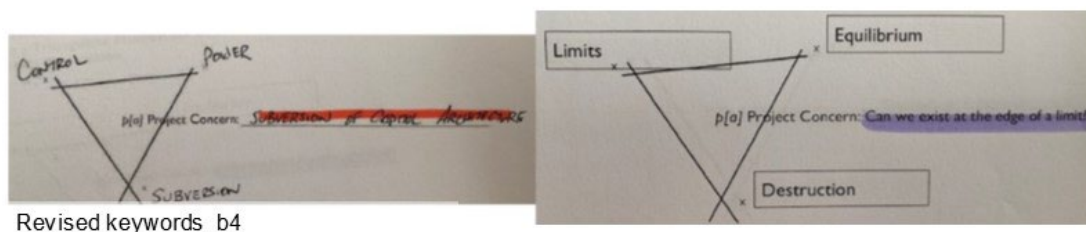


Figure 6-15: Process in action and reflective essays

**FEEL.** The explorative process expands the empathetic awareness of students in all biopics, especially in b1 where the continuum of dissociation is visible. Students in b4 struggle to either connect, or detach emotionally, which has a direct impact on the trajectory to completion of their projects.

*SHARE.* Sharing has two different roles. Firstly, interacting with peers to get other opinions and views, and secondly, communicating the design intent through abstract representation. In biopics where peer interaction is spontaneous, constructive collaboration and criticism assist students to understand perspectives other than their own (b1 and b2). Abstract representation of societal problems poses a challenge and students question 'how' relational connotations and associations can represent symbolic messages (b1, b2, b3 and b4). Rendering the intangible visible remains a constant challenge for students in b4. In the context to only reveal issues through abstract representation, it is imperative to have an opinion, to voice an opinion and to make your opinion matter in some way.

*DO.* In b3, students mention that the critical artefact as 'model' becomes commentary on self and on society. Students express directly what they feel, as the workshop has no final product or outcome expectation. Social commentary also features in b1, where students explore the meanings of conditions and scenarios in the city. Similarly, students in b4 have the intention to become involved in the matters of concern they identify, as activists, or as members of the community. This should however not be understood as dualism, because the shift between the two is considered as a slow process of realisation. In addition, it happens incrementally along a continuum of shifts between degrees of understanding.

*The project work will begin to explore the answers to these questions without attempting to fixate on a single architectural solution. This work also aims to make the question and speculative propositions visible (b4\_Derrick).*

*I am curious about how to bring this layered complexity of information to the surface and in doing so, hope to encourage an acknowledgement of this entanglement of immigrants with the unceded Native land and architecture's responsibility to the plurality of the present condition (b4\_Jovana).*

#### [trajectory to completion]

Only a handful of students show a concerted effort through their individual commitment to interpret pertinent aspects from the workshop in the trajectory to completion of the larger studio project. Very little to no such evidence is visible in student feedback, external comments and visual data.

*FEEL and BE.* In cases where commitment is visible, contextual considerations inform the interpretation. Emotional empathy, balanced with a cognitive understanding of the context ground the projects. These students are able to detach and find an 'exit' to close the loop in their project development. They discover a personal commitment in their individual process. For the remainder of the class, 'think', 'make', 'do' and 'share' seem to be part of the normal design practice, and 'feel' and 'be' dissolve along the way. To 'feel' and to 'be' therefore appear to be the most difficult ways of engagement to sustain beyond the obvious and predictable levels of engagement.

Due to the late insertion of the workshop in b2, the trajectory to completion does not show much evidence of its activities. As a result, the true impact cannot be determined. However, feedback express the intent to implement aspects of the unfamiliar approach in future projects, such as the keywords and vignettes (thinking in words and images). Students consider peer interaction and feedback (adopting

new perspectives), working with unfamiliar materials and realising the importance of the meaning of things, as valuable. One student incorporated the workshop thinking and approach in her project, with emphasis on human-centred matters, the value of meaning instead of aesthetic expression.

*I will apply this thinking method for future projects as it is valuable (b2\_Lyse).*

*I feel that the workshop is and was a great help when it came to adding value to my project. I wanted to make my design give meaning to the consumer but was lacking in my execution of my concept in ideas (b2\_Nadene).*

*I don't know I personally think that we should do more of these workshops to encourage future designers ... not be another drone in the proverbial [sic] beehive but instead be the difference (b2\_Andi).*

The prototyping process of luminaires in b3 shows evidence of critical thinking in manufacturing, especially considering ease of assembly. A quarter of the class addresses larger societal problems in the type of luminaires, to extend the use of light beyond aesthetic objects. They interpret issues regarding health and well-being, due to critical reflection and exploratory process. As a result, they close the loop in the emphatic route. The rest of the class shows evidence of creative use of materials and detailing, but does not address complex problems.

The process of inquiry in b4 is caught in a repetitive loop, instead of an iterative one. No evidence of the workshop engagement is visible in the trajectory to completion. Again, the question regarding the duration of a disruptive practice is highlighted, together with the challenges to connect and to detach emotionally to real-life challenges. These cause difficulties in the exploratory process. 'Feeling' and 'being', appear to be more complex modes of engagement as compared to 'thinking', 'making', 'sharing' and 'doing'. These highlight significant avenues of engagement to achieve deeper understanding and richer projects.

[post feedback]

*THINK.* The unfamiliar process unexpectedly assists students to consider their projects from a new perspective. Lateral and critical thinking, reflective practice and abstract thought all show to impact positively on the exploratory inquiry. The challenge to think outside standard norms, by considering new meanings, was intimidating at first (to varying degrees across the different biopics), showing that students respond with a deeper understanding and less predictable proposals. Abstraction and subjective connotations assist the ways in which students translate, interpret and make meaning of complex concepts.

*MAKE.* Second life materials as a disruptive catalyst in the making process, enable students to find conceptual and interpretive links to the critical artefacts. Students express spontaneously, by assigning abstract meanings to properties of materials (b1, b2 and b3). Students are no longer trapped in a familiar comfort zone, but free to explore with creative interpretations of unusual materials. They challenge their own self-imposed boundaries and find abstract and symbolic ways to express and represent ideas (b2). The iterative process of investigation unlocks responses to prototyping that are more manufacture

ready, considering materials and detailing (b3). B4 shows that if the making process is not actively pursued, the abstract interpretation later suffers.

*The numbered middle relates to a broken down clock, which is all over, which represents the different experiences at different times in a day. The threads of colour is the vast diverse potentials of people ... (b1\_Rebakah).*

*The installation is a representation of a city street vendor's stall, however the items on sale are unusual and have deeper meanings attached to them ... the items on sale are representative of the people in the city (b1\_Loren).*

**SHARE.** Interactive discussions assist students to develop their understanding of another's point of view (b1). Noteworthy in b2 is the comment that students feel free to explain things in different ways with an increased understanding of their message and intent. Through shifts between thinking in words and thinking in images, this becomes possible.

*I also found that we were able to explain things without the struggle of sketching and not being able to really express what we were thinking (b2\_Sh-Chen).*

**FEEL.** The data show that through dissociation and balanced emphatic responses, connected engagement influences complexity in richness and understanding. Otherwise, the interpretations are one sided and personal bias clouds the project.

**PROCESS.** The impact of unfamiliar actions in the studio, trigger unexpected sparks initially causing anxiety. Students later express gratitude and enjoyment for the experience in the post feedback session (b2). The fact that the workshop is process driven and not outcome based assists in the acknowledgement of other interpretations that would normally not be the case, as it is easy to follow certain 'recipes' to get results. This workshop intention is the opposite; it is exploratory, speculative, and provides students with the opportunity to ask difficult questions without having to solve them. However, when students consider these complexities, they internalise the associated challenges and issues and deal with it on another level – an expanded inner design awareness.

*Focusing on issues and resolving them, rather than building conventions helped me think better and work towards resolving an issue rather than begin drawing with a floorplan. This was very helpful as a creative because often we work on computers and rarely get the chance to allow ourselves to be messy and hands on (b2\_Sh-Chen).*

**DO.** By actively engaging with complex problems, students can make the choice towards commitment. When they acknowledge and accept the challenge to take action and to become champions of design issues, they become advocates for those that are not able to do so for themselves.

[alignment with ethos of school]

The investigation in b1 shows that students respond positively to the introduction to 'feel' and 'be' in addition to the conventional design inquiry. The data show a shortcoming and need to reintroduce 'feel' in a practical way. Connected engagement through 'feeling' appears absent in the engagement and ethos in b4. Students are able to motivate and formulate an argument theoretically and philosophically,

but find the emphatic process difficult. The design process as an iterative and explorative learning opportunity is highlighted in the findings of b2. Other ways of engaging outside the normal computer-driven environment, prove to unlock creative and lateral thinking. Critical reflection and sharing with peers are two modes that can add value to obtain deeper understandings. The inclusion of iterative practices and interactive engagement contribute to the ethos of the school in b3. Students are 'pushed' to consider problems beyond problems and to find the intangible within the practical.

## **SUMMARY 5\_process in action**

'Feel', 'act' and 'be' appear to be the most difficult modes of engagement to activate in the inquiry process. This is where the conscious decision to connect to deeper needs and requirements of users are revealed. In addition, if an emotional understanding can support the cognitive response, the overall engagement is well-rounded and whole. In this way, the designer can adopt the role of an agent, a change maker that cares and wants to make a positive contribution in the lives of others, in society as a whole.

## **6\_developmental transformations**

The developmental transformations thematic narrative considers student developmental theories through the lens of transformative learning. This discussion follows a different format to that of the preceding ones, by including theory from the literature in an attempt to contextualise the analyses in the larger discourse. These include transformative learning (Mezirow 1991), a holistic perspective (O'Sullivan 2002), constructivist understanding (Kegan 1982, 1994) and connected knowing (Belenky et al 1986). Developmental transformations are framed by a collective theory from educational and developmental psychologists, Biggs & Collis (1982), Gagne (1956), Bloom (1956), Krathwohl et al (1964), Kolb (1984), Perry (1970), Belenky et al (1986), Mezirow (1991), and Argyris and Schön (1974). In literature, the developmental theories or models are understood as 'hierarchies'.

Table 6-9 demonstrates in a theory matrix, the relation between the various authors. The horizontal rows, C, D and E represent the positions in developmental theory where the biopic investigations are plotted (C before workshop, D during workshop and E after workshop). The discussion below however, demonstrates that there are many permutations of development and not one single route. Krathwohl et al's (1964) lesser known affective domain in the Bloom taxonomies, sheds a new light on the possible insights gained in the thematic narratives (vertical highlighted column). In addition, Didau's (n.d.) taxonomy offers modes of engagements instead of hierarchical levels.

This study acknowledges the concept that learning is a development of skills and knowledge and that one builds on the other (scaffolding, after Vygotsky 1978). However, the study proposes the value of a fluid movement between the 'levels' or 'phases' for integration of different qualities or modes of learning, and not only as progressive steps to development in a hierarchical manner. Instead, it adopts a 'circular'

or 'open matrix' understanding, where the 'level' or 'phase' can be 'entered into' randomly, or more than one be occupied simultaneously according to the modes of engagement. Especially due to the context of the disruptive workshop activities and its unfamiliar approach in a design context, it requires new combinations or entry points for transformative learning and meaning perspectives (Mezirow 2018:117).

Table 6-9: Educational and developmental theory comparison

	Cognitive						[modes]	Affective	
<b>Mezirow (1991)</b>	<b>Biggs SOLO taxonomy (1982)</b>	<b>Kolb's learning cycle (1984)</b>	<b>Gagne's learning hierarchy model (1956)</b>	<b>King &amp; Kitchener (1994)</b>	<b>Perry's scheme of development (1970)</b>	<b>Bloom's taxonomy (cognitive) (1956)</b>	<b>Didau's taxonomy (n.d.)</b>	<b>Krathwohl' taxonomy (affective) (Krathwohl et al 1964)</b>	<b>Belenky et al (1986)</b>
<b>F - [value]</b>	Extended abstract	Active experimentation	Problem solving [complex procedure]	7-knowledge outcome of active inquiry 6-knowledge requires action and construction	9-Developing commitment 8-Orientation in implications of commitment 7-Initial commitment	Evaluation [creating]	-self-control / self-perception -metacognitive strategies -resilience / motivation	Characterising by value	Constructed [connected]
<b>E - premise</b>	Extended abstract	Abstract conceptualisation	Problem solving [complex procedure]	6-knowledge requires action and construction 5-contextual specific/shaped	7-Initial commitment 6-Commitment foreseen 5-Relativism correlate	Synthesis [evaluating]	-critical thinking -problem solving	Organising by conceptualisation	Procedural Connected
<b>D - process</b>	Relational	Reflective observation	Rule learning [relationships]	5-contextual specific/shaped 4-situational variables – abstract and uncertain	5-Relativism correlate 4-Multiplicity correlate	Analysis [analysing]	-creativity -collaboration -communication	Valuing	Procedural Separate
<b>C - content</b>	Multi-structural	Concrete experience	Concepts [systematic structures]	3-personal beliefs until absolute	3-Multiplicity subordinate	Application [applying]		Responding	Subjective [separate]
<b>B</b>	Uni-structural		Discriminatory learning	2-direct sensory observation	2-Multiplicity pre-legitimate	Comprehension [understanding]		Receiving	Received [separate]
<b>A</b>	Pre-structural		Basic types of learning	1-knowledge absolute /concrete	1-Basic duality	Knowledge [remembering]			Silenced [separate]

Table 6-10 illustrates the correlation between Mezirow's (1991) transformative learning and Argyris and Schön's (1974) single and double loop learning, and includes the consequent triple loop learning emerging from their work, based on Bateson's third order learning (1972). In addition, the holistic understanding of transformation (O'Sullivan 2002) and constructivist understanding of meaning-making (Kegan 1982, 1994) are included. The meaning perspectives of transformative learning, *content reflection*, *process reflection* and *premise reflection* (Mezirow 1991), are used in this discussion as the developmental pivots (before workshop, during workshop, after workshop) and relate to rows C, D and E (Table 6-9) as indicated and described in the discussion below.

Table 6-10: Transformative and loop learning

Transformation of meaning perspectives	Loop learning		Holistic (integral) transformation perspective	Constructivist understanding
Mezirow (1991)	Argyris and Schön (1974)	Triple loop learning (after Bateson 1972) – third order learning	O'Sullivan (2002)  Ferrer, Romeo & Albareda (2005)	Kegan (1982, 1994)
<b>Premise reflection</b> – “an awareness of <b>why</b> we perceive”	---	Triple loop learning (context & principles / values) – transform (change in perceptions)	<b>Inquiry</b> (participatory approach)	<b>5-self transforming mind</b> (systems of systems)
<b>Process reflection</b> – “reflecting on <b>how</b> we perform the functions of perceiving”	<b>Double loop learning</b> (frames / assumption & content) – reframe (change in thinking)	---	<b>Training</b> (bricolage)	<b>4-self actualisation</b> (systemic)
<b>Content reflection</b> – “reflecting on <b>what</b> we perceive, think feel, and act”	<b>Single loop learning</b> (action & process / procedure) – react (change in behaviour)	---	<b>Content</b> (mind-centred)	<b>3-Socialised mind</b> (across categories)

Below is a summary of the levels of learning according to the theories in Table 6-9 in relation to Mezirow (1991) in Table 6-10:

- *Premise reflection (why)* – row E: Relational, abstract conceptualisation, problem solving, action / construction, commitment foreseen, synthesis, conceptualisation and connected knowing
- *Process reflection (how)* – row D: Multi-structural, reflective observation, rule learning contextual / situational, relative (relativism correlate, multiplicity correlate), analysis, valuing, and separate knowing
- *Content reflection (what)* – row C: Uni-structural, concrete experience, concepts, personal beliefs, multiplicity subordinate, application, responding, and subjective knowing

The discussion to follow uses theoretical concepts as italicized words, as referenced in the tables above, without providing references and should be read in conjunction. In addition, citations are included for the integrative discussion of specific transformative notions in the biopics.

## Workshop

The workshop activities provide opportunities for growth and transformation through different modes of engagement and various perspectives. Findings show that some students display a connected view from the start and others develop connection through the process. However, this connection is not sustained in everyone. In addition, a large portion of students remains detached or separate from issues they address directly. The unfolding of this process is described in this section.

## [problem statement]

The findings show that students with an embodied experience of a context have a direct relation to the site and its problems, by means of an emotional experience, whether positive or negative. In this way, the route to a *connected knowing* is stronger, because of the contextual immersion (b1). The three forms of reflection according to Mezirow (1991:107-108), *content reflection*, *process reflection* and *premise reflection*, therefore appear as a continuum. In addition, the other biopics reveal *separate knowing* positioned according to *content reflection* due to sensory perception Mezirow (in Kember 1999:23), but relate to Perry's (1970) position *3-Multiplicity subordinate*, where students display uncertainty (b2) and encounter moments of 'temporising', a barrier to transition by 'freezing' (b3 and b4). In contrast, *process reflection* relates to *4-Multiplicity correlate* with focus on a-contextual issues, and personal bias overshadows the process, in b3 and b4 respectively. In *5-Relativism correlate* students are asking critical questions related to the design issues they identify.

*I live in the city but I am not part of it. I have a story; like everyone in the city but nobody to share it with. We are all different but similar in a way, yet we are disconnected. I wish (to tell my journey) to belong and to be part of the city (b1\_Thabi).*

*The first difficulty I had was actually thinking of the concern and not trying to solve the problem. I also thought that it was very hard to get out of the architect's mindset ... (b4\_Derrick).*

According to the Biggs SOLO taxonomy (Biggs & Collis 1982), students' experiences in b1 are *relational*, compared to the other three biopics, which are *multi-structural* where students struggle to make connections and focus projects. Following Bloom's taxonomy (1956) (Krathwohl 2002 - revised), b1 and b2 relate to *synthesis*, and b3 and b4 show limited synthesis, due to being too detached from the project, or being too close emotionally (b4). Kolb's (1984) learning relates to the first two phases, *concrete experience* and *reflective observation* (b1, b2 and b3). Students in b4 find *concrete experience* challenging, due to the emotional connection being too intense, or they keep themselves separate and detached.

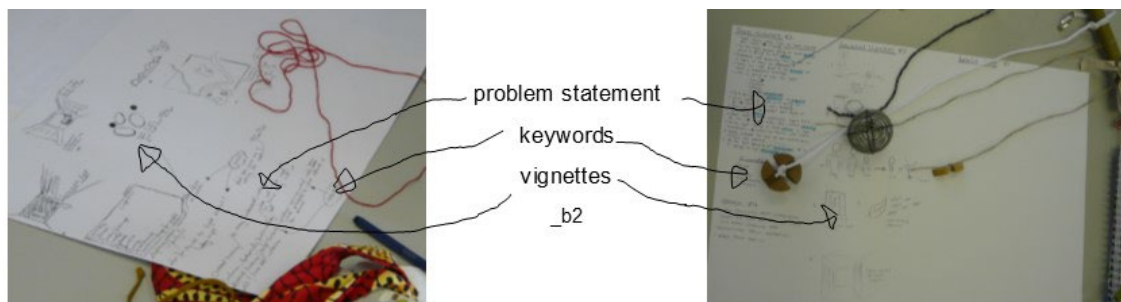
In relation to Mezirow's (1997:5-6, 2018:116) transformative learning, it is evident that students find it challenging to fully shift their *point of view* to that of the user, as their own *habits of mind* are strongly embedded in their own personal judgements and assumptions. There are however, selected students in each biopic that are able to shift their perspective to that of the user through *normative dissociation* (Panero et al 2019) and express *connected knowing*. All workshops display, according to Krathwohl's (1964) affective domain, an awareness and response to the context, or imagined context (*receiving*) in a detached state. In instances where students connect to the experience, their behaviour shifts towards interest and immersion (*responding*) (Krathwohl et al 1964).

*There was no electricity for the past week, load shedding is a huge problem in South Africa. I want to create a light that can be wireless, that can create a "homey" atmosphere and can change colour and that can be controlled from your cell phone (b3\_Roxanne).*

*Busy streets with constant flow of traffic. Watchful eyes on every corner. Clutching to valuable objects as we move with the crowd, completely alert and aware. We walk on dilapidated walkways, dirtying our shoes, kicking up dust. (b1\_Rebekah).*

[keywords]

Keywords provide a cognitive link with the problem statements and because of that, students are more connected (b1 and b2). Students in b2 show a deepening in *reflective observation* (Kolb 1984) for increased understanding. Perry's (1970) barrier, 'temporising', leaves students (a third of the class) in b3 in a frozen state, unable to engage actively with this activity. However, Kolb's (1984) learning cycle of *reflective observation* shows that students are able to recognise personal references to past experiences and thus expand their cognition. Noteworthy in b4 is a loosening of barriers, with a shift towards Biggs SOLO taxonomy's (Biggs & Collis 1982) *relational* concepts on an *extended abstract* level, by questioning issues related to *premise reflection* and formation. Re-framing of projects benefits this activity, which links to *double loop learning* (Argyris & Schön 1974), modifying and clarifying goals and challenging ways of thinking.



### PROBLEM STATEMENT *developmental transformation.*

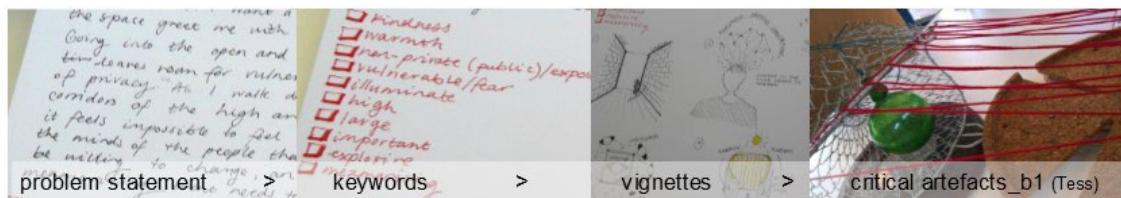


Figure 6-16: Developmental transformation and engagement

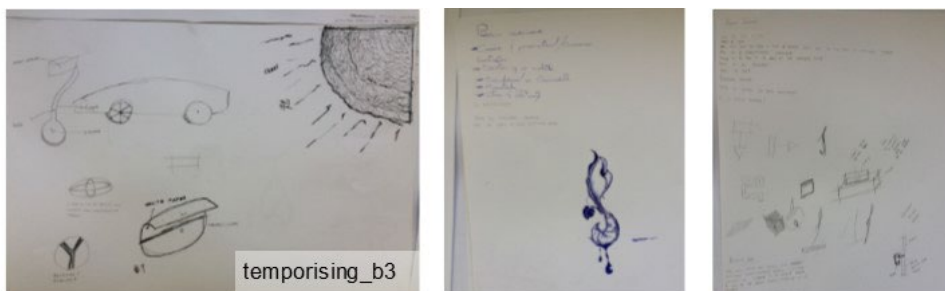
[vignettes]

Vignette drawings indicate a *connected knowing* because of the contextual immersion of students in b1. In b2, both *connected and separate knowing* are visible (Belenky et al 1986:100), with focus on emotive and experiential matters, and pragmatic considerations, respectively. In both b1 and b2, Perry's (1970:109) *5-Relativism correlate* is visible in the majority of students, with *6-Commitment foreseen* in some, as they respond to contextual matters in different ways where human-centred matters are concerned. In contrast, students in b3 experience a barrier to start the drawing phase – a static 'temporising' state. This inaction is triggered by hesitation and anxiety because of the unfamiliar activity and the requirement for contextual and relational exploration. *Separate knowing* equates to *4-Multiplicity correlate* by highlighting a-contextual issues. *Connected knowing*, emphasising

relationships, reveal *5-Relativism correlate* is through an awareness of complex issues (Belenky et al 1986:112-115; Perry 1970). In this way, deeper responses to wicked problems reveal *premise reflection* (Mezirow). However, it is unclear if all students find synthesis and deeper understandings.

According to the comparison in Table 6-9, Bloom's (1956/2002) *analysis* and Kolb's (1984) *reflective observation* correlate with a *separate mode*, and *synthesis* and *abstract conceptualisation* with a connected mode, respectively. In the context of *single and double loop learning*, students react to an activity or context's experience in a *single loop* cognition that deals with the self and personal judgements primarily. Shifts to *double loop* learning enable critical reflection and allows for reframing of design engagement in intentions (Argyris & Schön 1974). *Triple loop learning* is not yet visible, as it is too early in the process for transformation, except for one student in b1 who demonstrates a connected voice and full *normative dissociation*, free from bias or personal judgement. No vignette drawings are produced in b4.

Students displaying a temporising state, remain in a *receiving* mode according to Krathwohl et al's (1964) affective domain. However, students making relational and contextual links, show a reaction by *responding* to an experience. The student with a *normative dissociative* perspective shows an immersion and involvement that relates to a *valuing* of the experience because of the direct relation and association (Krathwohl et al 1964).



### VIGNETTES developmental transformations connect



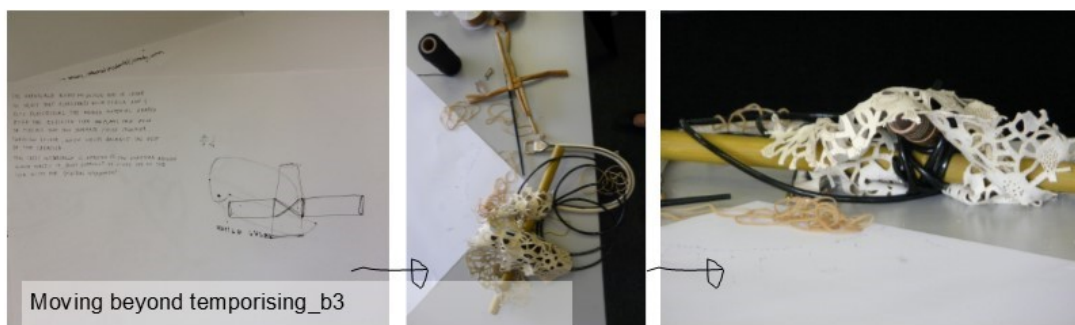
Figure 6-17: Developmental transformation and connection through vignettes

[critical artefacts]

The making of critical artefacts in relation to Kolb's (1984) learning cycle, reveals the consecutive process from *concrete experience* to *reflective observation* and *abstract conceptualisation*, in all biopics. This represents all three "transformation of meaning perspectives" (Mezirow et al 2009:7). Especially noteworthy in b3, is the observation that the 'making' process enables abstract thought and distillation of ideas and perceptions, not visible before this activity. As a result, a deep immersion into

wicked problems emerge, with an increased understanding due to *concrete experiences*. The majority of students show transition out of a ‘temporising’ state of anxiety and respond spontaneously, albeit with hesitation. They shift from *3-Multiplicity subordinate* to *4-Multiplicity correlate* by integrating *content reflection* and *premise reflection* simultaneously (Mezirow 1991:107-8). This enables the application of complex ideas within the mode of *synthesis* or *evaluation*, where students employ ‘thinking’, ‘feeling’ and ‘making’ at the same time. Students revealing evidence of *5-Relativism correlate* ask questions and immerse themselves in the making process (Perry 1970:109).

Transformation according to the Biggs SOLO taxonomy (Biggs & Collis 1982), is considered from a *multi-structural* mode, where they struggle to make connections, previous activities are now replaced with a *relational* understanding where concepts are integrated. In some cases, the *extended abstract* mode brings a broader perspective of the impact of lighting design in society. In addition, Bloom’s cognitive taxonomy (1956) reveals a shift from *application* and *analysis*, to *synthesis* and *evaluation* (b3). In the affective domain, students *respond* actively, and shift towards *valuing*, when they internalise the experience to gain deeper understanding. This results in *organising*, with an interrelation between values (Kratwohl et al 1964). Students make connected and committed decisions on behalf of others.



### CRITICAL ARTEFACTS *developmental transformations*

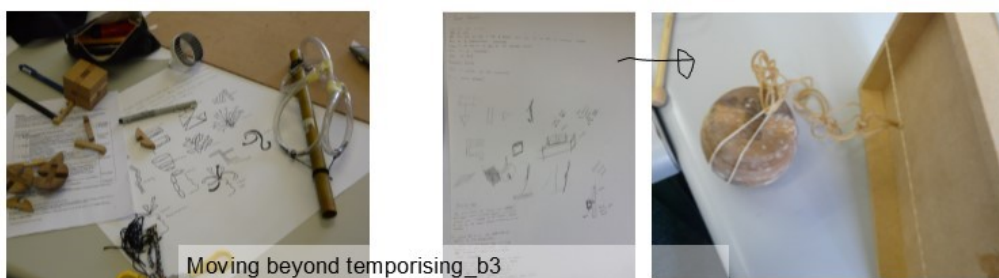


Figure 6-18: Developmental transformation – moving beyond temporising with materials

Ethical and cognitive development in selected students’ critical artefact making (b4) show evidence of *6-Commitment foreseen* (Perry 1970), as they express intention to act as agents, although their work is speculative. In this way, Mezirow’s (1991:107-108) view on reflective practice related to *content*, *process* and *premise reflection* become visible.

[peer feedback]

Peer feedback reveals noticeable observations. Students in b1 and b2 share freely in a constructive criticism session, as a positive experience and relate to Perry’s (1970) *5-Relativism correlate*, where

analysis of scenarios and situations are understood deeper. In contrast, due to the limited interaction between students in b4, the issue of project intent or messages are still being framed. The challenge remains to move from *separate knowing* to *connected knowing* (Belenky et al 1986:100, 131) and in cases where connection is obtained; the difficulty is to find focus and a creative and critical design interpretation. In addition, no or limited interaction in b3 affirms the barriers that inhibit transformation, *temporising* (fear of interaction) and *escape* (feeling alienated and not comfortable to share). In extreme cases, where students are not participating at all, *retreating to dualism (3-Multiplicity subordinate)* (Perry 1970:10), as some chose not to complete the workshop. This demonstrates that the route to transformation is unpredictable, and can end at *content reflection (receiving and responding)* for some, *process reflection (valuing)* for others, and *premise reflection (organising)* where perceptions are challenged, for a few (Mezirow et al 2009:7; Krathwohl et al 1964).



## PEER FEEDBACK *developmental transformations*

Figure 6-19: Developmental transformation – peer interaction and retreat

[reflective essay]

The reflective essay provides an opportunity for students to freely share their positive or negative experiences of the workshop. It reveals that Mezirow's (1997:5) transformative learning relates to *frames of reference*, challenging their own opinions in the context of a human-centred approach. The data show that *habits of mind* are the most difficult to change, as very personal judgements and experiences influence its understanding (b1 and b2). Some are humbled by the experience and find it possible to overcome personal challenges (b1). Students adopting a human-centred approach through normative dissociation find a deeper connection to critical issues (b2). In addition, bias from a designer's perspective is highlighted as an egocentric view (designer before user). This is visible in b3 and b4, where students show preconceived ideas. As a result, it becomes difficult to adjust to a human-centred approach and to internalise the translation of abstract ideas (b4). However, in b3 students adopt the view of the user, especially in pragmatic people-object interface considerations. The question of *separate* or *connected knowing* (Belenky et al 1986) is revealed throughout the duration of the workshop. In b1 and b2 students move from *separate* to *connected knowing*. B3 shows that the making process assists to establish connections in student thinking and understanding between issues within a particular context, which were not there before.

*Initially for me the process was very goal orientated. It was putting in more thought than feel. Do I want to be a designer that makes an aesthetically pleasing thing OR do I want to make the subject feel something more? (b3\_Lisa).*

In b4, students are moving back and forth between the two modes of *procedural knowing* because of the difficulty to reframe and focus the project descriptions (Belenky et al 1986:100). Even though some students display barriers limiting transition (static inaction as ‘temporising’, and ‘escape’ where interpretations are abandoned), the majority of students expresses an intent to act on behalf of others as agent, *6-Commitment foreseen*, and some indicate a deliberate choice to commit to decisions taken, *7-Initial commitment* (Perry 1970). Here, the affective domain stretches into *characterisation by value* (Krathwohl et al 1964), where internal adjustments are made in students’ beliefs, ideas and attitudes, see Table 6-11. This seems contradictory, but could be explained by the students’ emotions, either feeling overwhelmed by a theoretical burden, or because of an over emotional attachment to wicked problems.

Table 6-11: b4\_Shift observed in reflective essay

Initial challenge articulated	Shift/transition expressed
think abstractly instead of solutions	only ask (and reflect)
to think of concern without solving the problem	explore answers to questions, speculate
clarification of concerns	reflect and see things in a new perspective
concerns are vague (perceptual lacking)	
reconcile different ideas to reveal both	bring issues to the surface
process too strict	render visible the intangible
specify concern – too vague	
	render visible by the way of the ‘inside’

Students in b3 also show ‘temporising’ (but for reasons of unfamiliarity) with the activities and process according to position *5-Relativism correlate*. B2 has one other significant challenge, namely the workshop insertion in the last quarter of the design project. Because of this limitation, barriers to transition are due to students’ abandoning deeper interpretations in an *escape* to complete their larger design projects in time. However, they also reach *5-Relativism correlate* in the process (Perry 1970). A quarter of students in b1 deliberately incorporate the workshop approach and considerations into the design project, by looking deeper into the potential this city holds. Their *habits of mind* are shifted to question their own prejudices and as a result, they make connections to *6-Commitment foreseen* within the domain of *connected knowing* (Belenky et al 1986:113). Premise reflection becomes relevant for multiple reasons; firstly due to the fact that students demonstrate intent to engage with the difficult questions, as they are challenged by their own judgements and bias, secondly, their own values are under personal and collective scrutiny, and thirdly, *content reflection*, *process reflection* and *premise reflection* in concurrent application (Mezirow 2009:7).

*At the start of the design process I was apprehensive. I felt unsure of the outcome. My design is a reflection of the process (b3\_Nicole).*

*The workshop opened my mind to the creative potential in the city and even myself. It was very successful and fun to see all the different personalities of my peers coming out (b1\_Michelle).*

The trajectory to completion reveals notable results related to sustaining the small transitions made during the workshop. Data shows that it is difficult to keep a *connected voice*, to stay within the perspective of a human-centred approach and to modify goals through *double and triple loop learning* (Argyris & Schön 1974, after Bateson 1972) when the pressure to complete the design project is high. When students shift their priorities in the extended studio process, the potential of the workshop intent and complex understandings generally fade in all the biopics.

Table 6-12: b4\_ Transformation in design engagement and thinking

Students' personal views on transformation				
Question	Expose	View	Engage	Reveal
only ask to reflect	bring issues to the surface responsibility	Reflect / see opportunities new perspective	explore answers question / speculate propositions	render visible the intangible tame the insubstantial way of the 'inside' - interstitial conditions

The emotionally *connected knowing* at the start and during the workshop, is replaced by a *separate knowing* (Belenky et al 1986) in b1. Here, *escape as a barrier* to transition appears due to students feeling overwhelmed to make meaningful connections within the context of the larger design project. In addition, the challenge of limited time available to complete the design project and pressure of other modules' requirements cause stress. However, the quarter of the class showing commitment in their initiative, represents *6-Commitment foreseen* and *7\_Initial commitment* (Perry 1970:135, 153), and also reflects Kolb's (1984) trajectory from *abstract conceptualisation* in the making practice of the workshop, to *active experimentation* as an activist in the design project.

*Not sure if it was intuitive or intended ... Meaning-making in thinking, but not manifested ... No clear evidence of awareness beyond using terminology ... I am not convinced that this student integrated/engaged the workshop with the design project. She could be nervous and forgot to explain it ... (b1\_external examiner).*

*Although the design never reached maturity, the conceptual approach to material selection and connections to it is very interesting ... There was an energy and excitement around the model evident in studio sessions, but it was not pulled through to the design execution ... Direct link between model and design execution. It is a pity that a larger diversity of the typology was not developed as the model suggests (b1\_studio assistant).*

One student in b2 implements the workshop considerations into the project, together with a quarter of the class in b3 that consider the manufacturing of the luminaire prototypes. As a result, they show the same trajectory as described for b1. This is an example where a student embraces *premise reflection*, *triple loop learning* and Bloom's affective domain's *organising* category (Mezirow et al 2009:7, after Bateson 1972; Krathwohl et al 1964).

Table 6-13: b2\_Transformation themes

Identification of problems	Meaning-making	Importance of user	Feedback
Using keywords Express freely	Emotions and narrative Ordinary materials	New perspective	Constructive feedback
<i>The problems I identified during the workshop were real problems... (Siphumelele)</i>	<i>...and also how just a bit of thinking and using non-building materials to make something of value, actually makes you think about what something means to you</i>	<i>The value it added to my thinking is how important the user is (Khethiwe)</i>  <i>Writing down the problems of my project from a consumer's perspective helped me to come up with a more realistic and feasible solution... (Nadene)</i>	<i>Explaining your problem and receiving feedback was a very useful step too (Khethiwe)</i>  <i>I received very useful feedback which I incorporated into my final design (Siphumelele)</i>
<i>...to identify problems and issues that convenience stores faces without using any straight forward language... (Shu-Chen)</i>	<i>...building something of meaning without using literal objects (Khethiwe)</i>		

The use of the term ‘activist’ in b4 should be considered at this point. Someone who has a strong conviction for a particular cause, but remains detached, could be called an advocate or champion instead. Those students showing an emotional attachment due to the association with a particular community are in fact activists. However, in this instance they find it difficult to detach from the *wicked problems* under scrutiny and discussion.

[post feedback]

The post feedback shows that transformative learning is a challenging process to sustain within the context of a series of disruptive actions. The aspect of time surfaces again, as the process to connect with the needs of the user (Brown 2009) and the *route to empathy* (Kouprie & Visser 2009:445-447), where connection takes place, is timeous. The question whether a longer immersive project or a collective succession of smaller disruptive projects would be more conducive to transformations of greater magnitude, remains. B4’s data analysis shows that a long disruptive design project as an extended upset, is not particularly beneficial to enable transformative engagement.

Table 6-14: b4\_Emotional and cognitive engagement

Emotional engagement (connected)	Cognitive engagement (separate)
<u>Challenges</u> Loses objectivity Trapped in emotional situation and affective qualities Personally involved in the community / cause / issue Too immersed Dialogue with process, community and self Personal bias, and ignorance of other views	<u>Challenges</u> Struggle to connect at all Too detached, becomes a barrier to active engagement Observer of a cause, or situations Relate from a distance, as observer Instinctive focus on solving problems Personal judgements of own views and preconceived ideas
<u>Barriers to engagement</u> Temporary inaction, not making decisions	<u>Barriers to engagement</u> Abandon other views besides own (designer perspective)

Students showing shifts, however small, towards the trajectory of completion are making the links between all the aspects in the workshop: *connected knowing*, finding *commitment*, detaching emotionally to close the empathy loop and challenging their own premises and preconceived ideas

(Belenky et al 1986, Perry 1970). They also follow *triple loop learning* that modify their own behaviour, thinking and values within a particular context. *Premise reflection*, relates to 'why' questions (Mezirow 1991). The number of students represented here, however, are only a quarter of the entire sample group across all four biopics.

*To constantly be aware of the emotions you want to capture and enhance in a space. To be aware of the story and emotions one (designer) wants to express and illustrate to the user in a design (b3\_Christene).*

[alignment with ethos of school]

According to this research, the optimal positions in student ethical and cognitive development at third year level (exit level for undergraduate degree) oscillates between *4-Multiplicity correlate*, to stages *5-Relativism correlate* and *6-Commitment foreseen* (Perry 1970). In isolated instances, students make the shift to *7-Initial commitment* where synthesis and interpretation are complex and initiative towards action is expressed, beyond the requirements of the design project brief. Krathwohl et al's (1964) affective domain guides students, through emotionally connected qualities, to an understanding of valuing others, and their own role in the process. In addition, they internalise or *organise* their newly acquired design values (Krathwohl et al 1964). Mezirow's (1991) transformative learning correlates to this observation, where students move fluidly through or between *content reflection*, *process reflection* and *premise reflection*, when they challenge their own *habits of mind* and *points of view*.

An understanding of the transformative developmental theories in schools of spatial design will enable curriculum design and project alignments towards content, learning modes and engagement actions that address an integral holistic transformative learning context (Ferrer et al 2005, O'Sullivan 2002) and reveal the hidden curriculum. Jarvis (2021) refers to emancipatory teaching-learning and 'empathic-reflective-dialogic' re-storying, through which identity exchanges enable inclusive worldviews and understandings.

## Summary 6\_developmental transformations

Brouwer et al's (2015) experiential learning cycle speaks to the ethos of each school as its trajectory moves from feeling > watching > thinking > doing (straight, or with recursive / iterative detours), which culminates in the characteristic of the activist. This aligns with the development of *citizen designers*, promoting design that is value driven (Shea in Resnick 2016:20). Kolb's (1984) active experimentation style relates to the activist, where transformation becomes visible. This is the case in all biopics, where there are selected students surfacing as 'activists' for social design and a human-centred approach. They address wicked problems through empathetic responses and challenge preconceived perceptions within unfamiliar contexts and new ways of working.

We believe that social design can create truly transformative social change through reorienting its theoretical philosophy away from traditional human-centred priorities (object-centric) and shifting, instead, toward new, situation-centred (social systems-centric) priorities (Resnick 2016:288).

## 7\_challenge : shift

The 'challenge : shift' section deals with *threshold concepts* (*transformative, irreversible, integrative, troublesome* and *bounded*) (Meyer & Land 2003). Concepts that are challenging to address and internalise not only during the course of the workshop, but also towards the trajectory to completion of the studio project. These reflective moments reveal students' conception, reconstruction and multiple understandings of scenarios and conditions. It also includes critical reflection of themselves and their roles as designers, which lead to ontological shifts, albeit small.

[problem statement]

A wide variety of challenges is noted at the start of the workshop. The real-life emotional *disruption* of the walkabout in b1 proves a personal provocation and *troublesome* experience. This happens if benefit of possible shifts extend to where students can formulate a deeper understanding of the inner city context, especially where a virtual building is used as a site. The insertion of the workshop in the first quarter of the project means that integration potential exists during the design project. B2 also deals with a real-life scenario, but with a real-life client and a fixed typology within a fictional location / site. This requires students to identify pertinent intangible customer requirements in the *project framing* of the convenience store, to broaden the already pragmatic understanding (workshop inserted three-quarters into the design project). The late timing of the workshop makes it difficult for students to re-adjust at this stage and to adopt other perspectives and ideas.

*The workshop was an eye opener, I feel that it would be more effective if it was done at the beginning of a project. The value it added to my thinking is how important the user is, also how just a bit of thinking and using non-building materials to make something of value, actually makes you think about what something really means to you (b2\_Khethiwe).*

The challenge in b3 does not immediately revolve around the content of the workshop. The *disruption* is overwhelming in itself in terms of design practice and students are anxious and apprehensive to start. The difficulty is to connect with its aim, by not solving any problems and to identify wicked problems related to luminaire design. The unfamiliarity of this experience leaves students unresponsive. The extended provocation of the larger design project in b4 also leaves students stunned, because of the prolonged disruption, of which the workshop forms a part. The pertinent requirement only to reveal issues, and not to solve them within an abstract representative design approach, proves to be the biggest challenge. The question of representation of big societal problems is another concern, as students' thinking is immovable at this stage. However, pertinent topics (liminality and transience; power and control; and territoriality and presence) and themes (empathy; meaning-making; social agency; and urban condition) emerge in their inquiry.

*Students sit with paralysed expressions, too scared to touch the page, in anticipation for someone to say a word to relieve the pressure. The black sheets remain blank, no one moves. I wonder how we are going to address this stalemate and start to share my experiences of the past weekend to break the ice (Reflexive note\_b3).*

[keywords]

The keyword selection in b1 and b2 assists students to identify potential in the two very different contexts and are taken directly from the problem statements. In b3, it is a challenge to identify keywords that capture the essence of the problem statement, due to the luminaire design’s assumed object focus, however words describing quality of life and meaning-making are identified. A shift from social processes to meaning-making is identified in the keywords in b4. The engagement in all biopics becomes more integrated at this point.

Table 6-15: b3\_Keyword responses

Functionality / use	Aim / purpose	Emotive / immersion	Meaning-making
<i>convenient, customisable, simple, efficient</i>	What people want to feel <i>Earthy, organic, lively, simplistic, originality</i>	<i>calm, warm, quirky, sleek, elegant</i>	Quality of life, meanings <i>homey, colourful, atmospheric</i>

[vignettes]

Vignette drawings show that by shifting modes of engagement as ways of thinking, they become significant in the workshop trajectory, as students are required to translate text from the problem statements and keywords into sketches to represent complex problems. In b1, a binary condition between the city and people emerges (city represents a trapped condition, disconnected from its people; people as the vital mind-set, and the connecting elements in the urban condition). Students in b2 also make the shift from text to vignettes by addressing themes such as meaning-making (identity and value), memory and interaction, and human-centred associations. Shifts that reposition students’ mindsets represent transformative actions. In comparison, vignette drawings prove a challenge for students in b3, with a third of the class producing relational sketches, and the remainder only formal shape based associations or no vignettes at all. Students in b4 produced no vignettes, which means that due to a lack of modal shifts between ‘thinking in words’ and ‘thinking in images’, little relational interpretations are explored, impacting on later activities.

Table 6-16: Vignette summaries and shifts

<b>b2</b>			
Isolated objects	People only	Flat 2d diagrams	Complex relational
A-contextual objects Objects associated with activities/qualities	Users drawn in various activities	Layout, circulation diagrams Elevations indicating issues pragmatic challenges No or few people included	Relational conditions between space and users Experiential quality Populated to indicate intent
<b>b3</b>			
No vignettes	Literal objects	Objects with associations	Relational vignettes
Sheet empty	superficial non-spatial a-contextual literal	Annotated vignettes Associations with shapes and feelings / emotions	Meaning-making / relational experience Symbolic – memory, contentment (depth of meaning) Awareness of surroundings

The making of critical artefacts as a positive disruption in the workshop, becomes a catalyst towards action in many biopics. Threshold concepts emerge that have *transformative* and *irreversible* influences on students' thinking and engagement. B1 is a natural continuation of the workshop activities, where representations are symbolic and abstract, addressing various themes: authenticity, real-life scenarios, judgements and mind-sets to change, importance of process over product, small change as a bottom-up approach, self-correction / reflection and impermanence of things. In this way, students apply a reflective approach and engage directly with an exploratory process, as enabling actions of inquiry. The trajectory in b4's design project is also a continuation of the same approach and attitude – not solving any problems, but only revealing issues. The question of personal shifts and transformation remains *troublesome*, where representation is the biggest provocation: not finding a solution or creating a product as end-result.

The critical artefact stage in the workshop proves to be a positive disruption in b2 and b3. It becomes an icebreaker for students to respond to freely, without any hesitation compared, to the first experience at the start, especially b3. As a creative and cognitive catalyst, even though the process is different to the normal familiar studio practice, students engage with eagerness and excitement, some with a little hesitation. Making in b3 proves to be the catalyst needed for students to continue with the workshop activities. Up to this point, they were outside their comfort zone, but are now comfortable to express freely. The value of second life materials is significant, as abstract associations and symbolism become possible, something which students embrace. In this way and without being judged, they connect to the making process. Table 6-17 highlights the notable expressions of process, meaning-making and human-centredness.

Table 6-17: Critical artefact process and meaning-making

Process	Meaning-making & materials	Human-centredness
More possibilities – eye opening	Try new things	Appropriation
Process more important than product	Forced into different directions	Users to transform the form
Reflect on process – exploring ideas	Use of second life materials	Balance in design:
Focus on how – feel vs goal	Materials representative in making	Interface object, space, user
Narrative – expands the mind	Action of making – verbs	Temporary
Encourages power of knowledge	Symbolic – use of materials:	Inclusive
Way of thinking – out of the box	interconnectedness	
Unexpected	-memory, meaning	
Reflected – critical view	-association, intuitive, emotive	
Inquiry= exploration vs solution	-linked to people, interpretations	
Shift = thought vs feel		
<i>The process of weaving the thread [...] was more important than the end result. It revealed to me that my process of making my light will be more telling of the narrative I create, than the final product (Neo)</i>	<i>However, I enjoyed the idea of looking at it from a personal experience making the design more meaningful opposed to something you would usually just design and have no connection to (Kaanita).</i>	<i>Seeing the problems first allows one's eyes to open to what others are going through and allowing us as designers to empathise and to have compassion. Designing for people is important as it benefits everyone (Andreana).</i>

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*I found this workshop beneficial because I tent to struggle with putting my ideas down on paper and exploring them as well as reflecting on them. I enjoyed this workshop, it was fun and eye opening :) (Rozanne)*

*The process of creating in this lecture was slightly nerve wrecking as there was a lot of material and I am used to building models with an idea and materials in mind as opposed to letting my imagination work its process (Kemang).*

*I consider all elements, what colours could portray or how a certain shape could make someone feel. Dealing a lot more with the emotional aspect of creating and not the actual technical part of it...as of yet (Isabella).*

*The design should be enhanced by the people using it (Lisa).*

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*Students make their way to the tables stacked with second life objects and materials. I see their expressions, excitement, curiosity, amazement. The atmosphere lifts as students search through the array of materials, looking, picking, reflecting, and collecting. The thought of free expression must be the catalyst here. With arms filled with a wide selection, demeanours change and the prospect of making lies like a blank canvas (Reflexive note\_b3).*

[peer feedback]

Peer feedback in b1 highlights the transformative nature of the embodied experience of the site and context. Students identify themes related to identity formation, physical and social significance, meaning-making through interconnectedness of people. Interaction is constructive and students participate spontaneously, compared to the limited feedback in b2 and b3, where evidence shows only a few written comments, as if sharing with peers is not something that happens regularly. In b4, students work in isolation for the majority of the workshop and only share with each other at the end of the session in a formal discussion. Ideas are well framed verbally, but once students articulate the interpretation of the critical artefact, they are trapped in arguments without finding a conceptual exit to represent ideas. The question then arises, how to use critical reflection as a way of finding hooks between theory and practice? Themes emerging here are project framing, project approach, revealing issues, process / sequence of activities, translation of complex design issues and representation to an audience.



Student interaction\_b1



Student written feedback\_b1

## PEER FEEDBACK challenge : shift opinions

Fig 6-20: b1\_challenge : shift and peer interaction/feedback

Reflective essays are personal accounts of the experience of the workshop as a whole. In b1, half the class noted a shift in some way: perspective of user, contextual awareness, immersion and empathy, social and spatial agency, fluid living scenarios, bottom-up approach, potential and relational human-centred interaction. Following unfamiliar ways of design engagement make the discovery of new meanings, abstract interpretation and increased depth and complexity possible. The one aspect that is highlighted by a student is the concept of time, and that it takes prolonged involvement to make things visible, or to understand them deeper. This discussion links to disruptive practice and educational psychology as threshold concepts.

*The aim however is not to formalise the “singing in the streets”, but merely to extend it. Extending the delight from street to urban block, to urban interior and into the interior interaction and experience (b1\_Dhané).*

*The small pins show how something small can make a big impact – limiting the giant’s joints to connect and heal. I think as soon as you start focusing on the people and how they use the space you start to realise how important human interaction is (b1\_Nina).*

Shifts noticeable in b2 relate to another approach to that of traditional processes of design. Students discover that the concept of speculative inquiry opens other doors to how problems are expressed. An abstract approach allows the importance of human connections and social interaction to emerge. This mind-set brings the realisation that design and asking critical questions about it, is not only about solving issues, nor only about physical and spatial expression, but also about social interactions and connections. A student notes that the fragmentation of the activities allow for increased focus and understanding. However, complexity in the workshop is shown to become visible due to the shifting modes in engagement and perspectives.

*This workshop makes you shift your perspective, rather than being a designer, who’s primary focus is to fix a problem, it makes you step into the shoes of the end user, what do they experience ... (B2\_Andi).*

*The process has allowed me to critically consider different issues that peoples face inside a convenience store, human interaction and experiential elements that weren’t present prior (b2\_Mahesvaran).*

The biggest challenge in b3 is to break preconceived ideas regarding object-based luminaires and replace that with considerations of intangible qualities of light as a medium. In response, questions exploring human-environment interface emerge, and not only human-object interface. Students note the shift from initial outcome based or goal orientated solution, to a narrative focus at the end. In this way, connection with the process increases and students are more engaged. Significant is the transformation in how connectedness influences individual responses, shifting from a quarter of students connected at the start of the workshop, to nearly all students at the end considering the reflective essays. Themes are human-centred, meaning-making, social agency, fluid and flexible conditions of living.

*Controlled mess. As much as we try to control things, it cannot be DONE. We try to control a situation or an environment, and to an extent we can, however it is what is placed in that situation of which will determine the feel of the space. Its about balance, we set up a base, we put in half and the rest unfolds before us. It is not a bad thing, mess is beautiful. Chaos can be an adventure. We should embrace CHAOS (b3\_Isbella).*

*The workshop was informative and interesting. Was different to how thinking out of the box can be so creative. When you limit your thinking span it creates static designs. The workshop forces you to try new things what you would normally not do (b3\_Vernaya).*

Students in b4 find the abstract and representational design requirement the main challenge during the workshop, but also in the extended design project at large – making issues visible, instead of solving it. The difficulty remains to step out of the mind-set of the architect / designer, as dissociation is a challenge. Students in this group find it demanding to connect on an affective empathic level and as a result, remain detached from the issues. They address the workshop only superficially, although understanding of the matters is complex. In contrast, students that are too emotionally attached, find it difficult to detach from the matters of concern and as a result, struggle to detach emotionally from the empathic process. In this way, they lose perspective and struggle to zoom in to focus on one aspect for representation of the critical artefact. This shows that empathy is needed to connect and relate fully, but the opposite is also revealed, that affective empathy out of balance, can be destructive (to student, client or community). Equilibrium is required between cognitive and affective empathy for optimal design response.

*The more I read the reflective essays, the more I note that students are aiming to satisfy the studio project requirements. I see the same words used in the brief and wonder how forced some of the responses actually are, especially when I consider the difficulty in engagement I observed during the workshop, for them to find their own 'voices' (Reflexive note\_b4).*

### [trajectory to completion]

The studio projects underscore the emphasis towards the trajectory to completion for each biopic. Furthermore, the timing and influence of the workshop influences students' subsequent response. In b1, students that integrate the workshop into the design show an increased awareness of empathy. The remainder of the class revert to the conventional approach and disconnected attitude of a traditional design process. As a result, richness in design expression fades, and the complexity of interpretation becomes superficial and predictable. Technical requirements of supporting modules in the integrated examination overshadow the insights and depth of understanding that students gain in the workshop.

The influence of the trajectory to completion in b2 is limited, due to the late insertion of the workshop. As a result, only one student truly incorporates the considerations into the design development and presentation. Other students show intent to do the same in future projects, as the workshop reveals how thinking differently can bring new meanings in design. In this way, their preconceived ideas are challenged. Noteworthy is the mention of meaning-making to the consumer, the process of abstraction and value customers find in design.



*Figure 6-21: Timing of workshop in studio projects*

The majority of students in b3 do not include their own experience from the workshop as considerations in the design trajectory of the project. The pragmatic matters of prototype manufacturing dominate the richness and abstract thought uncovered earlier. The workshop shows no apparent link to the final design development, besides creative use of materials and only students who challenge the meaning of a luminaire, address larger societal issues in the process. These remain pragmatic, although the approaches are topical and relate to human wellbeing and health (child night-light, laptop screen glare and legibility, adaptability and choice). According to the studio master, students show a need for more background research to inform the design and challenge the 'normal table lamp' as object, by considering stronger user interface and atmospheric qualities in relation to spatial experience and effect.

The aim and purpose of a design response (eliciting a conversation and giving social commentary) are a challenge to students in b4. Throughout the project, translation and representation of big societal problems remain a challenge. Nonetheless, students reflect on their work in a positive light, but the external examiner does not give the same response. The need exists for more criticality, stronger focus/framing, adopting other points of view, increased creative exploration of media and integrating a theoretical balance with the design dialogue.

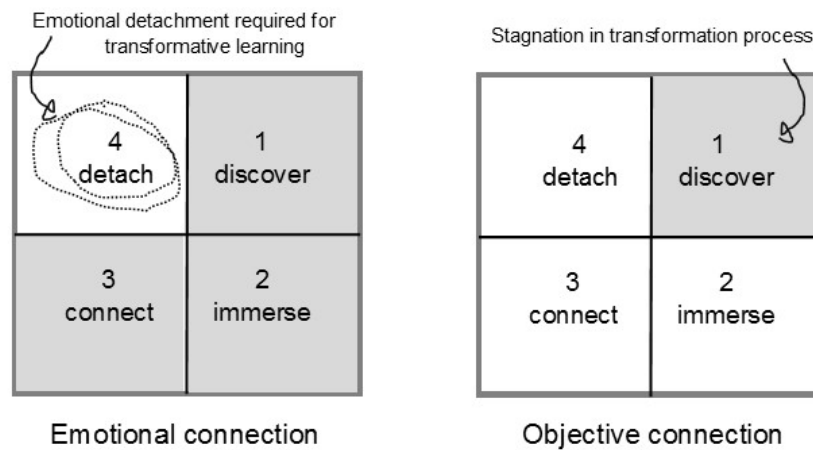
[post feedback]

Post feedback shows that some students feel they benefitted from the workshop in some way, regardless of how visible it is in the data. They comment that they are able to overcome barriers, generate meaning in spaces and express concepts abstractly by association and connotation because of the use of second life materials and considered detailing and connections (b1). In addition, emphasis no longer only includes aesthetics, but also meaning-making, increased customer experience and agency in the context of convenience store design (b2). Remarkable in b3, is the fact that students communicate their enjoyment of the workshop, in contrast to their anxiety and apprehension at the start. The disruption has a positive influence on their ways of working although it was an upset to their normal studio practice. The number of students who consider the workshop benefits in their design projects, increases significantly, and the focus shifts from task lights to atmospheric lighting, and from light as object, to light becoming spatial.

*At the start of the design process I was apprehensive. I felt unsure of the outcome (b3\_Nicole).*

*The process was relaxing because I reflected to what I experienced and saw during my weekend so I didn't focus on the main project but decided to look at other things to get my first step for the luminaire project (b3\_Palesa).*

B4 reveals that the workshop as disruption does not have an effect, as the active studio project is a provocation already. It only becomes a continuation of the same design thinking and intent. The question of time is prominent, as the long duration of the design project contradicts the mention that more time is needed to immerse with empathy, and to gain deeper understanding (as mentioned in b1). The challenge to integrate a theoretical standpoint as part of a design discourse, slowed down the process. In addition, personal traits of students also prove to affect the process, where some are not able or willing to connect emotionally. Figure 6-22 shows the emotional-objective continuum.



*Figure 6-22: Emotional-objective connections and empathy*

[alignment with ethos of school]

The findings from the investigation as 'challenge : shift' reveal a repositioning as agents of change in some students (b1 and 4). In addition, the importance of meaning-making and social agency shows in design in all biopics. It appears that the existing ethos of each school is extended beyond physical expressions of architecture and design. Instead, it moves toward an awareness of social conditions and fluid interfaces that require the attention of designers, especially today. It therefore supplements and expands the traditional and conventional methods of design. It adds to the focus on technological and sustainable aspects, by including matters concerning people by introducing a situation based human-centred design approach, empathic awareness and disruptive practice to foster small change.

## SUMMARY 7\_challenge : shift

The findings show that students in general find the challenges of the workshop difficult to sustain during the course of the studio project: the disruption, the question of empathy, the abstract representational focus, or discursive design (Tharp & Tharp 2018) and the normative dissociation (Butler 2006, Panero et al 2019). This can be ascribed to either the timing of the workshop, or its short duration. Students identify complex problems during the workshop, which are difficult to articulate and fully integrate into the context of the studio project. The disruption leaves students suspended in a state of uncertainty. This space between, or liminal state (Tucker et al 2014), is where students are trapped, if the momentum to engage is lost. For those entering and moving through the threshold and embracing the ambiguity, ontological shifts are made to represent the transformation in their own being. Roughly, a quarter of all students could make critical connections between the focus, approach and attitude of the workshop and still complete the studio project convincingly. In such instances, the project benefits through the students' deeper understanding and subsequent richness in the design engagement.

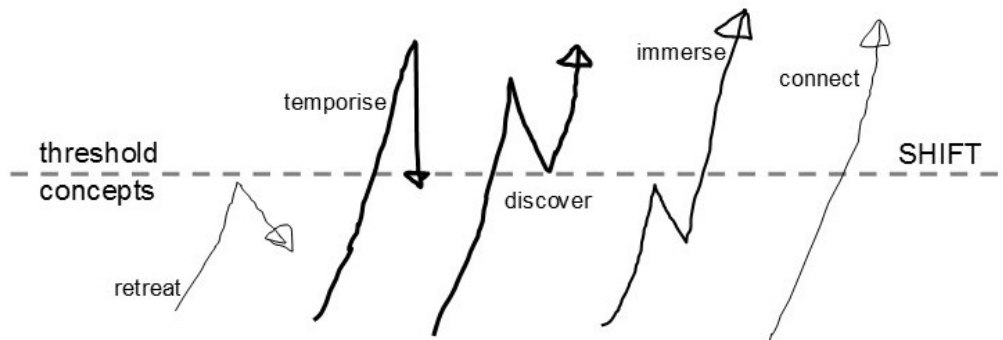


Figure 6-23: Threshold concepts and transformation trajectory

Nevertheless, small but significant shifts reveal that change is possible. It is now a question of how to implement active incremental small change in the studio environment that can build toward making a bigger impact on the ethical, affective and cognitive development of students. Becoming citizen designers (Resnick 2016) has much to do with holistic integral learning (O'Sullivan 2002, Ferrer et al 2005).

By means of:

- disruption
- the question of empathy
- discursive design focus
- normative dissociation
- design thinking

To achieve:

- meaningful design engagement
- deeper understanding and connection
- shift in attitude and focus
- changed design attitudes, values and ethos

Within contexts of:

- collective – wicked problems and situational awareness
- individual – ethical, affective and cognitive development

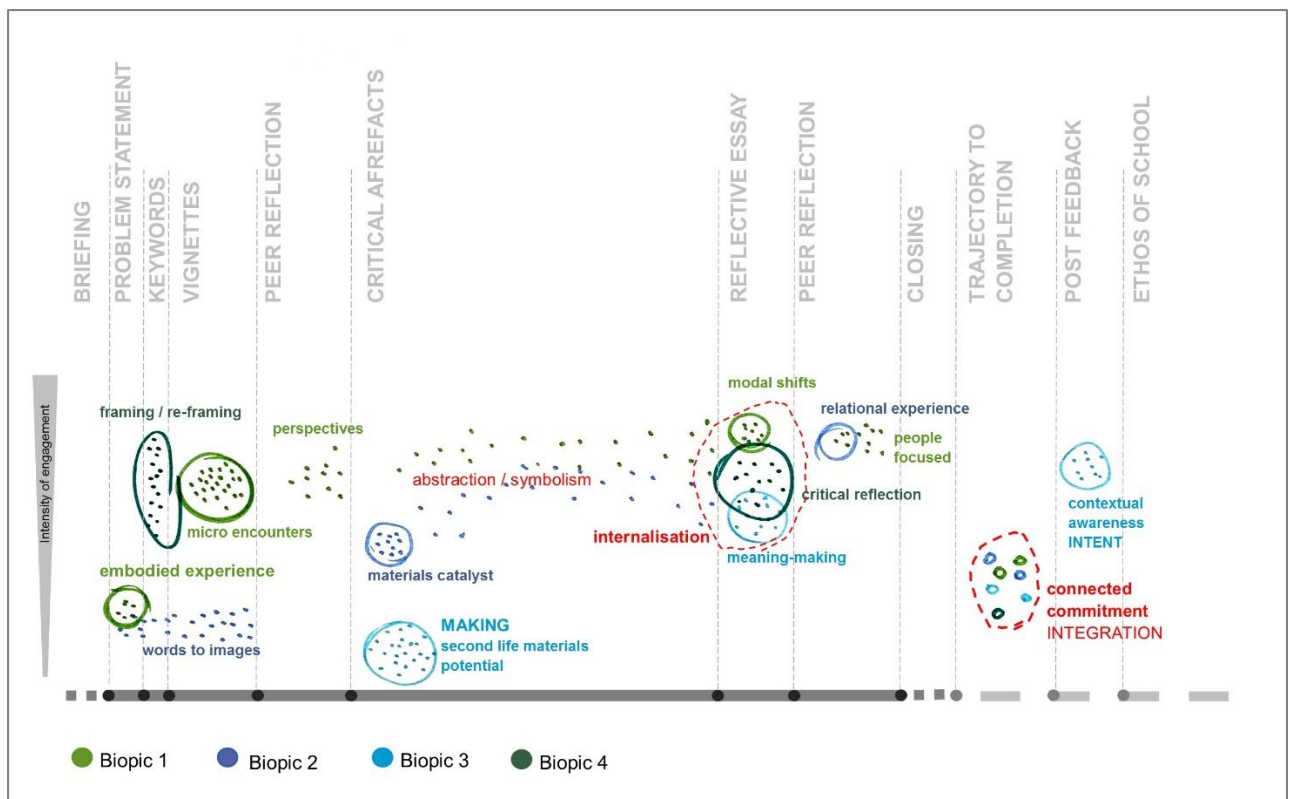


Figure 6-24: Biopic journeys shift summary

## Relational biopic summary

All characteristics of threshold concepts (Meyer & Land 2003, Tucker et al 2014) are represented in the study. *Troublesome* experiences regarding unfamiliar praxis and design intent develop opportunities for *integrative* actions. Through active engagement in the workshops, *transformative* realisations emerge for some students. In these instances, *irreversible* changes become visible in the way students take ownership and make decisions. A quarter of the sample group deliberately decide to take their commitment into the studio projects. As a result, they are *bounded* in disruptive practice. The study is optimistic to say that if students can make bounded shifts, immersed design engagement could transform them into citizen designers as future practitioners.

In the thematic narratives of the relational biopics, small but notable moments are identified that point to the understanding that some degree of transformation is possible within the context of the study. In addition, the findings show another challenge, namely how transformation can be sustained for positive future impact.

The benefit of transformative engagement is varied and unpredictable, and relates to the development of the student as an individual. By supplementing the conventional design practice in a disruptive way, it can potentially activate transformative design engagement, where future spin-offs could ripple into society. This study does not make a claim to present all the answers or to solve critical design pedagogy challenges. It shows that a limited number of students could sustain the disruptive challenge beyond

the end of the workshop. However, it asserts that minor shifts in design actions can cause small adjustments in students. These minor adaptations, over time, have the potential to transform habits of mind (Mezirow 1997:5-6, 2018:116). In the context of complex societal and design issues, research-through-design (Tharp & Tharp 2018) has the agency to influence future design praxis, discourse and disposition of students positively. It is noted that the process of transformation is an intrapersonal journey of each student as an individual. The discussion and findings to follow in *Chapter 7\_Postulations & Provocations*, offer an integration and interpretation of the threshold concepts from a holistic design approach.