> There is one thing that we all may agree on that studio is excellent for: As a social and organizational setting studio is the ideal context to learn the art of good judgement. This is important because analysis and logic reasoning, however important they may be, do not suffice for making architecture. We are talking about the ability to make wholes that are more than the sum of their parts, juggling multiple and elusive criteria in doing so. (Habraken 2007:11)

CHAPTER 2 **THE PROBLEM IN ITS CONTEXT**

2.1. OUTLINE OF CHAPTER 2

The context of the problem statement is explored in this chapter. It starts with a brief exploration of the notion of architecture, followed by an overview of the context of an education in architecture with particular reference to the origin of the dual format of project and theory from a Western perspective. This links with and introduces the context of architectural education in South Africa, where the establishment of schools of architecture is traced and outlined in the context of some of the major developments that helped shape the eleven schools of architecture that presented validated programmes in 2016. The contents is ordered from the general to the specific and, where possible, presented chronologically.

2.2. OVERVIEW OF THE RELATED LITERATURE

A wide range of sources were consulted to assist the writer in forming an understanding and formulating a contextual thread for the research presented in this chapter. Useful references include Julia Williams Robinson's (2001) ideas on the form and structure of architectural knowledge and Thomas Fisher's (2001) on revisiting the discipline of architecture..

Most helpful in this process was *The Architect: chapters in the history of the profession*, edited by Kostoff (1977a) that includes his chapter on the practice of architecture in the ancient world (1977b), that by Wilton-Ely (1977) on the rise of the professional architect in England, the study of John Galen Howard and the École des Beaux-Arts by Draper (1977) and the essay on the emergence of the Italian architect by Ettlinger (1977). Among other informants count *The beaux-arts tradition in French architecture* by Egbert (1980) and the overview of architectural education by Broadbent (1995). Equally edifying was the thesis by Weatherhead (1941) on *The history of collegiate education in architecture in the United States*,

which has become a standard reference for the history of schools of architecture in the Western world in the early twentieth century. On Germany and the Bauhaus the texts by Gropius (1971), Wingler (1969) and Wick (2000) stood out.

The norms, requirements and reports by bodies that validate and accredit academic programmes at schools of architecture proved insightful; these include publications by the Royal Institute of British Architects (RIBA 2014), the Commonwealth Association of Architects (CAA 2008) and various documents published by SACAP, including its guide to validation (SACAP 2012) and annual reports (SACAP 2015, 2016a). Information made available by the South African Institute of Architects (SAIA 2016, 2017), and the early history of its predecessor, The Institute of South African Architects (**ISAA**), published in ISAA (1959) were useful, but in the absence of a seminal text on the history of architecture, and an education in architecture in South Africa, an array of sources had to be consulted. Prof. Pearse's report on architectural education (Pearse 1934), Herbert's work on the modern movement in South African architecture (Herbert 1975) and the thesis by Van Graan (2011), *Negotiating Modernism in Cape Town: 1918–1948*, proved valuable in outlining aspects of local interest. Articles, for example those by Natas (1971), Theron (1985), Le Grange (1989), Davies (1996), Young-Pugh (2005) and Carter (2013) filled gaps in the unfolding of a narrative.

2.3. THE CONTEXT OF ARCHITECTURE

According to the Collins English Dictionary (2007:82-83) the English the word 'architect' originates from the sixteenth century French noun *architecte* derived from the Latin *architectus* that is based on the Greek *arkhitektōn*, where *arkhi-* means chief or principal (derived from *arkhein* – to rule) and *tektōn* refers to workman or builder (related to *tekhnē*, meaning art and skill). According to this etymology the architect is thus literally the principal builder.

The need for shelter – and, reciprocally, the intentional action of shaping environments – predates the notion of architecture as a vocation and the architect leading those who build. Habraken (2007:12) summarises the emergence of the profession as follows:

> The architect we think ourselves to be emerged in the Renaissance. It was Alberti who first defined him, declaring he was no longer beholden to vernacular customs, and could, by his inventions and creativity, do buildings never seen before. And it was Palladio who established our professional role model along that vision. From then on the architect did the special building: the castle, the place of worship, the palace and the villa, the town hall and the courthouse.

Kostof (1977a:v) defines those who practice architecture as "[…] conceivers of buildings. What they do is to design, that is, supply concrete images for a new structure so that it can be put up. The primary task of the architect […] is to communicate what proposed buildings should be and look like". He adds that the profession supplies "[…] the specialized skill that is called upon to give shape to the environmental needs of others" (1977a:vi). The Department of Architecture (2016a:2) at UP explains it as follows:

> Architects design spaces and buildings to satisfy our daily needs and improve the environment in which we live. They need abilities and skills that range from the practical to the artistic and from the technical to the theoretical. As professionals they conceptualise, design and document building projects and oversee quality control during construction. Architects are ethically and legally bound through Institutes and a government controlled Council which protects the interests of the public. Architects may manage their own practices or work for other, often, multidisciplinary firms, or can make contributions to the government sector and education.

As the discipline of architecture is centred on the design of space, the architect's core competencies with regards to the spatial artefact have not significantly changed in the modern[1] era. Architectural knowledge is produced and disseminated through its branches of practice, education and research (Robinson 2001:62). While education acts as a threshold to the profession, there is, despite some chasms, a coterminous relationship between practice and the academy. Duffy (1995:121) interprets this coalition as follows: "The profession is as good as a school and the schools are as good as the profession". Effectively all three branches rely on and, in turn, inform other fields and disciplines across a broad spectrum of interests and amid a rapidly expanding production of knowledge. This wide scope and reach – see Figure 2.1 – is deemed integral to the identity and praxis of architecture.

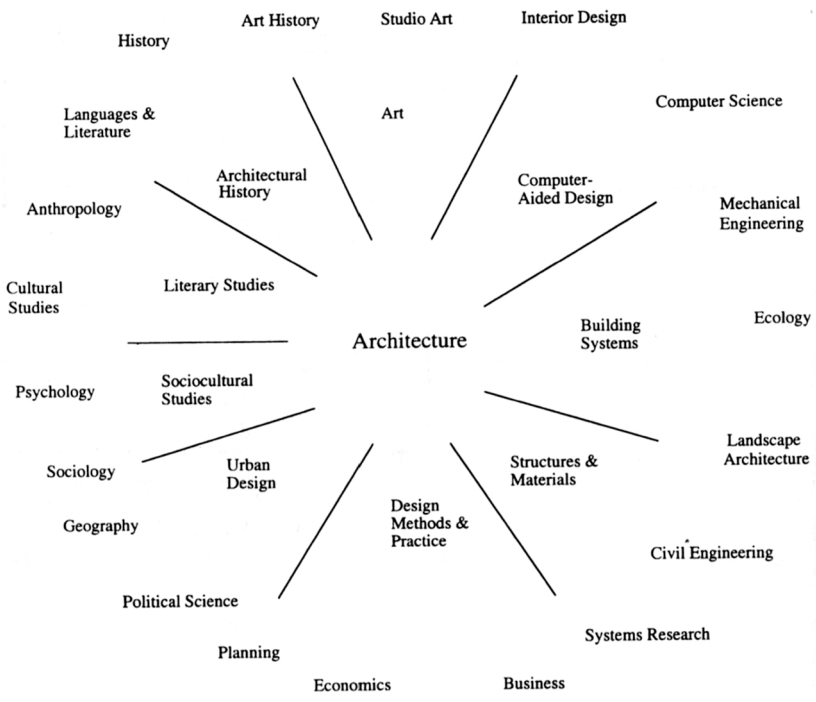

FIGURE 2.1 The relationship of architecture to other fields and disciplines (Robinson 2001:70)

1 The term 'modern' is used according to the following definition in Collins English Dictionary (2007:1046): "belonging or relating to the period in history from the end of the Middle Ages to the present".

With this growing production of knowledge, or perhaps because of it, the relationship between architect, patron and the end users for whom the spatial artefact is intended, has evolved over time. From a Western understanding patronage of the profession has, since the dawn of the modern era, slowly shifted away from state and church to a capitalist client-base in a free-market economy. The emergence, in the late twentieth century, of the global village and its economic realities forced the profession to question its role in society (Fisher 2001:5-7) and the paradigmatic shift in societal informants that impact on our collective spatial conscience. In part this was escalated by a global economic slump over the past decade, but it was also necessitated by other agendas, such as the impact of climate change on the built environment. With a multitude of informants on which to draw and respond, multidisciplinary and cross-disciplinary engagements have become unavoidable for the architect in the twenty-first century.

2.4. THE CONTEXT OF AN EDUCATION IN ARCHITECTURE

In one of the oldest surviving treatises on architecture, the Roman architect Vitruvius (c.80-70 BCE-c.15 CE)[2] famously proclaimed that "The architect should be equipped with knowledge of many branches of study and varied kinds of learning, for it is by his judgement that all work done by the other arts is put to test. This knowledge is the child of practice and theory" (Vitruvius 2006:40). His division of architecture into practice (Latin: *fabrica*) and theory (Latin: *ratiocinatio*) relates, albeit indirectly (Pont 2005), to the dual format of learning that has come to dominate architectural pedagogy. This dual format consists of theory, conventionally shared in lecture-format, and projects executed in the design studio (Broadbent 1995:16).

Theory inclusively covers aspects that, at the extremities, include the natural sciences and their primarily pragmatic application in the built environment, and subjects from the human sciences, such as history, that address precedents, philosophical viewpoints and other texts so as to unlock the meaning of place and the rituals that designed space facilitate. Ideally the theory component, as a whole, diachronically and cumulatively supports the project endeavours of the design studio, which over time has come to be recognised as the mainstay of the architect's education. On this point, Fisher (2001:4) argues that, despite other societal and ideological changes, design-orientated, studio-based pedagogy has, for more than a century, remained moderately stable.

Studio-based learning typically follows the format of a "reflective practicum" (Schön 1985:89) through learning-by-doing, discussion and critique closely associated with the project method (Knoll 1997) and broadly based on a Socratic mode. Salama (1995:1) contextualises the role of the studio as follows:

> Despite the considerable differences in the process of educating future architects around the world, there is one remarkable similarity – the overriding primacy given to the design studio as the main forum of creative exploration, interaction, and assimilation. The design studio is the kiln where the future architects are molded. It is the primary space where budding professionals explore their

2 Where available, biographical dates are given only for deceased persons in this study.

> creative skills, which are so prized by the profession. Thus, the attitudes imbibed in the studio are those that young graduates take to the profession. The architectural design studio occupies the core of the education of architects. This is evident in the time devoted to teaching architectural design and the importance given to the design studio by the students and the teaching staff.

Fernando (2007:143) explains the many aspects of learning in a studio environment when he writes:

> In the stage of design education, the design studio exists in a range of contextual sets: it is an artist's studio where aesthetic and creative ideas are materialized; it is a lab where experiments in building technology are conducted; it is a philosophical scene where theory of design is explored; and it is also a social workshop where the relevance of human and socio-cultural aspects of a design is addressed and applied. Although distinct from each other, these different sets must exist concurrently to achieve a comprehensive studio experience and to fulfil the need for a broader and all-inclusive design studio education.

The studio's prominence is clearly articulated in the requirements of local and international bodies that validate programmes in architecture. SACAP (2012:24) requires that validated courses "must be balanced between the theoretical and practical aspects of architectural training" and, like the Royal Institute of British Architects (RIBA 2014:5) and the Commonwealth Association of Architects (CAA 2008:11), SACAP (2012:25) stipulates that at least half of all formal learning in validated academic programmes should be design-related project work.

2.4.1. Historical analysis

In the following historical analysis the origin of the studio system in tandem with theory lectures from a Western perspective is investigated. Pivotal episodes in the development of architectural education in Europe, the United States of America and the United Kingdom are explored so as to contextualise current educational practices for architects in South Africa. In it is established how architects rose from artisans to be trained through internships in practice and eventually through full-time tertiary study that relies heavily on the design studio as a place of teaching and learning. All this is set against the background of the drive for professional recognition obtained through an academic qualification.

Kostof (1977a:v) suggests that the presence of architects was documented as long as five thousand years ago, but little is known about their training, if any, that enabled the proto-architect to make temples and monuments. It is accepted that Theodoros (or Theodorus) of Samos (d. 540 BCE) managed a private school of architecture in Sparta in the sixth century BCE (Kostof 1977b:16) and that architecture was discussed at Plato's Academy in Athens about three centuries later, although it was probably not formally taught (Broadbent 1995:10-11; Knoll 1997). Vitruvius (2006:42) suggested that the architect should be "[…] educated, skilful with the pencil, instructed in geometry, know much history, have followed the philosophers with attention, understand music, have some knowledge of medicine, know the opinions of the jurists, and be acquainted with astronomy and the theory of the heavens". This idealised prospectus gives us clue that an education must prepare the practitioner to deal with the broad spectrum of informants since the concerns that impact on the architect's decision-making are wide-ranging and varied.

2.4.2. Italy and France

Architects in the Western world were, for centuries, trained in situ, initially as artisans under master builders, and later through formal apprenticeships until the dual format of theory lecture and design project was progressively introduced from the sixteenth century onwards.

> Gradually, the two professions, builder and designer, diverged; the split between handicrafts and design grew and eventually resulted in the transformation of the building profession from a technical skill-based craft to a more innovative and creative form; as simple bricklaying and masonry skills developed into the sophisticated and creative application of form, mathematics and geometry, architecture evolved from a practical profession to a learned field of study. (Salama 2015:21)

The modern notion of studio projects as part of an architect's education stems from the popularity of design competitions in Renaissance Italy – see Ettlinger (1977:104-109) – and was reinforced by Italian architects' ambition towards professional recognition beyond the status of artisan. Knoll (1997) describes how projects (Italian: *progetti*) were introduced as hypothetical design exercises to supplement lectures at the Accademia di San Luca from 1596 onwards, but adds:

> […] this does not imply that the project method had emerged as a central teaching device, since the competitions organized by Accademia di San Luca were not viewed as an integral part of training. Participation was open to every young architect, regardless of whether he was a student at the Academy or not.

The institution that ultimately established the studio project, and formalised weekly discussion groups into theory lectures, was fashioned after this early Italian model. At the French Académie Royale d'Architecture, founded in 1671 (Egbert 1980:18), and its eventual successor, the École des Beaux-Arts (hereafter the École), students effectively worked as interns and acquired design and presentation skills in the studios of their masters while attending lectures on a weekly roster at the academy. According to Broadbent (1995:13-15) these lectures initially dealt with subjects such as arithmetic, geometry, mechanics, military architecture and fortifications, perspective and stone cutting; by the early nineteenth century the curriculum covered the theory and history of architecture, construction, perspective and mathematics and by the early twentieth century it included physics and chemistry, descriptive geometry, building law, general history and the history of French architecture.

By the late eighteenth century the monthly Prix d'Emulation was well established as a scholastic and teaching method and students were required to complete several such competitions to advance academically (Knoll 1997). Like the Concours du Grand Prix de Rome, the prestigious annual design competition established in 1720 that advanced a student to attend the French Academy in Rome, the monthly competitions tested a student's ability to sketch (in the *esquisses*) and render and compose a design proposal for presentation (in the *projets rendus*) in response to a specific brief (Broadbent 1995:15). The approach of the École was eminently an academic one characterised by an "emphasis on the study of compositional theory and traditional principles of formal design" (Egbert 1980:4).

2.4.3. United States of America

The École had a substantial influence on architecture and architectural education beyond the sphere of the Francophiles. This is especially evident in the United States of America during the late nineteenth and early twentieth centuries, where the first formal school of architecture at a tertiary institution in the Anglo-Saxon world was established (Weatherhead 1941:24). Draper (1977:209) explains that the École's influence in the United States was partly based on ambitions towards the Beaux-Arts' values "[…] at a time when American architects were lobbying for state licensing laws, decrying the low quality of public buildings, organizing professional societies, and attempting to found new schools." Weatherhead (1941:5), who describes the École as "the leading one for the training of architects throughout the world for two centuries", notes that many prominent American architects were trained at the École in Paris and that the new schools of architecture in the United States followed the Beaux-Arts format and teaching methods. He ascribes this influence to thirteen important factors, among them the École's rigid entrance examination, the fact that the instructors in the École were practicing architects of high repute who offered individual instruction to students, that this instruction was based on individual competition with the incentive of prizes, that progress was measured by the quality of a student's work (as opposed to the duration of study) and their educational philosophy with an emphasis on design supported by theory and the development of skills, especially in presentation (Weatherhead 1941:17-21).

The Beaux-Arts tradition manifests at the first schools of architecture established in the United States, namely those at the Massachusetts Institute of Technology (**MIT**), where teaching commenced in 1868, and later at Cornell University, especially so after 1896 (Weatherhead 1941:24-25, 33-35). This was cemented by graduates of the École lecturing design at the new American schools, most notably Eugène Létang (1842-1892) and Constant-Désiré Despradelle (1862-1912) at MIT (1941:29-31). At least at MIT, design was, from the outset, taught continuously throughout the course, as opposed to other early American institutions where it was only introduced in the last year of study (1941:34, 39, 42). It was significant that the design studios at most of these institutions were integral to the schools and thus not located in practice (1941:27-28). This has come to typify the American model of architectural education. Robinson (2001:61) explains the major shifts in architectural education in the United States as follows:

> Since the nineteenth century, [architecture's] locus of education has changed from the architecture firm to the higher education institution. Its instructional practices have shifted from a predominantly apprenticeship system to a system of classroom-based teaching supplemented by apprenticeship. The role of architectural instructors is changing from master architect, whose knowledge and theory of making buildings is personally held, implicit, practical, and integrated, and who instructs by demonstration, to that of professor who imparts explicit, specialized knowledges, using explanations based in architectural theory and science. The role of the student has changed from learning one synthetic approach from a knowledgeable individual to learning to synthesize a variety of knowledges from different perspectives and disciplines. Architectural theory is changing from prescription based in historical precedent to critical analysis and explanation deriving in part from the scientific model.

While the American Institute of Architects, founded in 1857, was instrumental in lobbying for the eventual establishment of education programmes (Weatherhead 1941:14), the profession was only later regulated

through the process of licencing. The number of schools in the United States increased dramatically after Word War II and the National Council of Architectural Registration Boards (**NCARB**) currently regulates standards for the licensing of architects in the United States and thereby indirectly controls the outputs of architectural education (NCARB 2017).

2.4.4. United Kingdom

In England the medieval artisan and master builder were gradually replaced by a "gentleman-architect, with a Classical education and an Italian bias acquired through the Grand Tour" (Wilton-Ely 1977:187). The notion of a single practitioner being responsible for both the design and supervision of buildings was established towards the latter part of the eighteenth century, while the only form of training available at this time was through the "irregular standards" (Wilton-Ely 1977:197) of articled pupilage in an architect's office, possibly supplemented by drawing classes. Weatherhead (1941:23) critiqued it as follows:

> The pupilage method could not afford a well-rounded training. It was necessarily lacking in any thorough study of the sciences of construction, and little opportunity was afforded for development in creative design. The student's experience consisted of contact with buildings, either completed or in the process of construction, and with the actual office routine. Thus it tended to produce good office men, well-grounded in English traditions of design and practical methods of construction, but not brilliant designers.

The Royal Academy Schools, founded in 1768 and principally based on the model of the French academy, was the first institution to offer classes in architecture in Britain, but these were intermittent and intended to supplement practice experience or educate privileged young men. Its standing was improved under the professorship of Sir John Soane (1753-1837), who taught there from 1806 and 1837. His lectures, some controversial, were extensively illustrated and his collections of antiquities, books, and artworks were principally intended as teaching tools. Soane was also a successful practitioner and is widely considered as the father of the architectural profession in Britain; his practice also took pupils (O'Donoghue 1898:210-211).

Wilton-Ely (1977:191-193) identifies the launch of the Institute of British Architects in 1834, designated as 'Royal' by Queen Victoria in 1866, as the first move towards professionalism in England. The Institute's charter stated its concerns as "the general advancement of Civil Architecture, and for promoting and facilitating the acquirement of the knowledge of the various arts and sciences connected therewith" (RIBA 2017). To be admitted as a Fellow of the Royal Institute of British Architects (**RIBA**), it was required that prospective members had at least seven successive years of practice experience, while the designation of Associate indicated either fewer years of experience, or that the member was "engaged in the study of Civil Architecture" (Wilton-Ely 1977:193).

Amid rapid urbanisation in the wake of the industrial revolution, early nineteenth century England saw an increased demand for buildings, including new typologies, like railway stations, that required greater technical knowledge and innovation from the architect. To address this need, and to overcome the

general inadequate training available, coursework focusing on the technical aspects of design were introduced at UCL in 1841 and at King's College London (Wilton-Ely 1977:197-8). This was followed by the founding of the Architectural Association (**AA**) in 1847 by articled pupils who objected to the prevailing conditions in architectural training and the pupilage system that was costly (to the pupil), inconsistent and open to abuse (AA 2017). From the outset the AA's mandate was principally focussed on their members' interests; this informed its tradition of self-governance and independence as it proved to be a powerful lobby group that successfully exerted pressure on the RIBA for reform, as Wilton-Ely (1977:199) explains:

> In particular, through the AA's campaign for the creation of an equivalent of the French *Diplôme d'architecture*, the Institute was eventually persuaded to hold the first voluntary examination for entry to its Associate Membership in 1863. In return the AA set up a 'Voluntary Examination Class', thus establishing for the first time the modern concept of systematic study tested by examination as the basis of the architect's education.

The RIBA further improved and eventually formally systematised its examinations in 1887 into three parts – Preliminary, Intermediate and Final – and in so doing raised the level of expectation for the professional knowledge of architects. At the turn of the 1890s, rising in the numbers of membership and the demands of the new examination system directed the AA to undergo a major reorganisation that laid the groundwork for a more systematic, methodical course of study. The implication was that full-time study gradually began to replace the system of pupilage (AA 2017), with other institutions following suit (Wilton-Ely 1977:204).

Although the RIBA has never undertaken teaching, it has promoted architectural education as an alternative route to its membership and therefore developed systems for recognising academic programmes that achieved the standard for exemption from the Institute's examinations. "In 1924, RIBA visiting boards were established to evaluate courses and examinations preparing students for professional practice. These visiting boards are the foundation of the current RIBA validation system" (RIBA 2014:5) and has been accepted as the norm for the validation of academic programmes.

Legislation passed in the 1930s saw the establishment of the Architects' Registration Council of the United Kingdom and the Board of Architectural Education, but these bodies were superseded by the Architects Registration Board (**ARB**) after the publication of the Architects Act 1997. The ARB is now the statutory regulator of architects in the United Kingdom charged with prescribing or recognizing the qualifications required to become an architect and keeping the Register of Architects, among other duties (ARB 2017a).

2.4.5. Germany

The Kingdom of Prussia, a precursor to modern Germany, had already in 1770 established a state architectural examination and its first laureate – architect David Gilly (1848-1808) – established a private school of architecture at Stettin in 1783, followed by a Bauschule and Bauakademie in Berlin in the 1790s (Cellauro & Richaud 2006:130). Here construction and materials were emphasized as the basis for

design. The German schools of architecture of the late nineteenth and early twentieth century continued this scientific approach and they maintained close links with engineering and technical schools. The training was "[…] long, rigid and technical, with little opportunity for individual freedom or originality in design" (Weatherhead 1941:23).

The Staatliches Bauhaus in Weimar, established in 1919, arguably had the most enduring legacy of early twentieth century schools of architecture in the Western world. Amidst the rise of Modernism in Western Europe and the economic ravages of World War I (1914-1918), its architectural ambitions grew from a rejection of the prevailing design approach that was decried for being superficial and detached from technological progress (Gropius 1971:81-82). It aimed to unify all the disciplines of art as inseparable components of a new architecture (Wingler 1969:32) that embodied the notion of total works of art (German: *Gesamtkunst*). This was to be achieved by "combining imaginative design and technical proficiency" (Gropius 1971:52) that, on the one hand undermined the medieval romantic view of crafts and, on the other, favoured a rigorous and sober pragmatism informed by the ambitions of Walter Gropius (1883-1969) to standardise and rationalise. These ambitions could only be fully realised when instruction in architecture was formally included in its teaching regulations in 1927 (Wingler 1969:122).

Gropius (1971:66-67) divided the Bauhaus curriculum into practical and formal instruction, which can be read in terms of the format of practice and theory. The 'practical instruction' concentrated on the handling of materials and lectures in materiality and tools; 'formal instruction' was further divided into studies of aspect, representation and studies of design "supplemented by lectures on all branches of art (both ancient and modern) and science (including elementary biology and sociology)" (1971:67). Weatherhead (1941:181) writes that this approach was "[…] sufficiently broad to provide an opportunity for the artisan or the artist as well as for the architect."

The curriculum was structured to be followed over three periods, commenced with the *Vorkurs*, a six-month foundation course established by painter Johannes Itten (1888-1967). It took on "something of the character of a rite of initiation" (Wick 2000:36) and aimed "[…] to remove the slag of academic ideas about art and design and to develop free artistic personalities but also to pass on basic qualifications for design in the form of a 'supraindividual design language' that could serve as the basis for understanding and communicating the self" (2000:36). This approach was in stark contrast to the pre-existing traditions of education in architecture: not only was design teaching now articulated in the context of art and production, but the role of the individual designer was being emphasised and validated. This value system applied equally to the artists, designers and architects – including Johannes Itten, Wassily Kandinsky (1866-1944), Paul Klee (1879-1940) and later Hannes Meyer (1889-1954) and Ludwig Mies van der Rohe (1886-1969) – who acted as Bauhaus masters. Their personalities, interests, views and even idiosyncrasies unavoidably influenced the syllabus, and welfare, of the Bauhaus as it evolved over its fourteen-year existence (Wick 2000:102-184). Phelan (1981:7) explains:

> The Bauhaus introduced the notion that there could be a number of 'correct' 'solutions' of 'problems'. This was in opposition to the classical academic notion that there was a single 'correct' solution to any

> given pictorial problem which depended on the current aesthetic ideal. The Bauhaus, by contrast, was pragmatic and considered a solution to a problem 'correct' as long as it adequately illustrated a solution. This was in keeping with its avowed desire to develop personal inspiration and individuality. This was a constant ideal of the Bauhaus preliminary course from Itten through both Moholy-Nagy and Albers. Pragmatism was also in keeping with contemporary scientific methodology which admitted new ideas not conforming to classical doctrine as long as they were demonstrably capable of explaining a phenomenon or solving a problem.

Following the completion of the foundation course students advanced to a three-year journeyman's certificate course that focussed on workshops dedicated to specific materials and outputs (Gropius 1971:67). In the period up to 1923 workshops were presented in printing, ceramics, stone sculpture, metal, wall painting, glass painting, weaving, stage, cabinetmaking and woodcarving. These were rationalised in the years between 1923 and 1928; while the printing and wall painting workshops remained, furniture replaced cabinetmaking, sculpture became plastic arts and weaving was substituted with the broader designation of textiles. As students graduated they became available to teach as junior masters; this assured continuity of the Bauhaus goals (Wick 2000:35-39). The third and final qualification was the master-builder's diploma that had no predetermined duration of study and was reserved for "especially promising pupils" (Gropius 1971:67).

Under Gropius' successor, Hannes Meyer, the curriculum was restructured by 1928 and subject modules like psychology and sociology were introduced, albeit for only two academic cycles before Mies van der Rohe replaced them with a renewed enthusiasm for craft and technical training (Broadbent 1995:18).

The Bauhaus legacy surpasses the founder's aim for all-inclusive design with a modern disposition; the intellectual and physical context in which it functioned allowed its participants to question long-established educational and professional routines, so that the professional ambitions of Renaissance architects came full circle as architects rediscovered their origin as craftsmen. As Robinson (2001:64) asserts, this cumulated in establishing the principle that apprenticeship follows education in architecture.

2.5. THE CONTEXT OF AN EDUCATION IN ARCHITECTURE IN SOUTH AFRICA

The establishment of educational programmes in architecture followed much the same path as it did in Western countries in the first half of the twentieth century: part-time courses eventually became full-time studies and university-based as demand grew and the profession established itself with the support of legislation and professional bodies. Van Graan asserts that there is an inherent link, established through colonial ties, between the education of architects in the United Kingdom and South Africa.

> As part of a colonial hegemony, it is essential to view architectural education in South Africa in relation to the development of architectural training in Britain as the two are inseparably linked in terms of structure, systems of education, and indeed, people. South Africans went to Britain to study architecture before returning to South Africa to practise and teach, and many educators came out to South Africa from Britain. (Van Graan 2011:114)

The first teaching of architecture in South Africa was undertaken from approximately 1813 in Cape Town under the French-born and educated architect Louis Michel Thibault (1750-1815) and Anton Anreith (1754-1822), a German-born sculptor, who was principal and instructor (Fisher & Holm 1989:295). Anreith had initially founded an art school by 1806 that, in 1814, merged with the Technical Institute funded by Freemasons of the Lodge de Goede Hoop (De la Querra 2017). Thibault had, in 1813, accepted the appointment as advisor to the school and subsequently taught there formally, thus becoming the first educator in architecture in South Africa. According to De Puyfontaine (1972:110): "Lectures were given from 8 a.m. to 12 o'clock and from 3 p.m. to 8 p.m. Boys and adult men who wished to perfect their knowledge could attend the lectures. It was situated at 8, Bloem Street, probably in the sculptor Anreith's home." The first South African-born architect, H. Teubes (1792-1858), was trained here. The Technical Institute closed in 1822 after the death of Anreith (Prinsloo 2000:139).

2.5.1. Teaching in Johannesburg and Cape Town

According to Herbert (1975:5) economic aid was made available during the aftermath of the South African War (1899-1902) for the rehabilitation of parts affected by the devastation of the conflict. This stimulated the building industry, especially in Johannesburg, and shaped the need for architectural education.

> In this flamboyant environment of optimism and expansion, the first steps were taken to place architectural education on a formal basis. Cape Town, in 1902, had offered courses in building construction and drawing at the School of Art; but it was in Johannesburg, at the recently established Transvaal Technical Institute, that the first comprehensive and systematic courses were instituted. These classes were held in what was affectionately termed the 'Tin Temple', a corrugated iron structure originally erected as a temporary expedient to house the Municipal Offices on Tuin Plein, which remained a makeshift educational building until 1925. (Herbert 1975:5)

Ernest Willmott Sloper (1871-1916), who was reported to have a keen interest in architectural education, presented the first classes in architecture in the Transvaal in 1903. He presented lectures in design, while Henry Seton Morris (1869-1915) presented a course in the history of architecture (Herbert 1975:5). Geoffrey Pearse (1885-1968) was one of the first six pupils to be taught in Johannesburg. Pearse became a leading figure in architectural education and was appointed as the first Professor of Architecture in South Africa in 1921. The Chair in Architecture fell under the Faculty of Engineering at Johannesburg University College, which became the University of the Witwatersrand in 1922.

Pearse (1934:2) writes that the founding of four provincial institutes[3] was one of the formative steps in creating a demand for formal training in line with the aspirations of a profession seeking recognition. Classes were initially presented on a part-time basis as most students worked as assistants in practice (Herbert 1975:5). Gilbert Herbert (who was both a student and later a colleague of Pearse) explains that

3 Natas (1971:43) outlines the establishment of the provincial institutes (according to the four provinces of the Union of South Africa and the Republic of South Africa prior to 1994 as follows: "The Association of Transvaal Architects, incorporated under the Architects (Private) Act No. 39 of 1909, of the then Colony of the Transvaal; The Natal Institute of Architects, incorporated under Act No. 10 of 1902 of the then Colony of Natal; The Cape Institute of Architects, founded in 1899 and the Port Elizabeth Society of Architects; and the O.F.S. [Orange Free State] Institute of Architects, founded in 1921."

the professor's attitude to architecture was based on his love for history and a strong practical bias (Herbert 1975:7-8). Broadly speaking these attributes came to characterise the early Wits school that Carter (2013:38) describes as having an 'engineering with arts' curriculum. Pearse (1934:3) explained that the curriculum at Wits was based on the University Schools of Architecture in England, where he attended the Regent Street Polytechnic in London before returning to South Africa (Herbert 1975:8).

Early attempts were made to present classes in Cape Town from 1902, but these were only really successful by 1912 when classes commenced at the School of Art (Van Graan 2011:118). The First World War disrupted teaching until 1919, following which the Cape School of Architecture was established in 1922 under the wings of the Cape Institute of Architects. It was incorporated into UCT in 1925 and thereafter became a branch of its Michaelis School of Fine Art (Van Graan 2011:119), which undoubtedly influenced the teaching approach of the school that Carter (2013:38) describes as having a 'fine arts' curriculum. From the second year of study students attended classes at night and worked during the day. Practicing architects who taught as part-time lecturers reinforced the link to practice, which is considered to be partly responsible for early training here being architecturally conservative, according to Van Graan (2011:119).

A conference on architectural education, held at the technical College in Durban in July 1923, proved to be influential as it led to the formation of the Federal Council on Architectural Education in the following year, when the Federal Council adopted two standard courses in architecture: a diploma modelled on the course at Wits and a degree modelled on the course of UCT (Herbert 1975:12-15). Thus, degrees and diplomas in architecture – both presented over five years of study and recognised by the RIBA[4] for purposes of exemption – were presented at Wits and UCT from 1927. In his report on a visit to schools of architecture abroad funded by the Carnegie Corporation, Pearse (1934:5-8) provides a summary of both schools for the 1932 calendar year, with staff and student numbers (76 students at Wits and 60 at UCT), the facilities available at the respective schools and an outline of their curricula – see Table 2.1.

The promulgation of The Architects and Quantity Surveyors Act (No. 18 of 1927) gave statutory powers to the ISAA and the Chapter of South African Quantity Surveyors to "direct and co-ordinate" (ISAA 1959:43-44) education in the two fields. In 1929 the government endorsed professional education in these fields as university (as opposed to technical college) functions, so that Wits and UCT were appointed as Joint Examining Authorities (ISAA 1959:44). This effectively meant that university qualifications would in future be the only available option to those wishing to qualify as architects.

4 Two local Boards of RIBA examiners were established in Cape Town and Johannesburg respectively. The local RIBA examinations were discontinued from 1930 as RIBA endorsed the qualifications of the two local schools (Natas 1971:44).

TABLE 2.1: Core curricula of the degree and diploma programmes at Wits and UCT in 1932, after Pearse (1934:5-8)

YEAR	WITS (Full-time degree and part-time diploma)	UCT (Full-time degree and diploma)
1	Architectural Drawing and Elementary Design* History of Architecture* Building Construction * Freehand Drawing* Geometrical Drawing Chemistry Mathematics or History of the Fine Arts or Language Diploma only: Graphic Statics	Architectural Design* History of Architecture* Applied Building Construction* Theoretical Building Construction* Geometrical Drawing* Life Drawing* One approved BA course
2	Design* History of Architecture* Building Construction* Mathematics or Modelling Physics Graphic Statics* Freehand Drawing* Geology	Architectural Design* History of Architecture* Applied Building Construction* Theoretical Building Construction* Hygiene* Life Drawing One approved BA Course
3	Design* History of Architecture* Building Construction* Strength of Materials* Surveying Sanitation and Hygiene* Geology	Architectural Design* Applied Building Construction* Theoretical Building Construction*
4#	Design including Construction* Interior Decoration and Furniture Specifications* Materials* Theory of Structures* House Wiring	Architectural Design including Specifications and the ordinary practice of Architecture* The Law of Building Contracts* Theoretical Building Construction*
5#	Design including Construction* Structural Design* Professional Practice Town Planning*	Architectural Design* Specifications and Building Materials* Professional Practice* A thesis*

* Indicate subjects for both diplomas and degrees. The diploma subjects were essentially selected from the degree curriculum.

\# In the degree programmes the second half of the fourth year and the first half of the fifth year were to be spent in an approved office (Pearse 1934:6-7).

2.5.2. Teaching established in other centres

Pearse (1934:3) lists three other institutions (UP, the Natal University College, Durban, and the Technical College, Port Elizabeth) where architectural training was presented in the early 1930s for diploma studies, in all cases under the auspices of either Wits or UCT.

Studies in architecture were initiated at the Transvaal University College (**TUC**) in Pretoria in 1929, the year before the institution officially became the University of Pretoria. A Department of Architecture and Quantity Surveying was formally founded here in 1943 following the termination of an agreement according to which examinations in architecture were taken at the Wits and those in quantity surveying at UP.

Part-time courses in architecture were first offered by the Natal University College in Durban in 1933, with the examinations conducted by Wits until 1949 when the College became the University of Natal (Croft 1970:10-11). The teaching that Pearse mentions at the Technical College in Port Elizabeth must have been discontinued as a new school of architecture was only established at the University of Port Elizabeth

in 1970. It was the first programme in the country to offer a two-degree structure, with the first degree being a Bachelor of Building Arts, followed by the Bachelor of Architecture. A programme in architectural technology was initiated here in the mid 1970s as a programme in draughtsmanship within the building disciplines in the then College for Advanced Technical Education (McLachlan 2010). A school of architecture was also established at the University of the Orange Free State, now known as the University of the Free State (**UFS**), in 1955 (Joubert 1997:50).

2.5.3. The influence of modernism

At Wits, according to Herbert (2011:63), Pearse "[…] encouraged his staff and students to take an open attitude to design and provided an academic *milieu* in which the Modern Movement could take root". This shift towards modernist ideals emerged from the mid-1920s under the influence of Stanley Furner (1892-1971) and with Rex Martienssen (1905-1942) central to its development (Van Graan 2011:117). Gerneke (1998:208) provides context:

> Excepting the Bauhaus, schools of architecture were not supportive of the Modern Movement then. But in Johannesburg a covey of gifted students soon became colporteurs of the avant-garde, fighting a running battle with academics and the profession. They launched the new Witwatersrand school as a bastion of Modern design – the only South African one for some two decades. Soon after graduating, these disciples of the Gropius–Mies van der Rohe–Le Corbusier triumvirate put the Transvaal on the international architectural map by getting a few Modern designs built by dauntless clients.

Its influence was cemented by the work of the a talented group of young architects labelled as the Transvaal Group and their publication of *zero hour* in 1933 by Martienssen, Norman Hanson (1909-1991) and Gordon McIntosh (1904-1983). McIntosh later taught with fellow Wits graduate Norman Eaton (1902-1960) at the new Pretoria school at UP, where a spirit of optimism (if not independence) contributed to the development of an identity characterised by pragmatic concerns and a regionalist response to the landscape and climate of the city. Its underpinnings eased the acceptance of a wave of Brazilian modernism, evident in student work of the Wits and Pretoria schools in the post-war period (Gerneke 1998:211, 215). Carter (2013:37) discusses the pedagogic shifts during the first decades of teaching and concluded that Pearse's practice-aligned link between architecture and civil engineering at Wits moved towards the French model of studio pedagogy in the late 1920s, but was re-centred towards architectural science a decade on following the influence of modernism, and as complex buildings demanded more than a compositional artistry.

In 1937 the school at UCT became independent under Leonard Thorton-White (1901-1965), who was appointed to the first Chair in Architecture there. Thorton-White reviewed the syllabus, changed the designation of the degree from a Bachelor of Arts in Architecture to a Bachelor of Architecture, restructured the school away from the prevailing Beaux-Arts trajectory (Van Graan 2011:120) and introduced "a Liverpool-derived Modernism" according to Carter (2013:37).

2.5.4. Conferences and seminars on architectural education

The RIBA hosted an important conference on architectural education at Oxford in April 1958 where recommendations were adopted that would impact on the minimum standard of entry into training,[5] recognising schools where "courses of comparable standard" (Martin 1958) could be conducted and that full-time courses, along with 'sandwich'[6] courses, were recommended for professional qualifications. The ISAA proposal for full-time study was therefore in step with the Oxford Conference's resolution.

Although the ISAA had subsequently proposed that a similar conference be held in South Africa,[7] it only materialised in 1972 in Cape Town. The core of this conference was a report on architectural education by Prof. E.W.N. Mallows (1905-2003), from the Wits school, who delivered a plea for contextual relevance in light of the developing economy of the southern African region, but also endorsed art as the basis for architectural design (Cape Town Education Conference 1972:11). A paper by Prof. L.T. Croft (1918-2014), from the Natal school, dealt with teaching methods in which he advocated an interdisciplinary approach to architectural education (Cape Town Education Conference 1972:11).

The conference proceedings greatly influenced the subsequent ISAA National Board meeting, where a number of resolutions were adopted and later reported on in Action on Education (1972:34). Many of resolutions were similar to those raised at Oxford, including those pertaining to admission and that universities were required to limit student intake to match staff capacity, that unsuccessful candidates be assisted to find their true vocation in architecture or the allied fields and that statistical correlations between student selection and graduate placement be investigated on a national level (Action on Education 1972:34). In the points that were eventually adopted, a plea was made for better integration of practical training with academic coursework and that universities enlarge the scope of their programmes to encompass allied courses (Action on Education 1972:34).

In response to Croft's paper it was concluded that the standard of teaching and teaching methods were inadequate and an appeal was made for clinics to improve upon these identified inadequacies (Action on Education 1972:34). A pivotal architectural teachers' seminar followed in Durban in 1973, with Geoffrey Broadbent as the keynote speaker; he presented a paper on design methodology (University of Natal 1973). The fourth architectural teachers' seminar was held in Pretoria in 1982 and was recorded in Departement Argitektuur (1983c). From the position papers presented at the seminar it is clear that the six schools had developed quite distinct, but not necessarily disparate, approaches to architectural education.

5 "The Conference unanimously agreed that the present minimum standard of entry into training (5 passes at 'O' level) is far too low and urged that this level should be raised to a minimum of 2 passes at 'A' level." (Martin 1958)

6 "The 'sandwich' course is **not** part-time training. (One conclusion on which the Conference was emphatic was that the part-time course must go.) The sandwich course which is proposed in schools, which carry out full-time training, is a means of breaking down the barrier between training and practice. This is done by alternating periods of training in a school with periods of **training** in an office. The collaboration in training by the office itself is essential to the success of any scheme of this kind." (Martin 1958)

7 Following on the discussions for the restructuring of the qualifications, the Registrar of the ISAA noted: "A Conference on Architectural Education will be organised as soon as practicable" (ISAA 1959:47).

Interest in such national seminars seemingly dwindled and only resurfaced thirty-two years later. Since 2014 three architectural educators' symposia have been held under the banner of the Architectural Education Forum for Africa, convened by Dr Ariane Janse van Rensburg of the Wits school. The first two were held in 2014, at Wits and thereafter as part of the international congress of the International Union of Architects (**UIA**) in Durban later that year. The third was integrated into the ArchitectureZA conference hosted at Wits in 2016. The success and frequency of these events are indicative of educators' shared interest and the need for dialogue on issues of architectural education.

2.5.5. Broadening the horizons

As the schools in South Africa have grown and their numbers increased, they continued to develop regional variation in their academic offering and undertakings. This trend is still promoted by SACAP that encourages schools of architecture to develop and nurture characteristics that are unique (SACAP 2012:3). Carter (2013:37-38) sees the establishment of cognate disciplines in the fold of some of the schools as an example of this practice.

Wits had offered a diploma in town planning since 1945; a new chair in town and regional planning was established there in 1964 with a bachelor's programme commencing in 1965 and a master's degree in urban design 1975 (Bryer 1977:34). UCT began a two-year postgraduate degree in urban and regional planning in 1965 (Carter 2013:45) and have since developed aligned programmes in cities and regional planning, urban design, and landscape architecture (UCT 2017). The programme in Town and Regional Planning at UP developed from the programme in land surveying and the only undergraduate programme in landscape architecture in South Africa was established in the school at UP in 1971 (UP 1987a:68). A programme in interior design was assigned to the school in 1999.

2.5.6. Duration and format of study

The formal, full-time programmes at the established schools of architecture were, at their inception, presented over five years of study, but in 1958 a proposal was adopted by the Board of Education of the ISAA to extend the required number of years of training to six, including one year of professional experience (ISAA 1959:48) to bring it in line with the seven-year requirement of the RIBA (Natas 1971:44). With the promulgation of the Architects' Act 1970 (No. 35 of 1970) it reverted back to a minimum of five years of study and two years of practice experience (Theron 198:65).

Diploma courses had been offered on a part-time basis at Wits and full-time at UCT at least since the 1920s. Pearce (1934:8) had by then indicated how similar the curricula of the degree and diploma courses, especially those presented at UCT, were – see Table 2.1. The only difference between them, according to Natas (1971:43), was the standard of the entrance qualification. The degree did, however, exempt graduates from the Final Examination for the Associateship of RIBA, while holders of the diploma were required to complete additional design requirements in order to apply for the same status. In 1958 it

was recommended to the ISAA that only full-time studies should be acceptable for professional recognition. John Stanley Lewis (_-1968), then the long-serving Registrar of the ISAA, commented that the first year of the part-time diploma courses were spent full-time at university anyway, while at one institution it was also the case for the final year of diploma studies (ISAA 1959:48). While the full-time diploma at UCT continued (Natas 1971:44), part-time diploma studies were subsequently phased out. At UP the part-time diploma in architecture was terminated in 1961 (anecdotally, the year in which the Union of South Africa became a Republic and left the Commonwealth) and replaced by an eight year, part-time degree course. The latter was also discontinued in 1966 (UP 1987a:68).

During the last quarter of the twentieth century diploma-based qualifications, later augmented by Bachelor of Technology degrees, were largely offered at technikons before 2004, when these institutions became universities of technology or merged with existing universities to form comprehensive universities. According to Young-Pugh (2005:35), technikons followed:

> […] a vocational curriculum in the training of draftspersons, architectural technologists, and senior technologists. Their architectural departments were established with the objective of supplying production workforce to architectural offices and have traditionally focused on detailed design, documentation, and delivery.

Theron (1985:65) notes that most of the six recognised schools of architecture offered two-stage degree courses over six years in the mid-1980s; UP was the exception, continuing to offer a five year Bachelor of Architecture degree until 1999, when a three year Bachelor of Science in Architecture degree was introduced, followed by a two year Master's degree in Architecture for the purpose of professional registration (UP 2002:194).

In accordance with the Architectural Profession Act, (No. 44 of 2000) (South Africa 2000), SACAP now validates academic programmes related to the architectural profession. The categories of professional registration have been amended to recognise architects, senior architectural technologists, architectural technologists and architectural draughtspersons (SACAP 2017). The threshold to each professional registration category is defined by qualifications measured against competencies explicated under specific outcome levels of the NQF – see Table 2.2.

TABLE 2.2: Professional registration categories for the architectural profession in 2016 based on SACAP (2017)

PROFESSIONAL REGISTRATION CATEGORY	REQUIREMENT	NQF LEVEL
Professional Architectural Draughtsperson	Higher Certificate [1] + 1 year WIL	5
Professional Architectural Technologist	Diploma [3] / Advanced certificate + 1 year WIL	6
	BScArch* / BAS [3]	7
Professional Senior Architectural Technologist	BTech, Advanced Diploma + 1 year WIL	7
	BArchHons* / BAS Honours / BArch(Prof) [4]	8
Professional Architect	BArch [5 / 6]	8
	MArch(Prof)*	9

KEY: [_] indicates minimum duration of qualification in years
WIL Work Integrated Learning
* indicates programmes offered by the Department of Architecture, University of Pretoria, in 2016

In light of the ongoing #FeesMustFall campaign and the unresolved question of the funding of tertiary studies, the matter of part-time study is again pertinent as full-time study is costly and thus not accessible to all. Theron (1985:65) had already previously suggested that alternative formats be considered so as to remove the stigma attached to architecture as being the preserve of the affluent. Although in its infancy, the Open Architecture Programme facilitated at the Cape Peninsula University of Technology (**CPUT**) may prove to be a beneficial option for senior students, while Work Integrated Learning, mostly embedded in the programmes of the former technikons, address some of the objectives of the sandwich option so as to better integrate academic and practice experience. At most of the local schools of architecture that present a three-year first degree, there is also a requirement for a bridging year out (to work, travel or undertake independent research) after graduation before professional postgraduate studies are undertaken.

2.5.7. Apartheid

No account of South Africa can overlook the political construct of Apartheid as the instrument of state that sanctioned and imposed systemic inequalities on its people. The election of the National Party into government in 1948 can be seen as the official start of the Apartheid state that formally ended with the first democratic elections in South Africa in 1994. During this time, in the curtest sense, the minority regime systematically shaped and entrenched the notion of physically segregated spaces based on groups defined by race.

> Apartheid social engineering used the built environment as part of its repressive arsenal against black South Africans. The presence of black people in cities was tolerated only insofar as they provided a source of cheap labour for industry. The social environments created for black people are reflective of this attitude. Townships located on the periphery of urban areas are characterised by row upon row of barracks-like matchbox houses and single-sex migrant worker hostels. A limited number of access points and a geometric street layout are designed with the intention of restricting unregulated movement thereby curbing potential resistance. The public realm exists only as a series of interconnected residual spaces dominated by motor vehicle movement, devoid of formal public amenities of any kind. (Manning 2004:529)

Education did not escape these policies nor their consequences and as a result the legacy of apartheid's policies remains tragically evident, and divisive, in the South African landscape in the second decade of the twenty-first century.

According to Davies (1996:321) higher education institutions in South Africa were already divided along racial, ethnic and language lines before 1948, a consequence of pre-existing policies and statutes that organised society according to race. Two acts of parliament would cement the Apartheid state's control over education through bureaucratic and authoritarian measures: the Bantu Education Act (No. 47 of 1953) and the Extension of University Education Act (No. 45 of 1959). While the former demoted the education of black learners to a segregated, inferior and underfunded system under state control, the latter affirmed this condition by formally segregating universities. Black students (defined as those of African, Indian and mixed race descent) were thus denied admission to the established 'white' universities

without a special permit. The regime's solution was that these students should attend separate institutions set up along racial and tribal concerns (Davies 1996:322). It should be noted that none of these designated institutions presented programmes in architecture.

A group of four institutions, including UCT, Wits and the University of Natal with schools of architecture, publically opposed the discriminatory policies and published their position in a booklet entitled *The Open Universities of South Africa* in 1957. They declared that their institutions were 'open universities' that took a determined stand against Apartheid and insisted that they maintain their autonomy to uphold the principle of academic freedom, "[…] particularly in appointing staff and admitting students without regard to race, colour, creed or gender" (Lange & Kirby 1991:1). Small numbers of black students thus managed to graduate in architecture.

The permit system ended in 1983 with the promulgation of the Universities Amendment Act (No. 83 of 1983) with the de facto consequence that a limited number of black students could, theoretically, access 'white' universities other than the 'open' institutions (Davies 1996:326-327). The impact on schools of architecture was not significant, as by the late 1980s there was:

> […] very little evidence of significant progress in the education of black architects. At the schools of architecture throughout the country black students make up an average of 5% of the student roll. Of the ISAA's registered 'full members' in 1988, only 1,6% is black. From these statistics it can be deduced that architecture as a profession remains predominantly accessible to middle class white South Africans. (Le Grange 1989:36)

Apart from the systemic exclusionary policies of the Apartheid school system, Le Grange (1989:36) lists several other factors that contributed to the low uptake among black students at the time. He argues that the cost and financial burden of a full architectural education, a lack of access to information about the profession and perceptions within architecture schools also had significant influence. In 1991, the year that admission to universities in South Africa based on racial grounds were scrapped, 2.76% of students enrolled at the three 'open' schools of architecture were 'Africans', with 60% of them in the first year of study (Lange & Kirby 1991:13-15).

On many levels the after effects of Apartheid policies remain tangible more than twenty years after the first democratically elected government took office. It is thus not surprising, when considering the legacy of Apartheid coupled with profound poverty and high levels of unemployment, that the architectural profession is more often than not viewed as elitist and therefore remains largely unfamiliar territory to many South Africans.

2.5.8. Transformation

An outline of transformation follows naturally from the brief discussion on the effect of Apartheid on architectural education. South African Institute of Architects (**SAIA**) and the Institute for Advanced Studies in Architecture and Infrastructure (SAIA & IASAI 2010:4) state: "There is a need for transformation of the

sector via professional representation in terms of race and gender as well as wider access and routes of qualification, including the provision of opportunities for learning while working."

By 2016 the South African architectural profession "[…] has not made significant improvement with reference to equity and redress within the new democratic dispensation" (SACAP 2016b:1). SACAP (2016a:23) indicates that in 2016 black men and women represented only 13% of the almost eight thousand registered professionals across all registration categories, while only 3% of registered women were black. The drive to increase the demographic representation of previously disadvantaged individuals, women and people living with disabilities, is therefore a priority that directly impacts schools of architecture in South Africa. The last published statistics for schools of architecture in South Africa indicate that 2 895 students were studying between first and final year at the ten public higher learning institutions in 2008; the report also indicates that just over 60% of these students were male and 56% were white (Wits CUBES 2008:2).

In light of these numbers the academy is acutely aware of the ongoing need to transform and (re)contextualise the profession from within schools of architecture (Saidi & Nazier 2011; Le Grange 2014; Botes 2015; Janse van Rensburg 2015). Similarly SACAP and SAIA currently drive transformation initiatives that focus on:

- Awareness and promotion

  Raising awareness of and interest in architecture, especially among previously disadvantaged groups (SACAP 2016a:24; SAIA 2016:33) is necessary in order to address a lack of awareness when compared to other professions, such as those in the legal and health care sectors.

- Funding

  There is a huge need for financial support on at least two fronts: in the first instance it is required to promote access to studies in architecture. The SAIA Future Architects Bursary Programme (SAIA 2016:33) made a start in this regard in 2016. Beyond the threshold to tertiary education it is imperative that disadvantaged students receive financial backing in order to complete their studies. Beyond fees for tuition, books, accommodation, sustenance and other daily expenses that, in our segregated cities often necessitate an exorbitant amount dedicated to travelling to and from campus, the student of architecture also requires materials and means to undertake and complete design projects.

  Bursary initiatives of regional institutes, like the Pretoria Institute for Architecture – see PIA (2017) – make a valuable contribution, but is hardly sufficient to address the demand. SACAP has reintroduced their limited bursary programme (SACAP 2016a:27), but it is clear that almost a decade of low economic growth, locally and globally, has had a negative impact on the availability of funding opportunities. This directly affects transformation across the board. The #FeesMustFall campaign challenged "[…] assumptions about who should go to university, what it should look like,

and who should pay for it" (Spaull 2017), but it also highlighted the chasm between academic ambitions and the availability of resources to achieve those ambitions.

- Alternative routes to professional registration

  These options serve the transformation agenda by offering alternative or accelerated routes to achieve professional status. SAIA launched the Open Architecture Programme in collaboration with the CPUT in 2014 to accelerate access to professional registration. This web-centred programme is offered over two-years as a part-time, practice-based alternative to full-time studies and is currently focussed on students pursuing a Bachelor of Technology degree in architectural technology with a specific emphasis on applied design (SAIA 2016:36).

  The raison d'être for RPL in the architectural profession is that "[…] a significant number of practitioners from historically disadvantaged backgrounds actively practise their trade, with no opportunity to upgrade their professional standing other than enrolling for full time studies" (SACAP 2016b:2). Effectively RPL provides the apparatus to assess and recognise pertinent professional experience within a framework for progression (SACAP 2016b:4) and in the spirit of the criteria and guidelines developed by the South African Qualifications Authority (SAQA) – see SAQA (2004).

- Women in Architecture South Africa

  With only 22% women among registered professionals in architectural practice in South Africa in 2016, there is an obvious gender imbalance (SACAP 2016a:9). The Women in Architecture South Africa project aims to increase equitable access to the profession, specifically for black women, and to retain them over the long term as active practitioners and successful owners of practices.

In the midst of these initiatives (and other less formalised endeavours) it is crucial to recognise the spatial context of transformation within the profession. Lucan summarises it as follows in SACAP (2015:4): "Transformation is not merely seen as 'colour by numbers', but further deals with issues of professional development and the quality of architectural education as this impacts on the spatial transformation of the built environment." The transformation goal is therefore spatial as it directly affects the impact of the architectural profession on reforming existing and creating new environments worthy of all its users. This remains the challenge to schools of architecture and the profession alike.

With the questioning of the architect's role in an ever-evolving society, some responsibilities are moving further away from the core of the profession through, for instance, the rise of project managers in the built environment, which Noero (2012:55) bemoans. In other respects the architect's role as an agent for change has started to be more aligned with the ascendant sociocultural frame of reference. One implication has been that the locus of architecture is being extended to previously marginalised environments such as informal urban settlements.

Many challenges remain, as De Klerk (2016:52) states in her essay on the role and status quo of architecture in South Africa:

> Architects as activists and entrepreneurs have a proud history in this country, but their practice constitutes a tiny proportion of all work done. We largely stand outside the endeavour to provide mass housing, planning initiatives to change the structure of our cities and the upgrade of informal settlements. There is a wide recognition that current development patterns – especially with regards to RDP [Reconstruction and Development Programme] housing delivery – continue apartheid spatial policies, yet delivery systems are entrenched and dictated by land values and economic constraints. Alternatives offered by social housing models are exciting on a policy level, but rarely lead to well-designed buildings that have a positive impact on communities. Further, while there is much excitement around the transformative potential of large infrastructure projects (especially the vaunted ability of large transportation projects to weave together our fragmented cities), the creation of meaningful buildings that define inviting public spaces around such nodes remain the exception rather than the rule.

While substantial portions of practice outputs are, and will probably remain to be, dedicated to commercial buildings and the needs of the well-heeled, more members of the architectural community and academy in South Africa are actively engaging, or starting to engage, with the realities facing a developing and post-colonial African context. Osman (2015) raises some pointers for the future:

> Architects have often called for participation and ongoing engagement with the communities that aren't yet adequately served by the profession. But alternative approaches are not yet the norm and have not yet strongly influenced the way that the discipline is taught, practised or how professional institutes and councils operate.
>
> The industry still tends to focus on wealthy clients and the architect as 'creative individual'. When working in complex, poverty-stricken and politically polarised contexts, this designer-centred approach is in direct opposition to a user-centred approach.

2.5.9. Schools of architecture in South Africa in 2016

Some schools of architecture were affected by the South African government's restructuring of higher education, which was intended to deliver a more equitable and efficient system, and the subsequent merger of institutions of higher learning in 2004. Especially the National Diploma and Bachelor of Technology programmes presented by former technikons have been affected and are in the process of being aligned to the NQF or have been introduced and await validation by SACAP.

Table 2.3 indicates the eleven schools of architecture in South Africa and the qualifications they offered in 2016.

TABLE 2.3: Schools of architecture in South Africa and the qualifications they offered in 2016, after SACAP (2017)

SCHOOL OF ARCHITECTURE (alphabetical order)	QUALIFICATIONS
Cape Peninsula University of Technology (CPUT)	N Dip (Architectural Technology) BTech (Architectural Technology)
Durban University of Technology (DUT)	N Dip (Architectural Technology) BTech (Architectural Technology)
Nelson Mandela Metropolitan University (NMMU) (Department of Architecture)	BAS MArch(Prof)
Nelson Mandela Metropolitan University (NMMU) (Department of Architectural Technology and Interior Design)	N Dip (Architectural Technology) BTech (Architectural Technology) MTech (Architectural Technology)
Tshwane University of Technology (TUT)	B Tech (Architecture Professional) (Part 1) [BArch – introduced in 2017]* M Tech (Architecture Professional) (Part 2)
University of Cape Town (UCT)	BAS BAS(Hons) MArch(Prof)
University of Johannesburg (UJ)	N Dip (Architectural Technology) BTech (Architectural Technology - Applied Design) BArch* MTech(Prof)
University of Kwazulu-Natal (UKZN)	BAS MArch(Prof)
University of Pretoria (UP)	BScArch BArchHons MArch(Prof)
University of the Free State (UFS)	BAS BAS(Hons) MArch(Prof)
University of Witwatersrand (WITS)	BAS BAS(Hons) MArch(Prof)

* Indicates programmes that have not been validated by SACAP to date.

2.5.10. The route to registration as a professional architect

Like in many other countries, the title 'architect' is legally defined and protected in South Africa, while the practice of architecture is a regulated profession with explicit requirements for training, registration and ethical standards of conduct and practice.

An aspiring professional architect would typically, upon completing Grade 12 with the requisite NSC, enter a higher education institution that presents programmes validated by SACAP in order to obtain a first, or undergraduate, qualification. While there are exceptions, the first degree at NQF level 7 is presented over a minimum of three years of full-time study at most schools of architecture in South Africa, including at UP (see Table 2.2). Graduates are able to register as professional architectural technologists and most spend a year gaining work experience in practice, or travelling, or both, before embarking on professional postgraduate studies that, at most institutions, consists of an honours and master's degree, each of at least a year's duration. With the achievement of a professional master's degree, the aspiring architect can apply to SACAP to register as a candidate architect.[8]

8 The process of a three-year first qualification followed by a year out and two subsequent years of postgraduate study and practice experience as a prerequisite for the professional exam correlates with the sequence followed in the United Kingdom – see ARB (2017b:5).

The candidate architect is required to work under the formal supervision of a professional architect or mentor for a minimum period of two years (SACAP 2014:2). Provided that certain stipulations are met, the candidate architect may sit for the Professional Practice Exam, which he or she should pass to be able to apply for registration as a professional architect. Renewal of professional registration has, since 2007, been conditional to ongoing skills development, measured by credits obtained for Continuing Professional Development (**CPD**) over five-year cycles (SACAP 2017).

CPD courses are generally presented through SAIA, a voluntary professional association, and its eleven regional affiliates (SAIA 2017). Sustainability, which has been a longstanding research field at UP, has only recently become a focus of CPD courses since new sections – on environmental sustainability and energy usage in buildings – were added to the South African National Standards (**SANS**) 10400[9] in 2011.

2.6. SUMMARY

The context of the problem was outlined in this chapter, from a brief exploration of the notion of architecture to an overview of some of the developments that shaped the prevailing Western attitude to architectural education. It mapped the rise of architects from artisans to apprentices and subsequently from occasional or part-time to full-time students who are trained through the dual format of studio projects and lectures in theory. The studio system became more prominent as a form of simulated practice that augmented and later replaced the apprenticeship system. Over time professional recognition obtained through academic qualification became the norm and consequently statutory bodies were established to regulate standards of education in architecture.

Through colonial ties the architectural profession and its education systems in the United Kingdom strongly influenced the development of both aspects in South Africa during the twentieth century. The specific character of the South African context highlighted some of the aspects that shaped and continue to influence the landscape of architectural education. The objectives of transforming the profession and the demographic representivity of students of architecture stems from the need to address the systemic discrimination suffered by the majority of South Africans under the Apartheid regime. The tussle between full-time and part-time study has not been fully resolved and has gained renewed interest in the context of transformation, the high cost of full-time studies and the unresolved issue of the funding of tertiary studies for South Africans.

The structure and outcomes of the academic programmes offered by South African schools of architecture has seen significant change over the past two decades. It was prompted by legislation that redefined and articulated all qualifications in South Africa and followed by the Architectural Profession

9 SANS 10400 explicates the deemed-to-satisfy rules regulated by the National Building Regulations and Standards Act, No 103 of 1977.

Act, (No. 44 of 2000) which eventually led to new professional outcomes being introduced for the architectural professions. Government's restructuring of higher education institutions also impacted on the number and type of qualifications offered by schools of architecture in South Africa.