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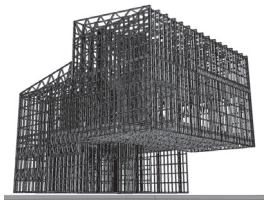

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INSPIRATION IN REALITY

In the last editorial of *Architecture SA*, mention was made of the protests at SA universities – essentially, these centered on the equity of access to institutions of higher learning. Having stated this, it is equally important to immediately mention that this might be a gross simplification of a very complex matter, and if it is perceived as such, an apology should be offered beforehand. These protests still simmer, and addressing them adequately would take a different scale of resources. Down the line, access to the architectural profession is also at stake here. This access issue will eventually determine the nature and survival of the profession.

The architectural profession and the *academe* do not live in different worlds – the contextual matters that affect the one affect the other. Local and global economic jitters have an equal influence on both. Coupled with these economic woes, we see social instability, the one humanitarian crisis after the other and a proliferation of natural and man-made disasters. These perceptions and realities of instability might always have been there. However, we are, due to global inter-connectivity, instantly and constantly informed about them…

Recently, we've had the multinational agreement on climate change in Paris, while the deliberations in Davos have just concluded. Again, these events and agreements that took place so far from us might have a real effect on our daily existence. The Paris Agreement, it seems, seeks to balance out imbalances in climate change and energy use to ensure long-term survival. However, at Davos, it would seem that shorter-term economic survival has won out over longer-term cultural production – the natural domain of a cohort of professions where the architect finds a natural home.

The context in which architecture is produced has and always will be changing. It will forever be a difficult and challenging sphere. The influence of architecture can be viewed as insignificantly small, set against these global forces of change. Yet, a contrary view can be held that our influence and the role of the built environment are all pervasive, and thus extremely powerful. There will always be the inspired and ethically acting architect who will be able to create meaningful beauty and functionality beyond a single generation and mindset.

In a small way, this issue of *Architecture SA* is dedicated to those in the profession who could (in the past) and are (currently) able to see, with inspiration and technical skill, beyond the intense difficulties of the here and now. In the same way I would like to remind all our readers of (the late) David Bowie's words: 'Turn and face the strange'. That is what architects are best at! ■

PAUL KOTZE
Editor

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PART 1

EXPLORING COLLABORATION IN ARCHITECTURAL EDUCATION: TOWARDS DESIGN-BUILD PROJECTS

What is the benefit of collaboration in architectural education and practice? The authors examine the concept for its ability to create well-balanced industry professionals.

By: Hermie E Delport-Voulgarelis and Rudolf Perold, senior lecturers at the Cape Peninsula University of Technology

1. INTRODUCTION

The formal teaching of collaboration is essential for the development of a well-balanced professional (Nicol & Pilling, 2000). We posit design-build projects as ideal contexts for collaboration, and believe that collaboration can purposefully be taught through the appropriate structuring of design-build projects into the education of architects.

In this paper, we first look briefly at collaboration in architectural education and practice, and after that at collaboration as a theoretical background for learning, design and production. We then explore the stories of a number of design-build activities and evidence of collaboration within these activities. The paper concludes with the evidence being reflectively interpreted through a collaborative framework to suggest implications for future practice. The framework was developed for the doctoral thesis of one of the authors (Delport-Voulgarelis, 2015).

This is a qualitative study that considers the social learning theory of Vygotsky (Doolittle, 1995; Smidt, 2013). The authors were both observers of and participants in the design-build constructions presented here. We will be using our own observations and the feedback of our students, gleaned from their personal reflections on the project and documentation – including models, drawings, photographs and reflective writing. What we have learnt is that design-build projects offer the potential to be ideal vehicles for the development of collaborative skills.

The Design Build Research Studio (DBRS) at the Cape Peninsula University of Technology (CPUT) investigates live and design-build projects as an alternative to the traditional architectural studio. Design-build projects form part of the broader definition of live projects. Live projects involve 'the negotiation of a brief, timescale, budget and product between an educational organisation and an external collaborator for their mutual benefit… Students gain learning that is relevant to their educational development' (Anderson & Priest, 2015: 2). Some live projects have a built structure as the outcome, and are then defined as a design-build project.

The authors aim to continually improve our educational practice, and believe that how and what we teach shapes the identity and values of future professionals. The educational value, implementation, pedagogy and possibility of alternative forms of practice are a part of our ongoing research. We hope to contribute to the international call to theoretically investigate the pedagogy of design-build projects (Abdullah, 2014; Harriss & Widder, 2014; Brown, 2012; Voulgarelis, 2012; Erdman *et al*., 2002).

The research is approached from a social learning perspective. We believe that learning is not an isolated activity but linked to context and social interaction, and that, from a radical humanist perspective, transformation in practice is 'possible by creating awareness of patterns of dominance' (Mills, 1990: 73).

This paper explores collaboration as such a pattern in a series of design-build activities. Architecture per se is mostly a social and not only an individual practice, and working in a considered collaborative environment can positively influence design outcomes (Türkkan et al., 2012:14). The conventional architectural studio does not always allow collaborative practice to develop, as Hill and Beaverford (2007: 2) assert: the 'very specific, and at times discipline-centric, studio experience often fails to promote interest and understanding of new perspectives, social realities and collaborative methods'.

2. COLLABORATION IN ARCHITECTURAL EDUCATION AND PRACTICE

The *Journal of the South African Institute of Architects* (*ARCHSA*) recently published a number of articles on architectural education. These include views on situating sustainable studies within education (James, 2014), transformation in education and the profession (Le Grange, 2014), relevant qualifications (Carter, 2013), and curriculum development (Delport-Voulgarelis & Perold, 2012). Design-build as teaching methodology is specifically addressed by Carter (2013: 43) as typically having 'an utopian or community-based ideal' and an 'inherent orientation towards… collaborative teamwork'. He further refers to three kinds of historically developed curriculum models: a compositional, a mathematical and a constructional curriculum. The latter is 'heavily workshop and site based, developing the material consciousness of the architect "as fabricator" (where the practical experience of making buildings is the driver of design thinking)' (ibid). We believe that universities of technology are uniquely situated to explore collaborative constructional curricula.

LIFE PROJECTS INVOLVE 'THE NEGOTIATION OF A BRIEF, TIMESCALE, BUDGET AND PRODUCT … STUDENTS GAIN LEARNING THAT IS RELEVANT FOR THEIR EDUCATIONAL DEVELOPMENT'

Design-build projects are becoming more and more prevalent in architectural education, and are already included in more than 70 percent of the curricula of members of the Association of Collegiate Schools of Architecture (ACSA, 2014). In general, students show more enthusiasm for and engagement with these projects than they do with conventional studio projects (Sara, 2006: 2; Schwartz *et al*., 2014: 16). Students also develop 'confidence and initiative in sorting out details' (Cavanagh *et al*., 2005: 7).

2.1. VIEWS OF ARCHITECTURAL EDUCATORS ON COLLABORATION

Collaboration and group work are mentioned, but not explored, in most descriptive and analytical design-build case studies (Delport-Voulgarelis, 2015). ›

Van der Wath (2013: 184), among others, writes that design-build projects offer a place where students can be 'exposed to the complex collaborative nature of spatial design'. Chiles and Till (2004: 3) state that there 'are clear social benefits' and that design-build projects are 'contained time-wise and need a group to succeed'. However, collaboration as an active pedagogical approach in design-build projects has not really been investigated.

Professional architectural practice requires collaboration. Professional teams work together in offices, often across diverse disciplines, and social architecture requires collaboration with non-professionals. Practitioners are expecting students to acquire collaborative skills as an academic competency (Tucker & Abbasi, 2012: 1). James (2014: 48) called for the 're-evaluation of interdisciplinary, multi-disciplinary, collaborative and participatory models … in the context of architectural … production'. Professional practice expects design to be done collaboratively, but in the conventional studio such action can even be seen as cheating – causing a tension between the two systems (Lotz et al., 2015: 3).

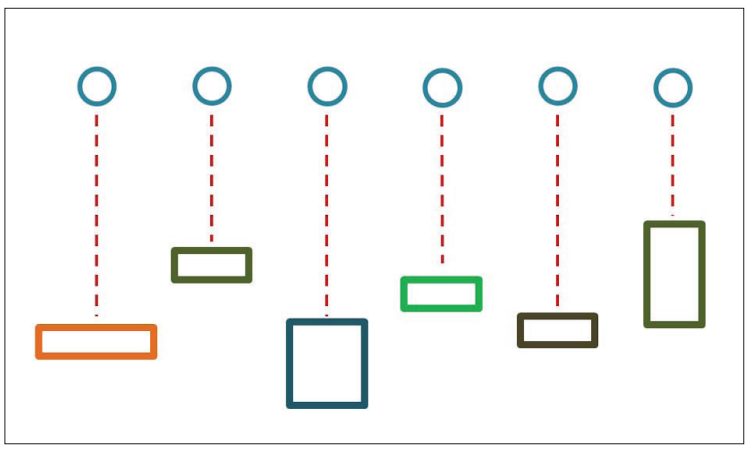

FIGURE 1 *conventional studio design / individual subjects producing individual objects*

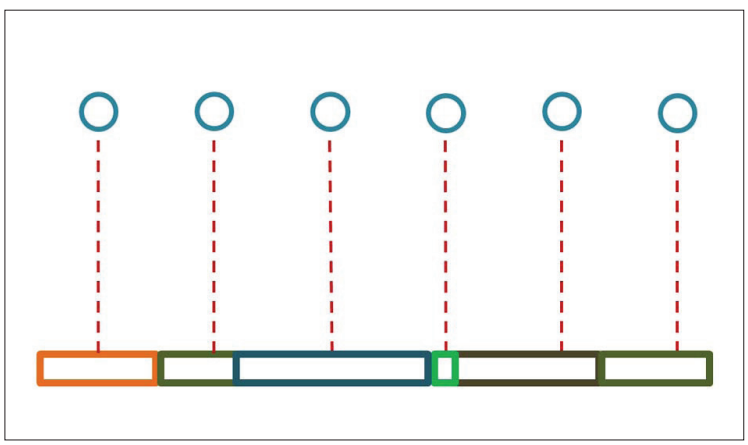

FIGURE 2 *conventional studio group work / individual subjects producing collective object with individual contributions*

The conventional architectural teaching studio is still focused on the individual hero designer (Jann, 2009: 47). In the foreword to the acclaimed work *Changing Architectural Education: Towards a New Professionalism*, Nicol and Pilling (2000: 8) state that the 'familiar model of architectural education seems unlikely to foster in students a positive attitude towards collaboration… while it remains primarily geared [towards] developing individual stars rather than preparing team players'.

The dominant prevailing relationship is that between a student and a tutor, and the development of the individual's design competence (Fig. 1). This 'individuality' is even referred to as a 'solo struggle' (Koch et al., 2002: 6), with little place for group interaction, since 'collaboration with other students means giving up the best ideas' (ibid). Although there are two major modes of operating in both practice and education, namely that of the individual and the group (Türkkan et al., 2012: 7), group work in the conventional studio (Fig. 2) is 'normally restricted to the early research stage of a project, with the final design invariably produced and assessed on an individual and competitive basis' (Nicol & Pilling, 2000: 8). This practice encourages students to work in parallel, collating the individual work into a single product, so as to move onto their individual design exercises as quickly as possible.

Cuff (1991: 44) concurs, saying that students 'are rarely encouraged to work in groups on design problems explicitly intended to help them learn about the social construction of architecture, about collaboration skills, mutual satisfaction, and the like'. Collaboration is currently neglected as a skill taught intentionally to students.

Collaboration invites participation, since 'the process is more dialogic and inclusive than traditional studio projects, allowing and embracing alternative voices in the studio environment' (Sara, 2004). Le Grange (2014: 45) emphasises that working together in groups is beneficial to the whole conventional studio-learning process.

About collaboration in design-build projects, educators write that students not only enjoy collaboration more than the usual competition among themselves (Chiles & Till, 2004: 3), but collaboration enhances self-confidence in group work and students realise that they do not have to be the best at everything (Sokol, 2008). Collaboration in design-build projects teaches students about individual responsibility within a team (Chiles & Till, 2004; Abdullah, 2011), about not disappointing the team (Nepveux, 2010:85) and about consensus-based decision-making (Cook & Stephenson, 2014:18). Additionally, Chiles and Till (2004: 4) believe that the 'core skills of organisation, teamwork and working to a tight timescale' must be formally taught to students.

2.2. PREVIOUS RESEARCH ON TEACHING COLLABORATION IN ARCHITECTURAL EDUCATION

The Australian Learning Teaching Council conducted a comprehensive two-year study into teamwork (another word for collaboration) in architecture and design disciplines. The conclusion was that most tutors in the design studio do not have the requisite knowledge to teach effective group work. The study states:

'What is clear from talking to educators nationally is that relatively few design teachers focus on the teaching of teamwork skills, and even fewer are involved in teaching scholarship or research in this area. It appears that as the teaching of teamwork is largely ad hoc in Australian design education, there is a clear need for the integration of team and group learning into design curricula' (Tucker & Abbasi, 2012: 1).

The research also highlighted the need for pedagogical models that not only assess the products of teamwork, but also assess the process of teamwork and various teamwork skills as well. Furthermore, Tucker and Abbasi conclude that 'as teamwork is listed as a graduate competency by accrediting bodies of design courses, we suggest that the need for the formal assessment of teamwork skills is pressing' (ibid: 7).

From our own experience and observation on various architectural learning sites over the past decade, we believe it would be fair to say that the situation is similar for South African educators. Also, although neither collaboration nor group work is mentioned per se in the SACAP competencies (SACAP, 2010), collaboration is one of SACAP's primary values (SACAP, 2014).

TUCKER AND ABBASI CONCLUDE THAT 'AS TEAMWORK IS LISTED AS A GRADUATE COMPETENCY BY ACCREDITING BODIES OF DESIGN COURSES ... THE NEED FOR FORMAL ASSESSMENT OF TEAMWORK SKILLS IS PRESSING'

Collaboration, as well as the necessity to move from the individual to the collaborative, is acknowledged as important in both education and the profession. Collaboration encourages participation, yet in architectural education the focus is still on the individual. In addition, very little is known about the teaching of collaborative skills so that they may be practised actively and purposefully. In many descriptive stories of design-build projects, group work and collaboration are mentioned, but not with any explanation of what collaboration entails. There is a clear gap in the literature regarding research into collaboration as a specific tool in design-build projects.

3. COLLABORATION FROM A THEORETICAL BACKGROUND

We consider collaboration as an underpinning social-learning concept. The idea of cooperative or collaborative learning is not new. Its roots can be traced back to the social-learning theory of Vygotsky (1930 to 1934/1978). Vygotsky's social-learning or sociocultural theory has greatly influenced contemporary social-learning practice. Vygotsky considered cognitive development ›

	COLLABORATIVE LEARNING	COLLABORATIVE DESIGN	COLLABORATIVE PRODUCTION
TUTOR BRINGS STUDENTS TOGETHER TO	learn from one another	learn from one another through and about design	learn from one another through productive work
STUDENTS FOCUSED ON	learning together	learning and designing/making together	making and working together
OBJECT	learning of specific knowledge, skills, values	design idea	making a real structure
OUTCOME (FOR STUDENTS)	new knowledge, skills, values	collaborative design skills	community structure
	can implement individually	design idea, design artefact	completed project
CLARITY OF OBJECT AND OUTCOME	explicit	explicit, some implicit	implicit, some explicit
MANAGED PREDOMINANTLY BY	tutor	tutor and team	tutor and team
ASSESSED ON	learning outcome	learning outcome and design outcome	structural outcome and process

FIGURE 3 *collaborative typologies / adaptation of original table by Hart (2015)*

positive interdependence	an understanding of the value of teamwork
promotive interaction	specific theoretical teamwork training
individual accountability	tutors that emphasise and mediate both task and group function, and evaluate both
the frequent use of social skills	teamwork that is well integrated into the curriculum, with an activity designed for collaboration
self-management and self-evaluation	
shared goals	the modelling of teamwork through team teaching
leadership and reward	considered team make-up

FIGURE 4 *collaborative rules / Delport-Voulgarelis (2015)*

to be a cultural activity within a social context and thus dependent on interaction with others. Communication, through language and other cultural artefacts, and collaborative learning, are seen as essential tools by which externally developed cognition can be internalised.

Johnson and Johnson (1984) did extensive research on cooperative learning based on, among other things, the work of Vygotsky. They found that cooperative learning experiences, more than individual and competitive learning experiences, promote creative thinking, acceptance of others, commitment, caring, feelings of inclusion, enhanced self-esteem and increased learning achievement. Johnson and Johnson's principles have a strong presence in a set of guidelines proposed by Tucker and Abbasi (2012), for collaborative learning in design disciplines. Social collaboration in the workplace, described by Hart (2015) as learning that is implicit and [happens] as a result of working together, is similarly grounded in social-learning theory. The work of Johnson and Johnson, Tucker and Abassi and Hart was considered together, and developed into three collaborative typologies in the unpublished doctoral thesis of which this paper is part (Delport-Voulgarelis, 2015).

The three typologies are presented in Fig 3. They are:

- Collaborative learning;
- Collaborative design; and
- Collaborative production.

The three collaborative typologies with their underlying rules (Fig. 4) were used as a framework to explore collaboration in design-build activities. Some of our interpretations are presented in the section that follows.

[To be continued in *Architecture SA* 78.]

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