

*intermission*

*Preparing the discussion of the last chapters, I had to remind myself that everything is interconnected and that the concluding part should reflect that. The sub-questions were guiding pointers at the start, but now they are like a touch screen, where if you touch the one, the others move in synchrony. Concepts relating to another as in an active web.*

*Regarding shift, change and transformation, I often wondered during the process, what constitutes being significant. If a small shift is worth mentioning. It turns out that even the smallest and seemingly trivial change can mean someone is adjusting, in attitude, in approach, in some way. I keep wondering, what could be the impact on the designer as a person, on the individual values and ethics related to challenging design projects?*

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*I reflect back to the balcony scene  
its profound impression on my being –  
how it touched me, to look with different eyes  
a place in time –  
by just being there, existing, living  
commanding its way into my field of vision*

*how did I change during this study?*

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*In the small cracks of our supposed designer opinion, the human voice can be heard in the distance, louder and louder until my own preconceived ideas are washed out and replaced by what truly matters.*

## PART D SHIFT IN FOCUS

**Part D** presents integrated discussions and conclusions regarding the data analysis and findings from the biopic investigations. *Chapter 7* offers points of discussion, or threshold concepts (Meyer & Land 2003), related to the patterns identified in the relational biopics. However, these are integrated into broader topics, presented as threshold categories that cut across as overlapping patterns as a networked field of relational concepts. The liminal space of threshold concepts provides scope for the known and unknown (Meyer & Land 2005:373) which this study interprets as explicit and integral concepts. Explicit concepts are embedded in the workshop brief and mostly relate to disciplinary aspects as conduits for investigation, whereas the integral concepts emerge from the qualitative data analysis, as process-driven consideration. These are in direct dialogue with the research questions, which are framed as *how* questions, addressing process considerations of how things are done. Therefore, *Part D* starts with a critical reflection of the workshop brief that, at the time, was an intuitive response to the concerns of the study and then moves to discuss the ‘plug-in’ as a way to connected learning. The discussion positions the findings in a relational context between design pedagogy and design practice as a synergistic relationship or interactive dialogue.

The discussion to follow shows that by contemplating small, but noteworthy changes – as a way of connected action in the way we engage with other people and the world – clues are given as to how and where transformation can creep in. Our designer perspectives and judgements are replaced by the acknowledgement and internalising of the realities of the human condition, of social situations. This becomes significant in context of the study, where threshold concepts are considered in relation to their characteristics, ‘transformative’, ‘irreversible’, ‘integrative’, ‘troublesome’ and ‘bounded’ to enable reconstruction of the self by means of seemingly small, but notable ontological shifts and epistemological transitions (Meyer & Land 2005). The study however, makes threshold concepts visible that emerge from the data findings as a default consequence of the plug-in workshop engagement, and does not intend to create a theory of thresholds as outcome. In addition and even more profound, the transformative journeys of students reveal more about themselves in their own intrapersonal transformations, than to formulate in depth understandings of the realities of others. If the same research is facilitated in other contexts, other threshold concepts could be highlighted instead of the ones identified in this research. The one constant remains – the way of engagement and the intensity of design inquiry in relation to the process – the *how* instead of the *what*.

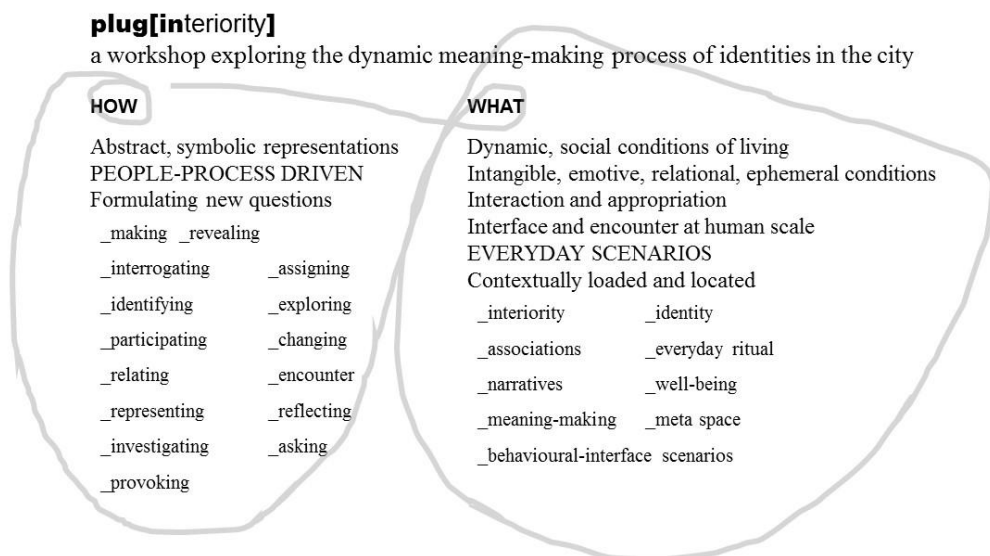
*Chapter 8* concludes the study by giving a critical reflection of the main points and then presents contributions of the research ranging in scale and scope. It includes the research context from micro to macro, by focusing on the student as individual, then contextualised in a community of peers. The discussion then shifts to the personal development capacity of the lecturer and ends with research through design within an academic community. The emphasis falls on design pedagogy and interdisciplinary education, with the entanglement of theory and practice. Furthermore, it unpacks the relation of other hybrid ways of design engagement in practice by considering the design professions and the impact of the research considerations on a larger view of society. Lastly, areas for further research are proposed.

*Reflecting on threshold concepts – what did I want students to explore in the workshop?*

*I took the brief out today, it is two years since I prepared this document, a complete intuitive response, but with conviction and a passion to address engaged learning in the studio. With coloured markers, I highlight phrases, words and concepts. At the time, I did not consider these being threshold concepts. In hindsight, I realise that is exactly what I did, spontaneously, according to an inductive study. The aspects included I believed were missing in the spatial design studio, things absent from the students' projects and from their ways of engagement with the process.*

*I did not expect the workshop to serve as a disruption; I simply wanted students to reconsider their familiar habits and to refocus on the dynamic and social conditions instead of the physical and static matters of architecture. I did not know about normative dissociation, discursive design, or empathetic horizons at the time. Nevertheless, I knew I wanted students to connect with what they were dealing with, to understand deeper and to be changed in some way.*

*It is strange to consider the workshop again at this late stage of the study. It is important for me to reflect on where everything started, in order to contemplate a discussion chapter in any way. I documented the 'how' and the 'what' written in the brief, to capture the essence of my intent and summarised it for my own reflection.*



*'How' remains constant as a way of engagement. 'What' becomes a changing variable related to the particular design intent or disciplinary focus depending on the studio project. This can change. Now I can reconsider the threshold concepts, in context of the qualitative data analysis of the detailed and relational biopics, with my intuitive response situated in the empirical situation of the workshops and theoretical discourse of the study.*

## Chapter 7 POSTULATIONS AND PROVOCATIONS

With a holistic understanding of a situation, citizen designers can facilitate solutions by synthesising ideas from key stakeholders and celebrating them. The true value of design is not about personal ideas, but rather about empowering the voice of others and sewing together ideas that might never have synergised without the direction and commitment of someone looking at the whole system of complex, delicately interconnected parts (Janzer & Weinstein in Resnick 2016:289).

### The plug-in critical reflection

At this point of the study, a critical reflection contextualises the spontaneous workshop brief, developed as a serious attempt to address issues in the studio, to increase students' engagement with the learning process. The plug-in is seen as a complementary action to the larger curricular content of the programmes and function in synergy with learning taking place holistically. Reflecting on the nature of project issues arising, two aspects are identified: discipline specific concepts (content / subject focus / *what*) and process related aspects (design actions and ways of engagement / *how*). The discipline specific concepts are embedded in the brief, to give focus to the workshop activities and exploration. In hindsight, these are threshold concepts, due to the unfamiliarity and subsequent influence on design considerations as situated in the design studio: dynamic, social conditions of living; intangible, emotive, relational, ephemeral conditions; interaction and appropriation; interface and encounter at human scale and everyday scenarios that are contextually loaded and located.

The study assumes that the threshold concepts can be replaced by other disciplinary considerations, when reflecting on the threshold concepts emerging from the qualitative data analysis. The investigation's emphasis on process means that other discipline specific threshold concepts could be substituted, and can still facilitate the speculative nature of the workshop as provocation to transformation. The emphasis on process lies implicitly in the workshop brief by means of verbs or actions words:

- Provoke / encounter / confront [disrupt]
- *Relate* [*associate / identify*]
- Identify / assign / address / articulate [frame]
- Interrogate / question / ask / reflect [critically reflect]
- Make / build / design [create]
- Participate [collaborate / share]
- Represent / reveal [share / communicate]
- Investigate / explore [inquiry / probe]
- *Interpret* [*imagination / translate / make meaning*]
- Change [transform]

Noteworthy is the absence of verbs that prioritise an affective relation to the activities, for example; connect, feel, perceive, experience, empathise, associate or engage. While 'relate' and 'interpret'

assume a personal interpretation or internalisation by the students. Upon further scrutiny of the meaning to 'internalise', it became evident that the threshold concepts become a probe for students' own design attitude and values in relation to that of other people, communities and their peers. 'Embody', 'manifest', 'absorb' and 'accept' are synonyms pointing to a potential transformation in both disciplinary and process threshold concepts – students integrating the newly discovered ways of engagement and complex concepts within their being as designers. Intuitively, the verbs relate to the modes of engagement in the workshop, associated with the descriptors in square brackets. It shows the spontaneous inclination of process over product.

**Disruptive process.** Reflecting on the purpose of the 'plug-in', the workshop is intended to refocus the student's approach and attitude to be aligned in a human-centred way, which they experience as a disruption, emotionally, affectively, cognitively and creatively. The sites and communities of the studio project foster this awareness. The shift to relational, social and dynamic conditions and the focus on revealing design and contextual matters without solving problems, prove most challenging, where shifts in terms of perspectives and modalities of interaction are concerned.

**Time and duration.** Questions of time, disruption and degree of understanding, present noteworthy observations that will be unpacked in the discussion to follow. However, in short, the disruption can be either detrimental or productive, depending on the inclination of the student and other related aspects that are outside the control of the researcher: for example, the effect of the studio project brief, duration of disruptive practice, troublesome threshold concepts providing a barrier in development and the continuum of connected-separate design engagement.

**Tool vs approach.** The argument whether the 'plug-in' can or should be considered as a tool or not, resurfaces. The workshop offers open-ended procedures, or flexible ways of engaging with complex issues that are not prescriptive, but open to interpretation by the students. In the design disciplines, where time spent on design development is a luxury, the plug-in introduces a 'short cut' with built-in contingency that requires rigorous work and action with speed in order to reveal hidden and intangible considerations of unfamiliar scenarios. It releases an understanding of interrelations and dependency of temporary and fluid living conditions. Furthermore, it is robust and adaptable, to insert different activities for various intentions. Upon critical reflection, it can be extended or built out over time to increase depth and insight into complex matters and include various social, economic and spatial conditions.

The plug-in workshop offers an approach to the design process, and the critical artefact is one of many possible tools that can be used to make concerns visible. The value of an approach means that it can be integrated in a spontaneous way into the students' daily design practice, where they take ownership of their own learning, by experimenting with hybrid methods resonating with their critical and creative spirit. However, it could be seen as a way of demonstrating an approach, although that is not the intention, as the perception of a tool can be distorted. This can also be useful in a professional capacity, not only in an educational milieu. The plug-in could also be used in direct community engagement and participation, outside the academic studio setting.

**Role of the researcher.** The effect of the presence of the researcher in the workshop is different to the researcher's initial expectation. The data shows that the initial apprehension and suspicions of students are replaced by expressions of gratitude and a realisation of matters the workshop exposed them to, in half of the sample. The analysis shows that they are more distrusting of the unfamiliar process they are forced to use, the impact on their grades and who will be involved in the assessments of the studio project, than the researcher making observational notes. In the instance where the students are already engaged in a disruptive project of extended duration, students experience no productive influence of the workshop. Nor do they express a contribution from the researcher during an interactive session; they find the presence of the researcher a disruption, as stranger and intruder, instead. They distrust another voice and opinion in their already troublesome experience and resist constructive feedback and input. The question of time and especially extended time necessary to deepen understanding, is therefore not always the issue. The dependency on the degree of complexity and effect of other external aspects to the workshop, such as entanglement with theory and personal world views, could add to the difficulty in design interpretation, internalisation and representation.

## Research context

The research questions provide the focus and intent for the purpose of the discussion, and contextualises the thematic narratives and threshold categories and concepts.

### main question

*How can a human-centred approach as disruption by dissociation enable transformative engagement in the spatial design studio?*

#### sq1

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

\_disruption, dissociation, meaningful connection

#### sq2

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

\_human-centred approach, empathy, complex design issues

#### sq3

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

\_shift / transform, insider perspective, design thinking, other design agendas

### How are threshold concepts identified?

Threshold concepts are identified by observing students' emotions, especially where anxiety sets in. When students are confronted with activities they are not familiar with, they are provoked into engaging in other ways compared to their normal design practice. Disruption causes an unsettled nature, in which the liminal space of threshold concepts manifest in students (Meyer & Land 2005). It is up to them to either embrace or reject that. In addition, they reconfigure concepts by revising previous understandings or perceptions, in order to develop new mental models. They furthermore contextualise complex

concepts by transferring new meanings to concept and situations (Meyer & Land 2005, Tucker et al 2014). For example, students that show connected and transformative learning identify selected threshold concepts and show their commitment to a different creative inquiry that is also critically reflective, by integrating it in design project presentations and exams.

### **How is transformation measured?**

This study uses no assessment or evaluation rubric to interpret how transformative learning can be measured. The usefulness of the Learning Activities Survey (LAS) as an instrument is considered, especially in context of using the Perspective Transformation Index (PT-index). Three indicators are scored: transformation during educational experiences, shifts not associated with education and absence of transformation (King 1998). As an empirical tool, the PT-index offers data that is too statistical in nature to be of value to ascertain the subtle nuances present in the transformative learning visible in this study. It is not a question of whether shifts are possible, but the degree and nature of intensity of the transformation, instead. These often small, seemingly insignificant moments do not claim grand announcements of deep ontological shifts. However, upon closer investigation, in spite of the short four-hour duration of the workshop, they offer discerning insight into students 'entering into' complex matters not previously considered. Instead, it considers qualitative indicators emerging from the primary data the researcher observes and identifies during the qualitative analysis and synthesis in the biopics:

- Connected / separate voice (first person / third person writing)
- Personal associations or experiences relating to workshop focus and process
- Integration of threshold concepts during the workshop and / or thereafter
- Degree of acceptance or resistance of the unfamiliar process
- Internalising of unfamiliar methods in the studio
- Revert or retreat to familiar processes, patterns and ways of working

Transformation is an organic process that is difficult to articulate. Sometimes, a small clue or cue makes visible a shift in thinking, or the way a student articulates an understanding, or how they reflect, and what the subject of their reflection is. It is not a direct science; however, the structured empirical investigation reveals pertinent moments of reflection and of shift that would otherwise not have been identified in the studio. These relate to both objective and subjective clues, behavioural responses of students, the nature and degree of immersion in the process, and the awareness expressed and engagement shown in the discipline specific aspects.

## **Discussion points**

Reflecting on the discussions that follow as provocations, the research reflects on Yin's (2016:236-242) observations of the five types of conclusions a study can follow. In *Chapter 5*, these are outlined as part of the considerations for the study and at this point, they become noteworthy markers to contextualise the discussion.

**Making substantial propositions.** The research shows that inserting a deliberate disruption reveals complex problems and creates an awareness in students of unpredictable and open-ended spatial conditions not previously considered in design projects. They find a way to inquire deeper, using hybrid methods and moving beyond superficial understanding to realise connections, meanings and aspects of engaged learning. As a result, shifts are observed in the context of spatial design projects, which are discussed in detail in the provocations below. The study acknowledges that learning is continuous, and that these shifts could happen at various points in a learning process, be big or small and could also include practitioners in the field.

**Challenging conventional stereotypes.** The 'plug-in' brings another understanding to the traditional design process, by extending the depth and insights gained because of more deeply engaged activities that probe not only the issues of investigation, but also challenges the students' personal convictions, perspectives and opinions. By introducing the 'micro lens' of human-centredness, grounded in fluid and transient scenarios, the process reveals a continuum of empathy, dissociation and connected knowing. Students become aware of other opinions and in their interactions with one another, realise the importance of respect, inclusivity and relationship formation between stakeholders. In addition, the individual attributes, beliefs and values of the students as individuals, and also as peer groups, are questioned.

**Discoveries about social behaviour.** The integration of data findings and related literature brings new concepts into the field of spatial design that are not normally associated with the design studio. Normative dissociation and empathy are derived from the health sciences (Butler 2006, Ross & Watling 2017), disruption from business innovation (Christensen 1997) and established disruptive design methods from social and environmental design (Acaroglu 2017), with transformation practices grounded in educational psychology and developmental theory (Belenky et al 1986, Perry 1970, Mezirow 1991). By considering interdisciplinary research, the spatial design disciplines benefit from these insights. Because of the different perspectives, insights and understandings emerge and as a result of employing these concepts in the workshop activities (albeit only known after the fact), the depth of inquiry increases. Connected knowing (Belenky et al 1986) as a way of engaging the affective domain (Kratwohl et al 1964), has been missing from spatial design education for some time. As social creatures, adopting a well-rounded approach is needed in order to acknowledge and identify the intangible, emotional, subjective aspects that are integral to complex living scenarios in which we make meaning.

This renewed way of thinking about design depends upon an equally reinvigorated concept of who the human being is. For too long we have simplified our world and thought of man in abstract terms, as if there were a single, universal human being who can serve as the common denominator for all of us. And for too long we have avoided delving seriously into the emotive, sensory, and phenomenological impacts of design (Caan 2011:53).

**Generalising to a broader set of situations.** The potential of a 'plug-in' workshop in other contexts and design projects is highlighted, in light of the explorative nature of the investigation. The possibility of replicating it in other schools of design could extend the contextual meaning and engaged learning that could facilitate transformation in students. Things to consider include design activities, duration of



the workshop and the nature of the questions that emerge as a result. Perhaps by provoking further, one could reveal new situations of understanding.

**Taking action.** The provocations to follow are not meant as a formal call for action that is supported by an action plan or timelines. Instead, the call for action addresses the scope for continued practice by means of research through design that can equip students with lifelong learning skills, promising to cross the education-profession lines of engagement.

## Provocations

The postulations and provocations offered here are integrated considerations of the qualitative data analysis, its deeper understandings and insights, as revealed by the participating students and interpreted by the researcher. The research questions and related literature prove interconnected and the discussions take a holistic view of the patterns as it reveals various topics as threshold concepts, organised under threshold categories (Figure 7-1). These are discussed as provocations.

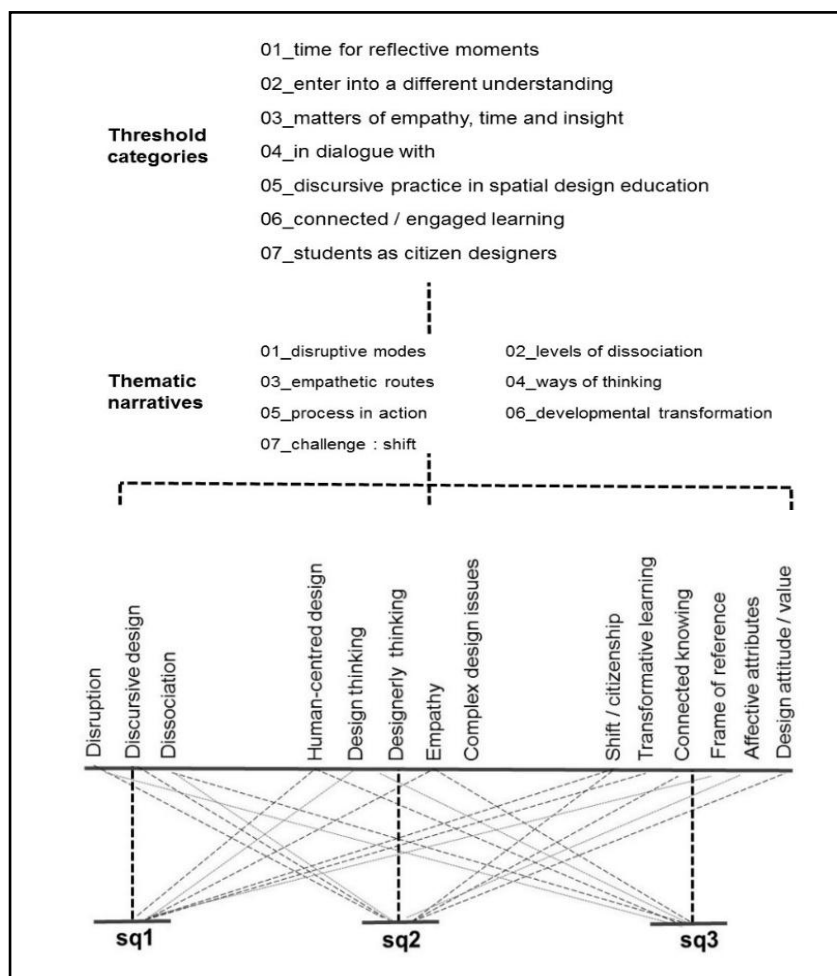


Figure 7-1: Relation: Sub-question - related literature - thematic narrative - threshold categories

Upon further reflection, reference to human-centred design is integrated and present in all threshold categories, due to the realisation that the threshold concepts collectively describe a human-centred

approach, embedded with situational richness. The threshold concepts' characteristics, 'troublesome', 'integrative', 'transformative', 'irreversible' and 'bounded' (Meyer & Land 2003) are found in combination in this study. For example, threshold concepts can be both integrative and irreversible, or transformative and bounded.

Table 7-1: Threshold concepts characteristics interpreted

troublesome	integrative	transformative	irreversible	bounded
normative dissociation <b>disruption</b> <b>discursive design</b> question of time -ambiguity and uncertainty	modal shifts <b>engaged learning</b> -connected – immersive experience <b>dialogue with the situation</b> -recursiveness meaning-making relational awareness	<b>frame of reference</b> (different understanding) <b>empathetic horizon</b> <b>-disposition / praxis</b> engaged learning <b>relational awareness</b>	<b>frames of reference</b> <b>commitment</b> agency as designer	<b>meaning-making</b> <b>citizen designers</b> agency as designer -learning ecologies -21 <sup>st</sup> century graduate attributes

Provocations are threshold categories, in which threshold concepts are discussed. These are interrelated, and a concept might appear in more than one category. The threshold concepts are divided in two aspects: subject (discipline) specific and focusing on the process of engagement. Noteworthy is the observation that if the study is conducted in the context of other design projects, the situations, programmes, typologies, users and intangible conditions can result in other threshold categories and concepts. This is the value of qualitative research, why repetition is needed to build the scope of such investigations, to benefit the discourse of disruptive practices, and to stimulate design research in the spatial design studio as engaged learning.

Table 7-2: Threshold categories and related threshold concepts

	Thematic narratives	Threshold categories	Threshold concepts
01	_disruptive modes	_reflective moments [troublesome; integrative]	<u>SUBJECT</u> <b>Contextual meaning and understanding</b> <b>Situational awareness</b> -site and studio <u>PROCESS</u> <b>Critical reflection</b> (shift) and <b>disruption</b> <b>Empathy</b> -responsive, transactional, instrumental <b>Bias, judgements, contextual meaning</b> <b>Time and understanding</b>
02	_levels of dissociation	_enter into a different understanding [troublesome; integrative; transformative; irreversible]	<u>SUBJECT</u> <b>Human-centred approach</b> <b>Small scale encounters</b> <u>PROCESS</u> <b>Normative dissociation</b> <b>Perspectives</b> -personal, users, context <b>Disruption</b>
03	_empathetic routes	_matters of empathy and insight	<u>SUBJECT</u> <b>Dissociation and empathy</b> - responsive, transactional, instrumental <b>Social, dynamic conditions</b> <b>Spatial appropriation and meaning</b>

		[troublesome; transformative; integrative]	<p><u>PROCESS</u></p> <p><b>Affective relation to design challenges</b></p> <p><b>Perspectives</b></p> <p>-designer / user</p> <p><b>Critique and reflection</b></p> <p>-time, connection, intent, point of view</p> <p><b>Disruption</b></p> <p>-expanding the empathetic horizon</p> <p>-connected learning</p> <p><b>Frames of reference</b></p> <p>-point of view, habit of mind</p>
04	_ways of thinking	<p>_in dialogue with</p> <p>[integrative; transformative]</p>	<p><u>SUBJECT</u></p> <p><b>Contextual meaning</b></p> <p><b>User-centred interface and meaning</b></p> <p><u>PROCESS</u></p> <p><b>Engaged / connected learning</b></p> <p>-process, context, user, self, peers</p> <p><b>Bias, judgements</b></p> <p><b>Critical reflection</b></p>
05	_process in action	<p>_a discursive focus in spatial design education</p> <p>[troublesome; integrative]</p>	<p><u>SUBJECT</u></p> <p><b>Abstraction, representation and message</b></p> <p><u>Communication to audience (provocation)</u></p> <p><u>PROCESS</u></p> <p><b>Dialogic inquiry</b></p> <p><b>Meaning-making, metaphor</b></p>
06	_developmental transformation	<p>_connected / engaged learning</p> <p>[integrative; transformative]</p>	<p><u>SUBJECT</u></p> <p><b>Personal experiences</b></p> <p><b>Real and imagined situations and conditions</b></p> <p><u>PROCESS</u></p> <p><b>Modal shifts</b></p> <p>-perspectives, actions</p> <p><b>Meaning-making</b></p> <p><b>Dialogue with the situation</b></p> <p>-self, context, process, users, peers</p>
07	_challenge : shift	<p>_students as citizen designers</p> <p>[transformative; irreversible; bounded]</p>	<p><u>SUBJECT</u></p> <p><b>Wicked problems</b></p> <p><b>Design ethics and responsibility</b></p> <p>-Representation on behalf of individuals and communities</p> <p>-Personal design identity / worldview</p> <p><b>Leadership and agency</b></p> <p>-Design agent, activist, advocate, champion</p> <p><u>PROCESS</u></p> <p><b>Commitment, values</b></p> <p><b>Situational empathy : situational awareness</b></p> <p><b>Human-centred design attitude / approach</b></p>

The provocations to follow critically reflect on the complex nature of the research questions, the consolidated data findings, considerations from practice, the literature review, and the disruptive practice introduced by the 'plug-in'. No answers are provided, nor are any problems solved, but the provocations are intended to stimulate further discussion and exploratory design engagement.

## Provocation 1\_reflective moments

[troublesome; integrative]

It is our capacity to see unfamiliar situations as familiar ones, and to do in the former as we have done in the latter, that enables us to bring our past experience to bear on the unique case. It is our capacity to *see-as* and *do-as* that allows us to have a feel for problems that do not fit existing rules (Schön 1983:140).

Moments of pause and contemplation, caused by the unsettling experience of a disruptive plug-in workshop inserted into the traditional design process, elicit critical reflection at various points. The relational biopic synthesis of *Chapter 6* reveals reflective moments stirred, because of other ways of engagement that students are unaccustomed to in the spatial design studio, which students experience during the workshop activities. In the context of the active studio project, impact moments reveal threshold concepts that are both process driven and subject led.

### **What causes disruption? How does disruption affect critical and creative responses?**

The workshop process, also extending further towards the trajectory to completing the design project, allows for pivots in awareness. Other design agendas are revealed when students reconsider their design attitudes and approaches (Awan et al 2011, Till 2009) through a critical reflective practice (Schön 1983). When this happens, the current values and ethos of design are under scrutiny. These moments can be small realizations brought about by certain aspects and activities of the disruption. The degree of influence, moving from value > impact > shift, is a slow process. Literature explains this happens in stages, as the student becomes receptive to transformation (Perry 1970). However, this study argues for non-sequential shifts that do not follow a hierarchical order, supported by the data findings that show evidence of students moving between different types of developmental aspects, as per the mode of engagement. The link to transformative learning that speaks to 'premise' reflection (Mezirow 1991:108) opens a door to the nature of transitions in the students' ontological and epistemological understandings of the world.

MODES OF ENGAGEMENT. Different modes of operation and engagement to the normal, conventional spatial design studio process bring new insights to students' understanding of the complexity of the design challenges in the projects at large. Introducing unfamiliar activities 'forces' an intensity in the inquiry process, one where students are requested to delve deep into their own points of view and habits of mind (Mezirow 1997:5-6). They are obliged to step out of their familiar 'human ecosystem' (Bronfenbrenner 1979) and all its layers, to transpose themselves into that of another person or community. This is a difficult task and it is the cause of much anxiety and hesitation. The students step out of their comfort zone, the place where they can respond with confidence. Suddenly, the security of a 'recipe' that works for the individual is turned upside down, and a different way of working is expected. For example, the abstract representation, or discursive design (Tharp & Tharp 2018) which focuses on a three-dimensional object with no spatial solution, aimed at eliciting discussion, is required instead. The symbolic nature of the activity opens other avenues to engagement and representation. Students realise that by focusing on intangible conditions, abstract concepts emerge that relate to subjective association and connotation of meaning-making. They make deeper connections in their learning (Belenky et al 1986), and understandings shift by making a 'semantic turn'. As Krippendorf (2006:xiii)

argues, “[d]esign is making sense of things ...” and “... to conceptualize artifacts, material or social, that have a chance of meaning something to their users, that aid larger communities, and that support a society ...” (Krippendorff 2006:xv).

**INSIDER VOICE.** In order to formulate an awareness of another’s situation or context, the adoption of other perspectives to the designer’s own, brings about a different understanding – the insider or emic voice (Creswell & Poth 2018:91, 94). The shift in focus from the self as designer / architect moves to the user, customer, audience or community as a first consideration in the design process. In spatial design disciplines, the focus on the static expression of architecture often outweighs the softer considerations related to people. Salama (2015:331) argues for an epistemological balance and thus, a mind shift requires a whole transformation in the being of the designer. The design thinking discourse integrates empathy as a point of departure to human-centred design (Brown 2009; IDEO 2019) and design practice extends empathetic awareness beyond a superficial observation. The workshop data show that when current architectural praxis refocus their attention to people, complexity of understanding increases and students are able to make complex connections with larger issues in which the studio projects are situated.

**MEANING-MAKING.** The next point where reflective moments provide a sense of realisation of engaged learning, is through meaning-making – a consideration rarely contemplated in the spatial design process: what things mean to people on an intangible level. Here the reference to meaning is not related to a superficial understanding, for example, warm colours’ association to comfort, but rather the realization that through abstraction and symbolism, people are able to assign deeper meaning according to their perspective and contextual significance. The intrinsic design value is not dependent on a message that is universal to all as a preconceived idea, but allows multiple interpretations as contextual meaning (Krippendorff 2006). The particularities of the situation of the living scenario and the human-object-environment interface and interaction, are integral to the meanings that are constructed.

Discursive design assists with meaning-making, especially when associations of second life materials create deeper connotations. In addition, the focus is on the communication of a message through related meanings and messages (Tharp & Tharp 2018: 105, 166). The shift in focus from solving problems, creating products and giving answers, to only revealing issues, presents a challenge for the spatial disciplines that are accustomed to solving problems (Cross 2006:78). The data findings indicate that when students are focused on a solution-led goal analysis (Cross 2006:79), they are hindered by their preconceptions and as a result, the exploratory process suffers. Therefore, a scenario-led potential analysis might be more conducive to connected learning. However, when students are too emotionally attached, they lose perspective. In contrast, a separate voice emphasises preconceived ideas, where students never make an emotional connection, but remain at a distance without realising the interpretation potential of the intricacies embedded within a project. In both cases, disruption combined with preconceived ideas, have a negative impact, regardless of the students’ opinion. They either ‘retreat’ to what they know and are familiar with, or ‘abandon’ (Perry 1970:10) the new idea and understanding. Due to the discomfort they experience the more troublesome the exercise becomes. In

this way, students find it difficult to transition the liminal space that threshold concepts present (Meyer & Land 2003).

However, the contrast is also visible: when students make critical connections, they embrace a dialogue (Schön 1983) with the process, themselves, the activities, and their peers, and face the challenge presented by the 'plug-in' head-on.

**PROCESS.** The workshop reveals shifts in students, which are mostly small transitions, but with a deliberate display of action, or a specific expression of intention for change. As a result, disruption becomes a positive catalyst to action for students that challenge themselves and their learning, through an active and productive engagement with an unfamiliar process. The biopics show a continuum of responses: a deliberate decision to include the workshop into the design presentation (b1), the deliberate expression to integrate the new practice in the future (b2), the integration of the workshop influence in the purpose and response in the completion of luminaire prototypes (b3), and an entanglement with the framing of challenging societal problems (b4). In terms of transformative learning, this means students are making decisions towards commitment, connected knowing, and the other complex, higher developmental categories (Belenky et al 1986, Didau n.d., Krathwohl et al 1964, Perry 1970). Pinpointing the moments of reflection during the workshop offers insight into the degree of transformation and brings another understanding of the nature of transformative learning.

**Problem statements.** The notion of the term, problem statement, comes into question, when appreciative inquiry (Stein et al n.d.) emphasises potential, instead of problems. This leads to engaging with project descriptions in a completely different way. Thus, this study argues for project description, or design situation, instead.

- Threshold concepts –
  - content (disciplinary): wicked problems, human and spatial agency
  - process: perspectives, personal bias and judgement

**Keywords.** Focusing on the essence of the project, by zooming into the significant matters related to contextual understanding, assists in the framing of questions (Design Council 2019, Dorst 2019:123), especially when students consider human-centred matters pertaining to the intangible and emotional.

- Threshold concepts –
  - content (disciplinary): human-centred matters, intangible conditions, emotional aspects, subjective well-being and sense of community
  - process: framing of project, articulation of the essence

**Vignettes.** These enable modal shifts (Cross 2006:88) in modes of engagement, by shifting between thinking in words to thinking in images. It brings new understanding of fluid, ill-defined contextual matters and challenges. Modal shifts are also considered in terms of perspectives (Brown 2009, Panero et al 2019), not only from the opinion of the designer self, but also according to the view and experience of the user, related to intimate scale and interactions. In this way, a multi-scalar approach integrates complex understandings across various contexts and situations (Till 2009).

- Threshold concepts –
  - o content (disciplinary): relational conditions interrelationships and person-object-environmental interface, systemic considerations, normative dissociation (assume role of the user)
  - o process: modal shifts, connected learning

**Second life objects and materials.** Students construct new understandings (Krippendorff 2006) as provocations to connected learning, because of the potential meanings embedded in the objects and materials. They make intuitive connections that result in symbolic or abstract interpretations, as discursive design (Tharp & Tharp 2018) responses. These are internalised as reconstructed meanings to convey deeper understandings and explorative ideas of difficult matters.

- Threshold concepts –
  - o content (disciplinary): meaning-making (deep association)
  - o process: abstraction, symbolism, discursive design considerations

**Making of critical artefacts.** The processes of making, reflecting and reconsidering, facilitate opportunities for critical reflection of students' view of the world. They are confronted, in an indirect way, with a "reconstruction of self" and to deal with its "unintended consequences" (Meyer & Land in Tucker et al 2014:162). The deeper effect of engaging with the workshop activities reveals itself during the process of engagement and it is up to each individual student to either be receptive to its impact, or to resist its influence, which Meyer and Land (2006:202) refer to as recursiveness and excursiveness.

- Threshold concepts –
  - o content (disciplinary): meaning of things, association to spatial design
  - o process: metaphor as a way of exploring difficult concepts or challenges, dialogue with the situation (Schön 1983:136, Tschimmel et al 2015), self, process, context, insight

**Peer interaction.** Personal bias and judgement are revealed in the free sharing of peer interactions. Students' own perceptions and perspectives are challenged in a safe environment, where critique is constructive as they interact with honesty and transparency. Noteworthy is the emphasis on intangible and emotional matters pertaining to relational encounters of people in places. Regarding sharing, opposing aspects of student designers emerge, namely ego and humility. Students confront themselves, and are confronted with their own preconceived ideas, which are different for each one. This demonstrates their tolerance for uncertainty (Meyer & Land 2006:201) and ambiguity contained in the process, but also their own understanding of threshold concepts.

- Threshold concepts –
  - o content (disciplinary): meaning-making, intangible and emotional aspects
  - o process: epistemic transitions and ontological shifts, humility vs ego

**Reflective essay.** Students reflect critically (Schön 1983) on the workshop activities and the disruptive experience, which highlight the matter of time required for immersion and understanding (Kouprie & Visser 2009:446). The emphasis of their reflection is mostly focused on the process and a personal re-evaluation of themselves and their worldview, because of their own process of engagement. Students

convey an awareness of deeper meanings, which did not always feature at the beginning of the workshop.

- Threshold concepts –
  - o content (disciplinary): meaning-making, associations and connotations, human-centred matters, relational conditions and human agency
  - o process: modal shifts – perspective and ways of design engagement

**Trajectory to completion.** Sustaining the connection to the user and ‘hidden’ issues regarding the studio project remains a challenge during the trajectory to completion with the active studio project. In addition, maintaining an extended empathetic horizon (Thomas & McDonagh 2013:50) also poses a difficulty. However, students who make committed decisions to incorporate aspects of the workshop in the design project, reveal active transactional empathy. This transitions into instrumental empathy (Ross & Watling 2017:28, 30), where they act to benefit the community, albeit in an academic studio project. Their personal convictions shift in epistemological ways (Combrinck & Venter 2020).

- Threshold concepts –
  - o content (disciplinary): human and spatial agency; meaning-making, sense of community, student as citizen designer
  - o process: critical reflection, modal shifts, connected knowing and transformative learning ecologies

**Post feedback.** Not all students provide post feedback, which demonstrates that not everyone has the same receptive capacity for disruption, especially where personal views are challenged. The way students handle the liminal space, due to the threshold concepts and the process of engagement, reveals a ‘pre-liminal variation’ (Meyer & Land 2006:202-203) in their being that can tolerate various degrees of uncertainty. As a result, their empathetic responses are influenced by initial engagement (relational empathy), full engagement (transactional empathy) and commitment, because of the realisation (instrumental empathy) (Ross & Watling 2017:28, 30) of deeper requirements posed by complex design situations.

- Threshold concepts –
  - o content (disciplinary): empathetic awareness, situational understanding
  - o process: other ways of knowing and understanding, internalisation of challenging concepts

**Alignment to ethos of school.** In general, the ethos of the schools are extended by introducing a connected learning approach, which promotes holistic learning, and activates the affective domain of development (Krathwohl et al 1964) in students, not only focusing on the cognitive side. The emphasis on people brings deeper awareness and understandings of increased design complexities. Other ways of engagement in the spatial design studio encourage a dynamic focus instead of the traditional static approach to design inquiry (Salama 2015:6).



- Threshold concepts –
  - content (disciplinary): disruption, empathy, human-centred and relational conditions and situations
  - process: relational and dynamic design pedagogy, holistic learning, connected transformative learning

Students consider threshold concepts as a way to reconsider and critically re-evaluate their role in the process of transformation, which make space for epistemological transitions in the ways they engage. However, the ontological shifts remain the challenging part of the disruptive experience, requiring time and effort of the students to reflect critically on their own judgements and biases. These shifts are not spontaneous, and boundaries, obstacles and resistance are experienced in the process. However, when there is commitment (Perry 1970), small signs of transformation appear. Unintended consequences become visible as they slowly move through the liminal space (Meyer & Land 2006, Land et al 2006) in their own time, which may only be after this workshop and within the completion of the studio project.

## **Provocation 2\_enter into a different understanding**

[troublesome; integrative; transformative; irreversible]

To be useful as a concept, dissociation should not be applied to ordinary instances of less-than-full engagement with one's surroundings, experiences and actions. Rather, it should pertain to qualitative departures from one's ordinary modes of experiencing, wherein unusual disconnection or disengagement from the self or the surrounding occurs as a central aspect of the experience (Cardeña in Butler 2006:58).

People do not always notice and recognise realities, experiences and perspectives other than their own, and designers are not exempt from this conundrum. It is not in our nature and certainly not easy to comprehend another's worldview or understanding of what is at the fore of a spatial design problem. Designers are often viewed as the expert or at least the bearers of expert knowledge based on their education and professional experience. These realities exclude the perspectives of extra-disciplinary collaborators and actual users and by default, subjectively render the framing of design projects incomplete.

MODAL SHIFTS. Data from the biopics demonstrate that modal shifts (Panero et al 2019) are integral to making transitions from one perspective to another, moving between connected and disconnected modes of engagement. A continuum of dissociation with self-as-designer reveals three modes; from a separate third person observer as designer (identifying potential of a situation); to a separate first person designer (expressing intent to reveal issue); and a connected first person as user (acknowledging meanings and relationships of fluid scenarios).

According to Belenky et al (1986:100), procedural knowledge introduces connected knowing and separate knowing, which can be aligned with emic (insider) and etic (outsider) perspectives (Yin 2016:335-336), respectively. From a health and behavioural sciences view, absorption (connected) and

attention (separate) relate to normative dissociation, which is part of normal daily functioning as “absorption in daily activities, daydreaming, fantasy and night dreaming” (Butler 2006:46-47). The motivation for introducing normative dissociation as a non-pathological component of psychiatric disorders (Butler 2006:45), relies on the reality that studio projects sometimes have fictional sites and / or users and pose a challenge for students to connect to the actual contextual conditions. In addition, when real-life contexts are included, access to sites or buildings might not always be possible for many reasons. Students are then reliant on ‘imagining’ and ‘reconstructing’ experiences of these contexts in their own ways (Heylinghen & Dong 2019:115), including the intangible aspects that enrich the physical conditions. Dissociation is therefore related to decontextualisation or derealisation (American Psychiatric Association 2013:302) due to the designer’s detachment from place and the need to reconstruct that in the mind using the imagination.

**NORMATIVE DISSOCIATION.** It becomes useful where contact with potential or real users or clients is not possible, and students are left to their own devices to create a connection to the human dimension. Reverting to a standard project accommodation list does not provide the required qualitative details to adequately connect to people on a deeper level. Therefore, normative dissociation enables layered meanings to emerge, when employing its two types of experiences: attention and absorption (Butler 2006:47). It is argued that ‘attention’ can be likened to cognitive empathy, due to the detached observation required, and ‘absorption’ compared to affective empathy, due to the deep immersion and degree of intensity of the experience.

### **How can students connect the two modes of engagement as a deliberate action of engaged learning?**

In acting and performing arts training, normative dissociation is used extensively to prepare student actors to formulate direct associations with characters. “Actors enter into the lives of characters, and thus might “dissociate” from themselves. Method actors strive to “become” another person by taking on their characters’ emotional life” (Panero et al 2019:3). In the context of spatial design, this could be considered an extreme psychological transition. However, significant is the capacity of acting students to “shift between different states of mind” (Panero et al 2019:12), when considering possible transitions between connected and separate engagement of design students with complex and often ill-defined challenges. In support, the biopic data shows that selected students effectively make transitions and in the process, could make deliberate shifts between user and designer views.

**MEANING-MAKING.** The critical artefact making activity, where second life objects and materials are used, presents opportunities for exploration of deeper understandings and as a result, becomes the catalyst for integrating different activity modes and perspectives in the ‘plug-in’. Abstract interpretations become possible, as objects embedded with prior meaning due to a previous use, are considered a-contextually. Symbolic representations of complex design issues therefore result in re-contextualising of materials with new meanings and associations, expressing layered messages. The workshop’s critical artefacts are related to a discursive design intent of revealing and asking questions without solving any problems (Tharp & Tharp 2018:7). However, for the purpose of the plug-in, no public displays are presented (except for the public exam exhibition in biopic 4). Students reconstruct

meanings during the making process and from this active engagement, there emerges contextual meanings that are open to interpretation and become fluid in their understanding.

... words, or artifacts for that matter – after all, words are artifacts as well – can change their meanings as they travel through different uses, different situations, different times, and different people's lives. In the course of their journeys, words designate and accomplish different things (Krippendorff 2006:xiii).

As process exploration, the workshop artefacts become ways of connecting to the deeper meanings of things (objects and materials) and experiences, situations and contexts as represented by the studio projects. The symbolic and often metaphoric interpretations directly address complex problems. Students identify these as part of the process, focusing on small scale and intimate encounters in the city, and on human-object-environment interface considerations. As threshold concepts, these are human-centred and speak to the intangible, fluid and transient situations of living, where human agency and contingency are emphasised.

### **What happens when students find it difficult to dissociate?**

NORMATIVE DISSOCIATION. Conversely, the constructive mode of normative dissociation, can also be challenging for some students and as a result, they remain detached from the issues of concern by staying with their preconceived ideas. A focus on 'attention' instead of 'absorption' shows evidence of predictable responses. In comparison, when students overcompensate with dissociation, the equilibrium in connected-separate experiences are disrupted – students find it difficult to detach from the immersion (Kouprie & Visser 2009:445-446) and remain in a dissociative state, which undermines a productive design process. The relation between empathy and normative dissociation becomes significant, as the empathy process starts with discovery, leading to immersion and connection, and ends with detachment. Detachment is integral to making deeper connections and finding increased understanding of the user's world, which is not possible for some students during the workshop. In addition, it is also challenging for students to achieve this during the studio project. Kouprie & Visser (2009:445) explain this as the empathy process, which is then employed in design practice to bring different perspectives.

Time is needed for the designer or design student to immerse themselves in the process of dissociation and of empathy. Due to its exploratory nature that is not focused on solutions or outcomes it is often perceived as irrelevant, although this process allows experience without judgement and encourages an open-minded design approach and attitude (Kouprie & Visser 2009:446). The workshops demonstrate the aspect of time and the challenge for students to connect, also in the extended disruptive studio project of biopic 4. The research therefore questions how the workshop can be augmented in order for students to not only enter into a different understanding, but also to sustain that understanding during the extended trajectory to the completion of the active design project.

## Provocation 3\_matters of empathy and insight

[troublesome; transformative; integrative]

We propose that it is more productive to discuss 'empathetic engagement' as a situated practice as opposed to 'empathy', which is often seen as an abstract concept ... (Ross & Watling 2017:31).

The discussion around empathy, time and insight, considers the experiences of the students and speculates whether empathy is an attribute that can be learnt, or if it remains an internal quality or trait a person either has or not. This seems to be an ongoing debate, also in the medical sciences, where a distinction is made between abstract concepts of empathy and the contextual approach contained within an in-situ experience, with motivation for the latter (Ross & Watling 2017:31). The distinction and emphasis are noteworthy, especially in this investigation where the plug-in workshop shows that contextual meaning and understanding are integral to formulating insight into complex design challenges. The empathy triad of 'relational', 'transactional' and 'instrumental' empathy underscores the active engagement in the workshops, whether met with excitement, or apprehension. This significant difference between empathy as a concept and empathy as engagement, appears to be the pivot in gaining connection as a 'performative' action to understanding within a spatial design milieu.

EMPATHY TRIAD. Through relational empathy, students meet the workshop and themselves head-on. They are confronted with their own judgements, prejudices, and opinions, not only regarding the requirements hidden in the active studio design project, but also the unconventional activities of the 'plug-in' disruption. They negotiate their way, as a transactional empathetic process, by critically reflecting on unfamiliar concepts and ways of inquiry. Instrumental empathy reveals itself when students relinquish control and submit to the process that requires modal shifts, both in ways of engagement and perspective. When they acknowledge and internalise the complex conditions related to a human-centred design approach, the designer's ego is suspended in favour of human agency and the contingency of the situation.

LEARNING FROM INDUSTRY. Practice confidently uses empathy as part of the investigative process and vocabulary of inquiry, integral to the design thinking discourse. Empathy is integral to design and "... reveals the true scale and complexity of the challenge of understanding a complex social situation in order to design a system that supports many and various needs" (A lesson in empathy 2013). Many practices are combining the design thinking and designerly thinking approaches in projects, which proves beneficial not only to the users or clients, but also to the designers (Panorama Innovation n.d.). In this way, they extract deeper understanding and insights into the lives of users when using hybrid methods. In comparison, spatial design education following a designerly thinking discourse as design science, relies on traditional methods that focus on cognitive and intellectual aspects, which this plug-in workshop shows is not sustainable in the context of design presently. Dorst (2019) argues for a system transformation. The sentimental perception and emotional connotations to empathy do not aid in creating links between design thinking and designerly thinking (Laursen & Haase 2019). This study motivates for an increased integration of the two approaches, as is currently seen in social innovation and human-centred design practice, to foster a holistic learning ecology within higher education of design that embraces transformation. The study argues that empathetic engagement has the potential

to inform transitions in design attitude and approach, in order to stimulate connected learning engagements. Various authors motivate for empathy, understanding, compassion and responsiveness to a multitude of complex issues; these directly address a decolonial pedagogical approach by including social, cultural, economic and environmental considerations (Berlanda 2017, Fisher et al 2017, Jarvis 2021, Simaan 2020).

CHALLENGES WITH EMPATHY. When empathy is considered an abstract concept that speaks to cognitive, affective and behavioural aspects only, the danger exists for a damaging effect on student engagement. Students without an empathetic disposition become despondent or resistant to the notion of empathy, and remain detached from the issues under investigation, resulting in superficial responses and preconceived ideas. In contrast, students who are too immersed, become lost in the issues and find it challenging to detach from the empathetic process (Kouprie & Visser 2009:445-446) in order to find an objective perspective. The evidence also shows that a few students find a balanced view and are able to integrate the empathy triad, by taking committed action by transferring complex understandings from the workshop to the studio project. However, in the rest of the sample, the enthusiasm and connection fades for multiple reasons.

### **The question therefore remains, how can empathetic engagement be sustained?**

This brings into the discussion, the matter of time and duration. The data show that a four-hour workshop introduces students to other ways of working and to perspectives other than their own. However, additional time is required for that to be internalised and integrated. Only exposing students to troublesome or unfamiliar concepts and design activities prove not adequate for deep engagement and additional time is needed to invest themselves into the unsettling experience. The fact that they are confronted with their own beliefs and views of the world makes this an even more difficult process. Students challenge their own understanding of disciplinary content and process, but also reflect on their individual premise to life (after Mezirow 1991:107).

Empathy is difficult and complex. To have empathic concern for another requires effort and understanding. It requires that I set aside my own selfish needs and think about the experience someone else may be having ... [i]t asks me to invest precious emotional energy into another, a cause, or a social concern that is not directly related to me, or what I value (Kaza in Resnick 2016:292).

VALUE OF EMPATHY. The two routes to empathy, 'mirroring' and 'reconstruction', as proposed by the Simulation Theorists (Goldman in Heylighen & Dong 2019:114-115) prove valuable in the workshop engagement, as students are able to relate to the context of their active studio project in a direct way. They do this either by mimicking what they experienced and in that way absorb complex concepts, or by imagining 'what can be' by reconsidering their experiences with a critical lens, from the perspective of the user. This is also seen as appreciative inquiry (Stein et al n.d.). The components of empathy: cognitive, affective and behavioural (Cuff et al 2014:147), therefore do not support the empathetic requirement effectively, as students are prompted to make relational and contextual links beyond only one individual's requirements and needs. Therefore, the empathy triad that promotes empathetic engagement, is more conducive to transformative learning.

EMPATHY AND THE 'PLUG-IN'. The word 'empathy' was not written into the 'plug-in' brief, however, students were asked to assume a user perspective, and not the familiar designer view during the workshop. This disruptive request interrupts their comfortable design space, by introducing normative dissociation (Butler 2006) to serve this purpose and in the process reveals a continuum of empathy, those that are immersed or absorbed, and others keeping an observatory distance by paying attention only. This is especially evident in the modal shifts required in transitioning between thinking in words or images, and the shift to making as an active process. With vignette drawings and critical artefacts during the workshop, a shortcoming in students' depth of understanding and complexity of insight into the wicked problem's they identified is revealed. The ability to gain deeper meanings, intangible and symbolic interpretations, together with abstract representations, is lacking as a result.

In addition, Mezirow's (1997:5-6) 'frames of reference' furthermore give context to the understanding of an expanded empathetic horizon (Thomas & McDonagh 2013:50), as students are faced with fundamental questions within themselves. 'Points of view' and 'habits of mind' address epistemological and ontological understandings of the world, respectively – challenging aspects for students to meet, especially within a disruptive experience, where little is known or familiar. Regardless of the emotion and experience of the workshop, the study illustrates that it is possible to expand an 'empathetic horizon' or to widen a perspective, or to deepen internal understanding, to extend relational insight or to enrich situational awareness. This study does not propose this workshop as the only way of achieving that, as the inquiry remains open-ended and exploratory. The data shows that an empathetic approach reveals complex issues and threshold concepts, as captured in the 'plug-in' brief. The ways students find their way through the liminality of threshold concepts (Meyer & Land 2003, 2005), determine their trajectory of ethical and affective development individually.

The threshold concepts emerging through the empathetic lens, such as human agency through an awareness of social and dynamic conditions, together with spatial appropriation and meaning, highlight the acknowledgement of perspectives and 'frames of reference' (Mezirow 1991, 1997). Not all students reflect critically on the connectedness of their engagement with complex issues, but the re-evaluation is focused around their own process experience and understanding, in light of how the nature of the activities unsettle their familiar design world.

PROPOSED TERMINOLOGY. Due to the biased connotation of the term 'empathy' as an abstract concept, as Bloom (2016) warns against, and likewise the possible subjective association with 'empathetic engagement', this study considers other terms as active handles into the field of spatial design. It conjectures whether 'internal understanding', 'relational insight' or 'situational awareness' could not be terminology or concepts more relatable to design students, considering the absence of perceived sentimentality and subjectivity.

## Provocation 4\_in dialogue with

[integrative; transformative]

“Seeing” ... means to explore beyond the obvious, to challenge existing perspectives, and to construct a deep understanding of what we perceive by examining and re-examining our frame of reference through careful observation, physical interaction, and imaginative inquiry ... [m]aking involves “conversation” with a material (Miyasaka 2014:3, 6).

Designery thinking literature refers to ‘dialogue with the situation’ as a reflective practice (Schön 1983) as one of its methodological approaches (Laursen & Haase 2019:823), but the findings from this study reveal that the dialogue is rich and layered, warranting a discussion to reveal the aspects related to the ‘situation’ within the context of disruption. This can be correlated with design thinking’s ‘exploratory learning’, dealing with ill-defined problems where solutions are not always complete (Laursen & Haase 2019:824). The data findings from the biopic investigations show multi-layered challenges emerging and as a result, ‘ultimate’ solutions would not be possible. The contextual meaning of the situation is embedded with specificity and particularity (Krippendorff 2006). As a result, there can be no universal or right solution. The designer, however, strives to find the most appropriate response, according to a holistic understanding of the design challenges. This study intends to contribute to the research-through-design (Tharp & Tharp 2018:126) discourse, by deepening a complex human-centred understanding to obtain better responses, due to an immersion into the issues under investigation. ‘In dialogue with’ therefore considers dialogue concerning the following matters: contextual meaning (awareness), process and unfamiliar activities, users, peers and self.

**Contextual meaning (awareness):** Both designery thinking and design thinking have contextual meaning as one of its design paradigms, focusing on the value of the design response in its context (Laursen & Haase 2019:822, 824). This view articulates contextual meaning as an outcome of the design process, but this study relates contextual meaning to contextual awareness, as a verb, instead of a noun. Why? This is seen as something that shifts and mutates as the students’ worldviews, experience and perceptions transform. In this way, the process inscribed in contextual awareness, as discovered by students, is instrumental to the transformations they reveal as part of the exploration, compared to a physical outcome or product. The relationship between ‘dialogue with the situation’, and ‘co-development with problem-solution’ (Cross 2006), therefore becomes significant, as both these ways of engagement are then exploratory and process-driven. In this light, the complexities embedded in design projects and in their contexts become actively engaged processes of discovery and making sense of situations and conditions (Krippendorff 2006:xiii). Contextual meaning then not only becomes a topic of understanding, but also a way of internalising complex issues.

**Process and unfamiliar activities:** The unconventional process inscribed in the disruptive ‘plug-in’ introduces other ways of engagement, compared to the familiar techniques students are normally introduced to/ confronted with in the spatial design studio.

PROCESS TRIADS. The triad, ‘think’, ‘make’, and ‘share’ (Reynders 2012:4) is familiar to students, and they spontaneously relate to these modalities of engagement. As a constructive process, the

introduction of 'feel' (Fisher & Clarke 2012; Brown in Mezirow et al 2009:10 ) and 'do' (Sanders in Tharp & Tharp 2018:75) bring additional complexity to the process. This study argues for two additional modes, one related to commitment to 'act' (Perry 1970), and the other linking to the affective domain (Krathwohl et al 1964) of engagement, to 'be'. To 'act' brings students into the field of citizenship and agency (Resnick 2016), which becomes their motivation to implement their internalised understanding and re-constructed meanings. To 'be', or 'being' speaks to the students' personal development and transformation of epistemological transitions and ontological shifts (Mezirow 1991) toward holistic learning. The refocused engagement of the workshop on the process, instead of the product, exposes deep revelations and recognitions, emphasising deep learning (O'Sullivan 2002).

MODAL SHIFTS. The designerly thinking approach to modal shift (Cross 2006:88) remains process driven – alternating between different tasks and stages of the design process as a cognitive activity, with modes associated with drawing, examining and thinking (Akin & Linn in Cross 2006:88). In contrast, the design thinking approach includes a shift in perspective to include multiple stakeholders in a project to obtain a holistic understanding (Brown 2009). Another perspective includes the creation of not only new markets or technologies, but also new meanings (Verganti 2009).

### **What do new meanings, derived from modal shifts, signify for spatial design?**

Practice has a seamless integration of modal shifts between ways of working and frames of reference as part of its design inquiry and process, by means of empathy and journey maps as part of the conventional 'architectural' design process (Coleman 2019). The synthesis of modes of operation and perspectives allow for a deeper understanding of complex user requirements that are changing according to the situation or context and as a result, influence people-object-environment interface. The 'plug-in' workshop introduces students to this approach during the course of the four-hour activities. They express their experience of the workshop activities as a gradual introduction of new aspects, in a sequential way, perhaps as a phased model (Brown in Laursen & Haase 2019:825), although that was not the intention of the workshop. Their critical reflections support a deepened understanding and awareness of issues, not considered before.

SOLUTION-LED-GOAL ANALYSIS. In comparison, solution-led-goal analysis (Cross 2006:78-79) proves to be detrimental to the development of students in this study, when the framing of the project is not considered from multiple perspectives. In such cases, both the designer's view (no emotional connection with issues), or user's experience (too immersed in the emotional losing perspective), cause the students to stagnate and/or retreat in their understanding. Solution-led-goal analysis has at its core the user's spoken and unspoken needs (Dorst 2011), but when this is compromised due to difficulty in making modal shifts in perspective by means of normative dissociation (Panero et al 2019), the 'sense-making' and meaning-making processes suffer. In this light, the literature review in *Chapter 3* speculates that 'solution led goal analysis' is no longer useful in complex design projects, and that 'situation-led potential analysis' becomes more relevant to elicit meaning and contingency.

Although the emphasis of solution-led goal analysis is on "... creating the right solution rather than qualifying the goal" (Laursen & Haase 2019:820), the right solution might be elusive and indefinable.



As discussed above, the conditions to determine the 'right' solution are in flux, and the social fabric influencing its situations, remain fluid. Because of the contingency and agency inscribed herein (Awan et al 2011), the solution-led-goal analysis could be tainted with preconceived ideas and personal bias of the designer. Krippendorff (2006 in Laursen & Haase 2019:823) argues, "... the identified solution is meaningful to both the users and the context", although the goal might shift in the process (Cross in Laursen & Haase 2019:823). Thus, the productive intent by solution-led goal analysis is not constructive where disruption upsets the students' inner and outer worldviews.

**Users:** The various workshop activities elicit an unconscious activation of empathy, whether cognitive, or affective (Cuff et al 2014:147). Normative dissociation (Butler 2006) relates to the complex needs of users. Some students find it challenging to immerse themselves in a connected perspective (Belenky et al 1986:113) of the users' experience. Human-centred processes in practice show the value of embedding the design inquiry in the world of the user (Coleman 2019, Costello 2019) to better understand ill-defined design challenges. Spatial design education can benefit from this approach (Luebke 2015) to increase the intensity of engagement in the studio.

**Peers:** Sharing and interacting with peers bring a dialogue to the surface that would remain hidden otherwise, as students are sometimes hesitant and shy to disclose their opinions. They expose their personal views, which is a daunting experience. However, they experience the studio as a safe space to share, and in the process learn from another's perspectives. In instances where students do not share freely, dialogue with the process is stifled. Thus, the iteration runs the risk of stagnating into a never ending spiral of repetitive concern without exit from the process in some way, compared to 'detachment', which provides closure and objectivity to the phases of empathy (Kouprie & Visser 2009).

**Self:** Critical reflection on everyday scenarios of living reveal a people-process driven approach to design inquiry. The awareness of others' needs, other than the perspective of the designer, brings another level to self-development of the student, challenging personal design convictions and worldviews. Individual biases and judgements surface and students are confronted with themselves, their roles as designers and the position of the user in the project description. When the student realises a need for integral shifts in epistemological and ontological concerns, and only then, can a transformed approach and attitude towards emphasis for another over the self, emerge. Until then, predictable and superficial understandings remain. Each student determines the pace for development as an individual journey, and the trajectory is dependent on the readiness and openness of each on a personal level.

## **Provocation 5\_a discursive focus in spatial design education**

[troublesome; integrative]

The discursive work gets users or stakeholders to reflect in potentially the same way as when orientated towards social engagement, but their responses are synthesized to produce insights that get folded back into their broader design and development processes ... discursive work still emphasizes systems of knowledge that deal with substantive topics but insights from this are subsequently applied to the specific concerns ... (Tharp & Tharp 2018:126-127).

The purpose of introducing a discursive design approach in the spatial design studio is to supplement its traditional ways of design inquiry, in order to increase and deepen understanding and insight. The focus on "... critique or activism opposing typical commercial design and certain sociocultural conditions ..." (Tharp & Tharp 2018:345) highlights the notion of 'discursive' as a way to elicit critical reflection and response. This research study is situated at the intersection between discursive design's practice and inquiry based domains of social engagement (awareness and understanding) and applied research (relevant insights).

... as a means through which ideas of psychological, sociological, or ideological import are embodied within, situated as, and engendered through artefacts. These ideas are capable of sustaining a complex of competing perspectives and values; so, we say that they deal with *substantive* topics (Tharp & Tharp 2018:74).

The difference between the use of artefacts in discursive design and in the 'plug-in' workshop lies in its intent and purpose during the process. In discursive design, the intent is generating an artefact as a tool, embedded with meaning to provoke conversation within an audience regarding a particular 'substantive issue' (Tharp & Tharp 2018:122). The critical artefact, as employed in the biopic investigations, is equally embedded with abstract meaning and associations to evoke a discussion. Here, it is for the development of ideas of the students as an exploratory process, and not meant to 'present' a message to an outside audience. The active engagement with making the artefact is emphasised for deepened understanding of design complexities.

In this way, deep learning is stimulated, with no pressure or expectation on the students to solve any problems or to derive an outcome. It is not focused on achievement, but rather on transformative engagement. This study recognises the potential synergy between discursive design's critical stance of 'making things visible' (Tharp & Tharp 2018) and design thinking's immersive way of understanding users' intangible needs (IDEO 2019). The data findings show that when students pause for a moment, with the purpose to immerse themselves in the users' world, they relate to the difficult concepts and design challenges on a personal level and in that way increase their understanding of the situation. The value of this approach, especially in the spatial design studio, is the emphasis on understanding and relating to the project challenges upfront, before the student continues in the design process, where spatial results are expected. The Double Diamond design process offers an example of the nature of this approach (Design Council 2019), which can be useful in a spatial design context. In this way, preconceived notions borne from the designer's opinions and perceptions are balanced with the users' perspectives and experiences. This is a deliberate act and it is up to the student or designer to consciously take the time and invest emotional energy (Kaza in Resnick 2016:293-293) and commitment to deeper understand complex human-centred matters, which are better framed and carries ethical responsibility (Tharp & Tharp 2018:367).

The applied research domain of discursive design focuses on "... accessing deeper values, attitudes, and beliefs" (Tharp & Tharp 2018:345) and in this way enables different mindsets. The data findings of the biopic investigations reveal that students respond to the workshop in two ways. Firstly, they project what they know as the 'correct' course of action, as a form of solution-led goal analysis (Cross 2006:78-79), which aligns with the 'declarative' mindset that "... has something to say ..." and "... feels that she

knows". Secondly, they want to investigate to gain knowledge by adopting an inquisitive mindset that "... seeks understanding ..." (Tharp & Tharp 2018:345).

### **How does a discursive approach benefit the spatial design studio inquiry?**

DISRUPTION. The students experience the discursive focus of the workshop as a disruption to their normal studio practice, with the added emphasis to reveal issues only, and not to solve problems. This interruption requires students to make modal shifts in their perspective and in that way, elicit a connected way of engagement by relating to the user on a personal level. The workshop activities facilitate an active dialogue with the process, especially a critically reflective one (Cross 2006). The co-development of problem-solution (Cross 2006) becomes a synergistic process of inquiry and students confront their own biases. The meaning of things is scrutinised and explored, which affects their interpretation and representation of the issues at hand. The data findings reveal that in order for students to respond in a connected way, they have to actively engage and immerse themselves in the contextual meaning (Krippendorff 2006) of the active design project. When this does not happen, they find themselves suspended in the liminal space presented in the threshold concepts (Meyer & Land 2003).

But architecture is becoming increasingly complex and we face challenging times requiring new kinds and more comprehensive skills and modes of thought ... besides, architects are designers and should apply their design skills to more than buildings (Buchanan 2012:17).

TRANSFORMATION. When threshold concepts are troublesome, they stimulate in the students an awareness and opportunity for change. However, not all students are receptive to the potential transformation. Educational psychology and transformative learning theory support the knowledge that unsettling experiences can either cause a student to retreat, or to excel (Mezirow 1991, Perry 1970). The disruption is too severe for the individual and thus stepping into a known and familiar territory brings comfort and safety, particularly in the design disciplines, which are traditionally determined by the designer or architect's view and interpretation (Till 2009:109). The biopic investigations reveal that other opinions also matter. In fact, it demonstrates students' acknowledgement of the importance of integrating unspoken voices into projects that previously did not represent all stakeholders equally.

Adopting a user's perspective brings another layer of understanding to the table. By expanding the empathetic awareness (Thomas & McDonagh 2013:50) into a situational awareness or relational understanding, human-centred issues are highlighted early in the design project, in order to formulate a better framed project description at the outset. In spatial design, the consideration of users and intangible needs are best addressed as an integrated process. The complexities embedded in human-centred matters do not allow for an ad-hoc insertion into the design process. When this happens, the integration remains limited and the true needs are never addressed to the level required for human-object-environment interface, due to its fluid and transient condition.

METAPHOR AND MEANING-MAKING. Intangible conditions related to being human, includes meaning-making and a sense of community, as the workshop data reveal. When students engage with challenging topics and concepts, they find expression through abstraction and in that way, represent

their internalised meanings and messages in the studio. This dialogic inquiry, where metaphor is used to make sense, enables them to engage on a deeper level with the issues that are inscribed as part of their active design project. The lesser used modes of engagement extracted from the process triads (Brown in Mezirow et al 2009:10, Fisher & Clarke 2012, Reynders 2012:4, Sanders in Tharp & Tharp 2018:75) discussed earlier, prove to be the ones creating active connections, relational understanding and deeper insights – ‘feel’, ‘act’ and ‘be’. These modes allow students to operate on a connected learning plane, propelled by their own individual convictions and commitments towards transformation (Mezirow 1991, Mezirow et al 2009, Perry 1970;) and citizen designers (Resnick 2016).

## **Provocation 6\_connected / engaged learning**

[integrative; transformative]

Connected knowers develop procedures for gaining access to other people's knowledge. At the heart of these procedures is the capacity for empathy. Since knowledge comes from experience, the only way they can hope to understand another person's ideas is to try to share the experience that has led the person to form the idea (Belenky et al 1986:113).

Developmental and transformative learning theories supporting this investigation are presented in the literature mostly as hierarchical models of sequential development. Belenky et al (1986:14-15) argue that the ‘ways of knowing’ are not a linear progression although it is often interpreted as such. Kolb (1984) also presents a non-sequential theory, supported by abstract concepts instead of stages. Perry's (1970) scheme of development follows a progressive line of growth, similar to models from other theorists (Biggs 1982, Bloom 1956, Gagne 1956, King & Kitchener 1994, Krathwohl et al 1964), which build onto the next level of development, as scaffolding (Vygotsky 1978). This study acknowledges the value of a hierarchical approach to the development of students. However, it proposes an alternative view on the nature of development where students engage with complex societal matters. Didau (n.d.), Longmore et al (2017) and Taylor and Hamdy (2013) agree with a relational learning approach.

NON-SEQUENTIAL TRANSFORMATION. The data findings resulting from the biopic investigations reveal a different approach to a linear understanding and interpretation of the theoretical models, taxonomies, cycles and schemes. Due to the nature of the various workshop activities, assorted modes of engagement are activated, which stimulate different responses. These are focused on particular aspects in a design inquiry and do not necessarily require prior learning, compared to the ‘zone of proximal development’ that relies on a continuum of learning that increases in difficulty (Vygotsky 1978). In contrast, the disruptive action of the ‘plug-in’ workshop introduces activities and modes of engagement that provoke students. Two responses are possible, firstly, they are stretched beyond the limits of what they can handle in that moment and retreat due to anxiety (Perry 1970) and secondly, they stay within a familiar comfort zone (Vygotsky 1978). When students operate in the learning zone, they engage with learning material from a receptive stance and relate to the cues embedded in the workshop activities. Sometimes, peer interaction assists students to make critical connections and to confront their own judgements and opinions in the process.

The role of the designer furthermore supports this view, as the designer is not always the expert within a situation, which links to the critical re-evaluation of levels of learning. The data findings show that the designer becomes a “servant of urban society” (Campbell 2018:289) that sometimes facilitates, leads, supports, emphasises and provokes in favour of the greater good. These roles, which cannot always be predicted beforehand, require different modes of engagement and are supported with the ‘random’ appropriation of ‘levels of learning’.

The findings below (Table 7-3) support the discussion by demonstrating the students’ performance according to the various levels or stages (hierarchical theories) and concepts and perspectives (relational theories). A non-sequential development is evident from the table. It shows that various activities are represented on different stages or concepts simultaneously, regardless of where these is situated in the workshop duration. No sequential growth pattern is visible. This supports the notion of contingent and fluid ways of learning and working in spatial design, due to the need for different modes of engagement at different stages of design projects. The levels or concepts per author below, read from the bottom upwards.

The following learning theories are listed in the Table 7-3. Hierarchical theories include: cognitive (Perry 1970, Bloom 1965/2002), affective (Krathwohl et al 1964) – overlapping levels, Transformative (Mezirow 1991) – hierarchy implied through transformation, and holistic (Kegan 1994) – development according to age. Relational theories include: cognitive (Kolb 1984) – abstract concepts, affective (Belenky et al 1986) – perspectives, and modes (Didau n.d.). This study argues that sometimes a particular way of engagement requires a specific learning or developmental mode, or combination thereof, applied or considered in a non-sequential way compared to its theoretical context. Theories with hierarchical levels show the same outcome as relational models – fluid and contingent responses. The relational theories have various level descriptions in relation to design actions. The workshop activities demonstrate that even through affective ways of engagement, a non-sequential nature of development is supported due to the diverse modes of inquiry, which are mutually supportive in the overall context of the ‘plug-in’.

Furthermore, the curve of each individual student’s development is unique and does not follow a pure linear trajectory as described in theory. The transformative learning process is a troublesome one and often met with resistance and or retreat in certain situations (Perry 1970:10). Every student follows a personal path that fluctuates according to the openness of the student in the specific moment of learning. Some students flourish and others might have difficulty in their acceptance and absorption of ambiguity and uncertainty (Land et al 2006).

Table 7-3 furthermore includes additional concepts (in italics and highlighted) to selected learning theories. The research findings reveal scope for expansion to better represent transformation in spatial design: Bloom (1956/2002) (*reflect, internalise*), Mezirow (1991) (*value reflection*), Kolb (1984) (*reflection, internalisation*), Belenky et al (1986) (*resilient / responsive*) and Didau (n.d.) (*situational meaning*). The darker shaded rows toward the middle of each theory represent the area of development most prevalent in third year students.

Table 7-3: Non-sequential transformation (hierarchical theories and relational approaches)

Workshop activities		Problem statement	Keywords	Vignettes	2 <sup>nd</sup> life materials	Critical artefacts	Peer interaction	Reflective essay	Trajectory to completion	Post feedback
Developmental learning theory										
Cognitive	<b>HIERARCHICAL THEORIES</b>									
	<b>Perry 1970 (hierarchical)</b>									
	Developing commitment (Position 9)									
	Orientation in implications of commitment (Position 8)					o			o	
	Initial commitment (Position 7)	o			o	•	•		o	•
	Commitment foreseen (Position 6)	•			•	•	•	•	•	•
	Relativism correlate (Position 5)	•	•	•	•	•	•	•	•	
	Multiplicity correlate (Position 4)	•	•	•	•			•	•	•
	Multiplicity subordinate (Position 3)	•	•	•	•				•	•
	Multiplicity pre-legitimate (Position 2)	•	•	•					•	
	Basic duality (Position 1)	•	•						•	
	<b>Bloom 1956/2002</b>									
	<i>Internalising</i>			•		•	•	•	o	•
	<i>Reflecting</i>	•	•	•	o	o	•	•	•	•
	Evaluating – creating				•	•			•	
	Synthesis – evaluating				•	•	•	o	•	
	Analysis – analysing		•	•		•	•		o	o
	Application – applying			•	•	•			•	
	Comprehension – understanding		•			•		•	•	
	Knowledge – remembering	•			•				•	
Affective	<b>Krathwohl et al (1964)</b>									
	Characterized by value	o		o		o		o	•	•
	Organising by conceptualisation		o	•	•	o		o	•	
	Valuing			•		•	•	•	•	•
	Responding	•	•	•	•	•	•	•	•	o
Receiving	•	•		•	•	•		o		
Transformative	<b>Mezirow (1991)</b>									
	<i>Value reflection (who / attitude)</i>	o	o				o	o	o	o
	Premise reflection (why / understand)	•					•	•	•	•
	Process reflection (how / engage)		•	•	•	•	•	•		
Content reflection (what / relate)	•	•		•	•	•	•	•	•	

		<b>Kegan 1994</b>								
<b>Holistic</b>	Self-transforming mind (system of systems)								o	•
	Self-authoring mind (systemic)	o	o	o		•	o	•	o	•
	Socialised mind (across categories)			•	o	•	•	•	o	
	Instrumental mind (categories)	•	•	•	o					
	Impulsive mind (single point)	•			•					
		<b>RELATIONAL THEORIES</b>								
		<b>Kolb (1984)</b>								
<b>Cognitive</b>	<i>Internalisation</i>			o		o	•	o	o	
	<i>Reflection</i>	•	o	o		•	•	•	•	•
	Active experimentation				•	•			•	
	Abstract conceptualisation			•	•	•		o	•	o
	Reflective observation	•	•	•	•		•	•		
	Concrete experience	•	•	•			•	•		
		<b>Belenky et al 1986</b>								
<b>Affective</b>	<i>Resilient / responsive (connected)</i>				o	•				o
	Constructed (connected)	o	o	•	•	•	•	o	•	•
	Procedural (connected / separate)			•	•	•		•	•	
	Subjective (separate)	•	•	•	•		•	o	•	o
	Received (separate)	•	•	•						
	Silenced (separate)	•	•							
		<b>Didau (n.d.)</b>								
<b>Modes</b>	Self-control/-perception, meta-cognition, resilience / motivation	o	o	o		o	•	•	•	
	Critical thinking, problem solving	•				•		•	•	
	Creativity, collaboration, communication		•	•	•	•	•			•
	<i>Situational meaning</i>	•	•	•	•	•	•	•	•	•

Table 7-3 shows a general migration towards the 'higher order' levels, but also indicates that it is not a sequential process. The 'lower order' levels remain integral to both the understanding and internalisation of complex concepts, even towards the completion of the active design project. Noteworthy is the observation that 'final' levels of theories are focused on different developmental aspects. For example, active experimentation (Kolb 1984), creating (Bloom 1956) and character by value (Kratwohl et al 1964). This means that they are not all necessarily achievable within the scope of a third year, exit level student, because time is needed to practice 'tacit' skills that can be gained during experience over time, aligned with post-graduate studies and working as a professional in industry.

Students in postgraduate studies have a wider exposure to the nature of projects that require more autonomy (Mezirow 1997:7) and independent work, which allows them greater internalisation and introspection, as compared to the undergraduate students. In addition, the focus of the 'higher levels' also differs. Kolb's (1984) and Bloom's (1956) (revised by Krathwohl 2002) terminologies suggest an operational mode of engagement, which supports the workshop activities. The study proposes adding 'reflection' and 'internalisation' to Kolb's (1984) theory, and 'reflecting' and 'internalising' to Bloom (1956) in order to cover the missing aspects that are currently not considered. In comparison, Krathwohl et al's (1964) affective domain, integrates in its last two levels, 'organisation by conceptualisation' and 'characterising by value' of internalisation and deeper values embedded as part of its theory. These speak to the designer's epistemological perspectives of the nature of knowledge and ontological worldviews, due to the emphasis on attitudes and values required for citizenship designers (Resnick 2016).

The discussion regarding a general understanding of undergraduate student development, as pointed out in the relational biopic synthesis in Part 2 of *Chapter 6\_Biopic investigations*, argues that exit level third year students are plotted on the process reflection band of development, as indicated in Table 7-4. According to Perry's (1970) scheme of development, the transition between '4-multiplicity correlate' and '5-relativism correlate' represents the complex stage of development of a student during a third year design programme. It is also the point in design learning where the potential for a shift from 'separate knowing' to 'connected knowing' in learning is explored and discovered (Belenky et al 1986).

VALUE REFLECTION. The emergence of value reflection in this study brings another layer of understanding to the project between student and the community of users. When value reflection is considered in a fluid and contingent learning environment, students are able to find commitment in themselves. The notion of value reflection therefore extends the reflective trio by Mezirow (1991) to address aspects of citizenship design to contribute to positive change in all communities (Table 7-4).



Table 7-4: Level of development of undergraduate students

Transformation of meaning perspectives	Loop learning		Holistic (integral) transformation perspective	Constructivist understanding	Developmental theorists
<b>[Value reflection]</b> – including those <i>who</i> are involved					
<b>Mezirow</b> (1991)	<b>Argyris and Schön</b> (1974)	<b>Triple loop learning</b> (after Bateson 1972) – third order learning	<b>O’Sullivan</b> (2002) <b>Ferrer, Romeo &amp; Albareda</b> (2005)	<b>Kegan</b> (1994) (levels)	<b>1) Kolb 1984;</b> <b>2) Bloom 1956/2002;</b> <b>3) Krathwohl et al 1964</b>
<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)	1)Active experimentation 2)Evaluating 3)Organisation by conceptualisation
<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)	1)Abstract conceptualisation 2)Analysing 3)Valuing
<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)	1)Reflective observation 2)Applying 3)Responding

Subsequent to proposed additions to Kolb’s (1984) learning cycle and Bloom’s (1956) cognitive taxonomy are indicated in Table 7-5 with the addition of ‘reflecting / reflection’ and ‘internalising / internalisation’, according to the requirements of critical reflection and internalisation posed by spatial design education as discovered in the data findings of the biopic investigations. Didau’s (n.d.) taxonomy confirms the understanding that hierarchies are not conducive to revealing the finer nuances of student development. Instead, modes of working that address values, process (action) and constructive speculation demonstrate transformation far more effectively. This study shows that Didau (n.d.) can benefit from adding situational awareness to his taxonomy to provide a context in which spatial design student development can take place.

Table 7-5: Proposed amendments to developmental learning theories

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

RELATIONAL APPROACH TO TRANSFORMATIVE PEDAGOGY. The research shows that a relational approach to transformative education is supportive of the complex demands spatial design place on student development. Multi-faceted project contexts and richly layered user scenarios ensure an increase in complexity encountered in the design studio. Students are required to consider various aspects simultaneously and this is not a simple one-dimensional process. The benefit of moving between different modes of engagement and adopting various perspectives, support the relational approach.

AFFECTIVE ENGAGEMENT. The study reveals small shifts in design engagement, when the affective side of design inquiry is re-introduced into the process. Alexander (2004) supports the emphasis of the subjective, by combining the scientific, objective side to spatial design and the personal, emotive and feelings associated with deeper meanings. Although this approach has been acknowledged widely it is met with criticism and as such has not been integrated as part of mainstream theory of spatial design.

Tim Brown shares in an interview with Luebke (2015:37) that “[i]f the field of architecture is to remain relevant, it must focus more on the meaning and less on the mechanisms of the trade”. Educational literature furthermore expands this approach, when the value of the affective side to development, brings into focus its impact on values and attitudes (Lynch et al 2009:52):

The affective domain is a necessary compliment to the cognitive domain. It focuses on the development and refinement of interests, attitudes, and values. It is intensely personal and focused at the individual level. The writers' objective is not to prescribe a list of interests, attitudes, and values that one must hold. Rather, from an educational perspective, it is important that educators have the opportunity to expose students to the affective domain, challenge them to think more deeply about real problems, and thereby lay a foundation for more holistic development throughout their careers. It is critical that the profession help the leaders of tomorrow think more deeply about their own evolving interests, attitudes, and values, and recognise and respect the interests, attitudes, and values of others that we have been entrusted to serve (Lynch et al 2009:52).

An area of difficulty is balancing the domains of learning according to Bloom's (1956) cognitive and Krathwohl et al's (1964) affective domains. This study does not focus on the psychomotor or skills domain, because of the exploratory and speculative approach to ways of engagement in the workshops, nor does it propose a set of threshold concepts for spatial design education. The disciplinary focus remains a vehicle to demonstrate the effect of the disruptive 'plug-in' workshop, with its emphasis on process and ways of connected engagement.

DISRUPTION. The biopics show that students more fluently absorb disciplinary threshold concepts into their understanding, such as human agency and appropriation. However, the ways of engagement that include for example shifting perspectives, prove most difficult for students to internalise and apply into their personal practice. As such, the 'zone of proximal development' explains the panic zone, when students are unsettled beyond their comfort (Vygotsky 1978). One of the major obstacles according to the data remains the shedding of the designer's opinion or ideas. Students are not only confronted with difficult issues, but their personal human and learning ecology as a whole (Bronfenbrenner 1979) is disrupted individually, extending to their macro or ontological worldview. Suddenly, the familiar perspective and preconceived notions are no longer adequate and the student realises that perhaps they are also not appropriate anymore and that other responses or options could be better suited for a certain situation or scenario.

PREMISE REFLECTION. Mezirow's (1991) transformative learning theory includes reflective thinking which proves to be integral to students' development, comprising content, process and premise reflection. Kember (1999:21) notes that both content and process reflection are associated with cognitive functions, and that premise reflection is related to the affective dimension of introspection.

### **How can introspection be measured?**

The research of Boud and Walker (1993) and Kember (1999:21) align with the data findings of the biopic investigations, revealing that emotional discomfort or disruptive experiences result in introspection or critical reflection. Mezirow (1997:5) relates transformative learning theory to shifts in a frame of reference, which includes “cognitive, conative, and emotional components”. The two

dimensions of frame of reference, 'habits of mind' and 'point of view' frame the students' internal reference and external worldview.

Habits of mind are broad, abstract, orientating, habitual ways of thinking, feeling, and acting influenced by assumptions that constitute a set of codes. These codes may be cultural, social, educational, economic, political, or psychological. Habits of mind become articulated in a specific point of view – the constellation of belief, value judgment, attitude, and feeling that shapes a particular interpretation (Mezirow 1997:6).

Therefore, habits of mind are associated with ontological positions that are more difficult to change than points of view relating to mere epistemological approaches when engaging with problems or searching for meaning. The students' engagement in the biopics reveals an intuitive acknowledgement of complex matters pertaining to human-centred issues and a cognitive understanding that perspectives other than that of the designer are valuable. However, internalising that and making it a part of the students' internal make-up, is challenging to sustain, especially outside or beyond the context of the workshop. When students are not able to set aside their personal biases and opinions, transformative learning is delayed. Critical reflection therefore is not just a re-evaluation of the actions performed to achieve transformation, but also self-reflection, to confront the self with difficult questions. It becomes a provocation to honesty and humility and as such, a reflective form of criticality.

We transform our frames of reference through critical reflection on the assumptions upon which our interpretations, beliefs, and habits of mind or points of view are based. We can become critically reflective of the assumptions we or others make when we learn to solve problems instrumentally or when we are involved in communicative learning ... [s]elf-reflection can lead to significant personal transformations (Mezirow 1997:7).

Instrumental and communicative learning (Mezirow 1996) represent the two opposing approaches to design intent. Instrumental learning contradicts the views of this study with its focus on control over people and the environment, albeit for efficiency's sake. Communicative learning on the other hand, aligns with the purpose of a 'plug-in' workshop, due to the focus on participation of people to reach a consensus, where understanding of others' values, feelings, intentions and beliefs are paramount (Mezirow 1997:6). Communicative learning therefore relates to a discursive design approach, where the representation of messages is instrumental to obtaining different opinions and perspectives to increase insight and deepen understanding of ill-defined challenges (Tharp & Tharp 2018). In this light, the normative position driving spatial design is questioned, due to the subjectivity of preference expressed by the designer or student self. Normative positions can be inclusive or exclusive of human-centred considerations, which open the debate of the purpose of design, especially today, with a world in flux. Design has the potential to change lives for the better, but it is up to the designer's personal conviction and perspective to contribute to positive transformations that cut across scales, from the urban, to the intimate and personal: "Making massive small change" by means of incremental shifts on local level (Campbell 2018). Students, as future practitioners or agents, have the capacity to facilitate and enable human and spatial agency (Awan et al 2011).

PERSPECTIVES. When students imagine or refocus their attention on another, other design agendas are revealed, because the realisation includes aspects to living and the urban environment that was

unknown before. Disruptive personal experiences bring out the inner convictions and struggles that students are unaware of. By means of normative dissociation (Butler 2006, Panero et al 2019) and expanding the empathetic horizon (Thomas & McDonagh 2013:50) into situational awareness and contextual understanding, complex challenges are better framed and articulated. As a result, layered scenarios of living, requiring relational understandings and holistic or systemic integration, can be addressed. By allowing open systems for human agency for users to appropriate, permeable boundaries (Campbell 2018:30) facilitate the contingent flux contained in the complex social situations (Till 2009:71).

Students connect to these scenarios because of their personal or imagined experiences (Butler 2006, Panero et al 2019). When studio design projects are situated within a 'fictional' site and with 'fictional' users, the project lacks an active link and students find it difficult to relate to contextual issues and meanings that are embedded in the social condition. The 'plug-in' workshop proves useful to bridge this gap, as activities prompt certain modes of engagement. Depending on the student, the response can lead to transformation in small increments, when modal shifts (Cross 2006:88) in terms of ways of engagement and perspectives are made. When this happens, students construct new meanings (Krippendorff 2006) derived from different experiences and opinions, for possible personal introspection and reflection for interpretation into the studio project. Dialogue with the situation, self and others (Mezirow et al 2009:9) enables the process of sense and meaning making (Krippendorff 2006), when an open mind meets new and unfamiliar ways and ideas.

## **Provocation 7\_students as citizen designers**

[transformative; irreversible; bounded]

Transformative learning involves experiencing a deep, structural shift in the basic premises of thought, feeling and actions. It is a shift of consciousness that dramatically and irreversibly alters our way of being in the world (O'Sullivan 2002:11).

The relational biopic syntheses, situated in the spatial design studio, reveal that transformative learning is related to modal shifts concerning ways of engagement and shifts in perspective. On the surface, one may argue that it is easy to adapt to other ways of working and that it is intuitive for a person to see another's point of view. This research shows the opposite when deep transformations are intended. Modal shifts become hugely challenging, as it touches the individual's inner core, as well as worldview. The students' learning ecologies (Bronfenbrenner 1979) are disrupted, but the research shows that upon critical reflection by some students, the disruption is productive and becomes a stimulus to refocus their attention to other spatial agendas.

### **How do students become, or move towards becoming citizen designers?**

SELF-REFLECTION. It proves to be an integral part to transformation and without this, no shift is possible. Mezirow (1997:7) argues that transformative changes happen when our learning's familiar frame of reference is disrupted. The data findings show that a quarter of students from the overall data sample actively chose commitment to aspects discovered and uncovered during the workshop, which were

internalised in some way, into the studio project. This evidence demonstrates students' self-reflection and individual convictions, relating to autonomous thinking (Mezirow 1997:7). When students adopt connected learning and critical reflection, autonomous engagement enables students to become agents for positive change.

Transformative learning is not an add-on. It is the essence of adult education. With this premise in mind, it becomes clear that the goal of adult education is implied by the nature of adult learning and communication: to help the individual to become a more autonomous thinker by learning to negotiate his or her own values, meanings, and purposes rather than to uncritically act those of others. This goal cannot be taken for granted; educational interventions are necessary to ensure that the learning acquires the understandings, skills, and dispositions essential for transformative learning (Mezirow 1997:11).

Negotiation of own values, meanings and purposes are related to the capacity to make modal shifts. When students can manage this in their own learning, they are able to act in the best interest of the project and not spontaneously respond according to their own opinions. Transformative learning brings together various aspects of metacognition (Flavell 1979) that support a student's individual development. When students become aware of their own trajectory of learning, they consider their design inquiry in a new light. The emphasis on self as a designer fades, and the other stakeholders in the project are highlighted. Their perspective shifts from the outsider to the insider by developing a situational awareness and contextual understanding. In this way, the empathetic horizon expands from 'relational' in terms of response, to 'transactional' where they negotiate their interactions and opinions, to 'instrumental' (Ross & Watling 2017), where students' design actions contribute to social and systemic change, in favour of human agency and spatial appropriation. The effect of empathy, in a theoretical sense, should not be discredited for creating emotional connections. However, the learning process can be scarred when this connection is not in equilibrium between cognitive and affective conditions of empathy (Cuff et al 2009:147). Over-emphasis on cognitive empathy can furthermore result in aloofness, promoting the perception of preconceived notions of control over a situation.

When students are confronted with threshold concepts, they find themselves in a liminal space (Meyer & Land 2003, Land et al 2006). Their individual response to this in-between condition is dependent on their receptiveness or resistance to change, especially within a difficult situation, such as the disruptive 'plug-in'. The threshold concepts are not only discipline specific, but also related to the ways of design engagement prompted by the various activities during the workshop. The latter offers more challenges and causes students anxiety and discomfort, which makes it difficult for them to suspend their own judgements in many ways. The realisation that not every problem has a right solution, and that not every issue can be addressed in the same way, is a discovery that is troublesome for some students, and liberating for others. This is the influence of situational awareness and contextual understanding, that the human-condition is dependent on many fluid and transient factors and forces outside the control of the designer (Till 2009:104). It is therefore up to the student to explore immersive ways to deepen insights and to create a personal connection to the complex design issues in some way, in order to reply as an agent of change.

CITIZEN DESIGNERS. Triple loop learning supports the notion of students as citizen designers, as context, transformation and shift in perspective (Medema et al 2014:27), are considered. Triple loop learning, inspired by single and double loop learning (Argyris & Schön 1974) and influenced by 'Learning level III' (Bateson 1972), considers "how do we decide what is right?" Medema et al (2014: 27-28) argue for multi-loop social learning, following a web of 'content-context-process' factors, considering what to change, why change is possible or not, and how change can be implemented.

The 'plug-in' workshop addresses all three factors, by emphasising the need for shift in perspective and adopting supplementary ways of design inquiry in the spatial design studio. Whether change is possible relates to the individual students' receptiveness when disruption upsets familiar ways of working in a place of design comfort. In addition, the ethos of the school and the students' worldviews play an integral part to the possibility of epistemological transitions and ontological shifts. Change in the studio is implemented by the disruptive 'plug-in' workshop, introducing unfamiliar practices that are met with initial anxiety and apprehension.

### **Can transformative learning be related to personal traits of an individual disposition only, or can it be integrated as design praxis?**

The data findings reveal noteworthy shifts in students' engagement, suggesting that some started the workshop with a deep connection, motivated mostly by an emotional disruption and immersion in the contextual meaning of the site, or pressing issues under investigation. Some of the students in this group sustained the connection through the workshop and into the active design project. However, the majority reverted to the traditional detached engagement, due to the external pressure of the studio project, the realities of making prototypes or the challenge of producing a discursive object for exhibition purposes. In comparison, there are students who found their connected voices during the workshop, by critically reflecting on the process and honestly confronting their preconceived notions or opinions as self-reflection.

The small and seemingly insignificant shifts inform small changes, resulting in big impact. Students that adopt hybrid ways of engagement display an agility in their personal design exploration and as a result, flourish in certain areas introduced in the workshop. Students with a high tolerance for ambiguity and active exploration question their own design response to allow the process to unfold. This observation is separate to the understanding of learning styles, identifying the 'reflector', theorist', pragmatist' and 'activist' (Honey & Mumford in Caple & Martin 1994:17). The detailed biopic analyses demonstrate that students are able to move across learning styles and that adult learning (Mezirow 1991, 2018 Mezirow et al 2009), focusing on self-reflection and autonomous learning, enables students to be aware and take responsibility for their own development.

Wicked problems are addressed with more awareness of its complexity and the potential and layered richness contained within. When students engage deeply, embodied or imagined experiences are internalised and students connect with the dialogue within the design challenge. This process, as dialogue with the situation (Schön 1983), with the process, self and peers, provides a platform from

which to consider and represent hybrid design scenarios, embedded within a particular context and community.

The multi-scalar approach emerging from the data reveals that when students zoom in and out of project contexts and design challenges, they formulate a deeper understanding of social complexity in spatial design. A continuum of macro, meso and micro scales allows a human-centred emphasis to gain insight into multi-faced and diverse living scenarios. The design attention is refocused to the human scale or direct and intimate encounters, rich with meaning, memory and ritual. In this way, students develop their situational awareness, with emphasis on the intangible needs of complex living scenarios. Design activism, design leadership, design agency, design ethics and responsibility become integral to student transformation as citizen designers (Resnick 2016).

Changes in consciousness take place below the surface of action, and so they're hard to measure. But every once in a while they break out. They break through the surface. And only then do you realize that a change in consciousness has taken place (Zinn in Tharp & Tharp 2018:112).

Therefore, the human centred approach explored in this study highlights three important components. Firstly, people as users, customers, clients and communities who are served by designers. Secondly, the student as designer that uses hybrid design methods and ways of critical and creative inquiry. Thirdly, the student designer is also the receiver of challenging disruptive experiences embedded within design projects. The response to such experiences can guide and support a process of transformative development towards students becoming design activists, advocates and champions of design for positive change. When they act with design values and an attitude of commitment to promote a larger community of student designers, pioneering research-through-design for the greater good.

## Summary

The postulations and provocations presented in *Chapter 7* provide issues for consideration in the discourse of spatial design education. The interrelatedness of the seven points of discussion proves significant in the context of a human-centred approach, filled with layered meanings and embedded within complex scenarios and situations. The people-process driven workshop brought to light noteworthy shifts in students' engagement with design inquiry and the hybrid methods revealed pertinent process threshold concepts, brought to light due to the identification of disciplinary aspects. The reference to time, for reflection, to expand empathy, to realise another's perspective or experience, proves to be an important consideration to transformative learning. When students are able to spend more time, the understandings are deeper and the insights more complex. This is especially the case when they refocus on small-scale encounters.



The key message from the seven provocations revolves around potential richness of complexity offered by the question posed earlier in the chapter: What do new meanings, derived from modal shifts, signify for spatial design? There is clear evidence that transformative learning is possible when introducing deliberate and productive modes of disruption into traditional, single-solution driven design processes. One can only imagine how much richer and significant transformation will be when introducing real-life contexts, alternative formats of design studio organisation and a broader willingness to accept contingent conditions as part of a designerly way of knowing.

This seems to be changing.