

Drawing Out: Weave and the Environment in the work of James Birrell and Walter Burley Griffin

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Preamble

The *Drawing Out* research seminars have discussed using abstract and conceptual drawing and redrawing as a method of researching and revealing intrinsic architectural elements and ideas in constructing architectural space. Questions have been raised that query how research can be developed and posed in architectural practice and within the practice of design, rather than rhetorically lying in the field of theory and criticism of architecture. This discussion has led to conclusions that review of secondary source literature and drawings can lead to a closed and cyclical argument that tends not to reach or feed design practice. However, abstracted conceptual and analytical redrawing has proved to expose further insights and reveal unforeseen ideas and concepts in the work at many different scales.

Drawing out seeks to branch out of typical humanities research suggesting that looking beyond secondary sources and redrawing or drawing out ideas could influence architectural practice and design methods in a productive manner. Further to the previous 'constructing architectural space' topic, this research seeks to investigate how conceptual and analytical drawings merge in the process of making.

The following essay and documentation investigates the work of James Birrell at the University of Queensland and his schemes for other universities in Queensland. In parallel with analysis of the secondary sources on Birrell, a series of drawings have been made that investigate the weave and the environment in Birrell's work at a number of scales. The following essay references these drawings and their key indicators, and is followed by the group exemplar research.

Essay

This essay analyses Semper's conception of the wall as a weave and its relationship to the environment, through a case study of James Birrell's work during the 1960s. Birrell's work at the University of Queensland's St Lucia campus and in his schemes for other universities in Queensland will be considered at a number of different scales in the following essay, drawings and commentary. The largest scale, labeled *conceptual weave*, investigates Birrell's work as a weave with the macro environment, drawing out connections with the surrounding landscape, topography and the idea of drawing as mark making. The *campus weave*, links Birrell's ideas of enclosure, territory and the way the form of Birrell's buildings weave with their immediate surroundings as part of larger site plans. The third scale, *crafted weave*, links back to Semper's (and consequently Frank Lloyd Wright's) ideals of craftsmanship and investigates the crafted inventive nature of Birrell's details, with particular focus on the J.D. Story Building's repeated pre-fabricated piece weave at the University of Queensland.

To establish the research question regarding the connection between weave and the environment, Semper's concept of wall as weave and the wall's intrinsic architectural relationship to the environment will be analysed. Secondly, drawing and redrawing will be discussed as a basis for drawing out the weave in Birrell's work. Further more, Birrell's

biography of Walter Burley Griffin will be analysed through drawings and literature review to establish Griffin's influence on Birrell's planning in relation to surrounding landscape and material selection. Don Watson argues Birrell's study of Griffin began whilst he was a student¹ and is evidenced in Birrell's 1953 article *Current Building in Canberra*². This study of Griffin, leads to analysis of Frank Lloyd Wright's 'textile tectonic'³ and Birrell's work at the three scales; *conceptual weave*, *campus weave* and *crafted weave*.

In the polemic text, *The Four Elements of Architecture*⁴, Semper celebrates the intrinsic nature of making and craft in architecture. Of the four elements; roof, ground, enclosure and hearth, the enclosure or wall, seemingly the most neglected element is chosen for further investigation. In Semper's theory the wall is the moderator of the environment⁵. Semper sees the wall as implicitly linked to the artisan, craftsman, the woven and the weave. His drawing out of wall as weave comes from an understanding of traditional building envelopes. Currently, the wall is often seems as a flat hermetic surface, but looking back to Semperian times and further, or in greater detail of contemporary walls and traditional Japanese building envelopes, it is obvious that the wall is made up of many layers beginning with a woven mesh, which is then covered in mud or dung, followed by further layers of mesh and plaster, gradually forming a finer and finer weave to create the smooth wall. Hence, this lath technique implicitly links the wall with weave and the crafting process of making.

In Semperian terms the wall is the embodiment of the setting aside of architectural space⁶. Hence, weave can be a formal tempering of the environment, an environmental filter or a built adjustment of the environment. According to Frampton, Semper see 'the woven as a place making agent',⁷ further linking the weave and environment at a perceptual level. The following analysis of Birrell, Griffin and Wright, uncovers connections to Semper's craft and weave in their work.

Although not formerly acknowledged, many connections can be made between Birrell and Semper. Towards the end of his time as a student, Birrell helped found the magazine *Architecture and Arts*⁸. He was a frequent contributor to the magazine from 1951 to 1955⁹. His articles, *Style*¹⁰ and *Current Building in Canberra*¹¹ are discussed later. However, it is interesting to note an article titled *Fabrics*¹² also in

¹ D Watson (1989). "Imaginative Work of Whimsical over-Design? James Birrell's Work for Public Authorities in Brisbane 1955-56," *Transition* 30, Spring.

² J Birrell (1953) "Current Building in Canberra," *Architecture and arts* 2, no. 5.

³ K Frampton (1995). *Studies in Tectonic Culture : The Poetics of Construction in Nineteenth and Twentieth Century Architecture*, ed. J Cava (Cambridge, Mass.: MIT Press), 93.

⁴ G Semper (2010) *The Four Elements of Architecture and Other Writings* (Cambridge ; New York: Cambridge University Press).

⁵ Ibid.

⁶ Ibid.

⁷ Frampton, *Studies in Tectonic Culture : The Poetics of Construction in Nineteenth and Twentieth Century Architecture*, 15.

⁸ Watson, "Imaginative Work of Whimsical over-Design? James Birrell's Work for Public Authorities in Brisbane 1955-56."

⁹ J Mackee (1985). "James Peter Birrell : Beginnings 1928-1955" (University of Queensland).

¹⁰ J Birrell (1952). "Style," *Architecture and arts* 1, no. 2.

¹¹ Birrell, "Current Building in Canberra."

¹² R Rowed (1952). "Fabrics," *Architecture and arts* 1, no. 3.

Architecture and Arts 1952, that may have influenced Birrell and is linked to Semper's references to woven textiles. The author, Reginald Rowed, writes about the expertise needed in the textile industry and his concern for the low value given to fabrics and textile designers (see figure 3). As well as discussing weave's warp and weft, he describes a new technology, which was making it possible for small businesses to produce textiles without the heavy machinery¹³. Similar to Semper's edict, Rowed argues for a rebirth in the 'pride of craftsmanship'¹⁴ with the help of new machinery to promote the true skill of Australian designers. Frampton describes Semper's vision of textiles as the 'first cosmogonic craft' where 'culture is quite literally woven'¹⁵ into design.

In analysing the correlation between Semper and Birrell further, it's interesting to note the similarities of intent in Semper's polemic book *Style in the technical and tectonic arts*¹⁶ and Birrell's essay *Style*¹⁷ published in *Architecture and Arts* in 1952. In Birrell's essay he analyses style at the time and divides it into three approaches; the *geometric* (abstract), the *mechanistic* (abstract but with the precision of a machine) and the *empirical* (opposite to abstract, concerned with human values)¹⁸. These approaches to style link directly to the topic of drawing in terms of abstract, representational and conceptual drawings. Sir Peter Cook describes the difference between abstract and representational drawing as the difference between maps compared to etchings of medieval English villages¹⁹. Maps abstract particular information, like Birrell's *geometric* and *mechanistic* styles, whereas the etchings of towns are representations²⁰, similar to Birrell's *empirical* style concerned with humanist values.

Linking to the seminar topic of drawing out, analysis of Birrell's designs show that his work and also Griffin's work, extract information and characteristics from the landscape. Analysis of the landscape is apparent in both their abstracted maps, topographic plans and also through careful perspective drawings of the site. Additionally, environmental features and landmarks are literally drawn into buildings through their abstracted representation as lines and axes in Birrell and Griffin's succeeding plans and drawings. Hence, it is proposed that environment is literally and metaphorically drawn into rules for formal constraints and woven into Birrell and Griffin's design and planning strategies. Therefore, linking Semper's ideas of enclosure, weaving and craftsmanship through interpretation of the environment and drawing of lines from the landscape to generate walls. This process occurs at both large and small scales, weaving through Birrell's work both conceptually and in the physical tectonic/making of walls.

¹³ Ibid.

¹⁴ Rowed, "Fabrics," 4.

¹⁵ Frampton, *Studies in Tectonic Culture: The Poetics of Construction in Nineteenth and Twentieth Century Architecture*, 16.

¹⁶ G Semper et al. (2004). *Style in the Technical and Tectonic Arts, or, Practical Aesthetics* (Los Angeles: Getty Research Institute).

¹⁷ Birrell, "Style."

¹⁸ Mackee, "James Peter Birrell: Beginnings 1928-1955".

¹⁹ P Cook (2008). *Drawing: The Motive Force of Architecture Ad Primer* (London: John Wiley and Sons).

²⁰ Ibid.

Cook describes the 'tradition of drawing and redrawing' as the 'force behind architecture'²¹ and Louis Kahn writes 'drawings are expressions of one striving to reach the spirit of architecture'²². This *force* (as Cook describes drawing) is evident in Birrell's work with the landscape as a 'primary concern'²³ (see figures 1, 2 and 4). Further to his work at the University of Queensland, Birrell continuously draws topographic lakes and land axes in his plans for James Cook University in Townsville (see figure 4 and 5) and less successfully at Griffith University (see figure 6)²⁴. These moves were learned from Birrell's study of Griffin's work in Canberra. These abstracted lines are considered Birrell's conceptual weave with the environment. According to Birrell, one of Griffin's first planning moves for Canberra was to draw out the landscape axes, the land axis and water axis²⁵ (see figure 7).

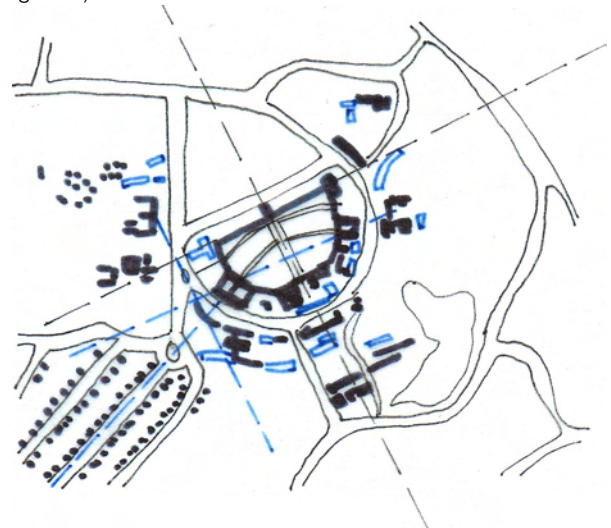


Figure 1 University of Queensland: Birrell's alignment with formal axes and potential linear interventions.

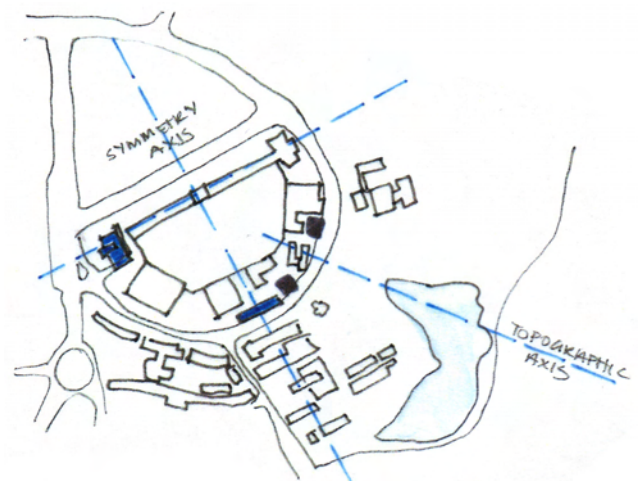


Figure 2 University of Queensland: Birrell's proposal to balance the topographic and formal axes.

²¹ Ibid.

²² M Merrill (2010). *Louis Kahn: Drawing to Find Out: The Dominican Motherhouse and the Patient Search for Architecture* (Baden: Lars Muller), quotes Louis Kahn on the back cover.

²³ F Pratt (1998). "The University of Queensland Buildings, St. Lucia Campus, by James Birrell" (University of Queensland), 156.

²⁴ J Birrell (1965). "Neighbours on the Campus - Planning at St Lucia and Townsville," *Journal of the Australian Planning Institute*, no. July.

²⁵ — (1964). *Walter Burley Griffin* (St. Lucia: University of Queensland Press).

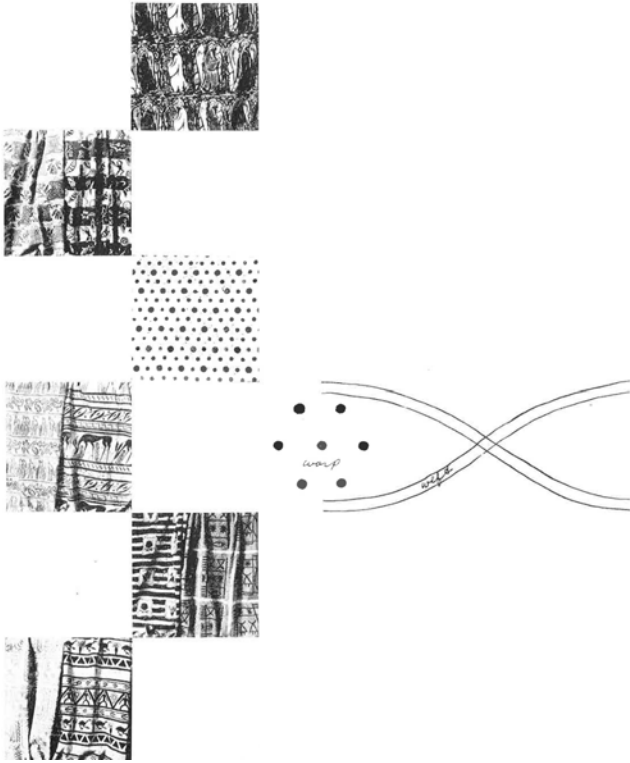


Figure 3 Architecture & Arts cover: Fabrics article promoting weave and Australian craftsmanship.

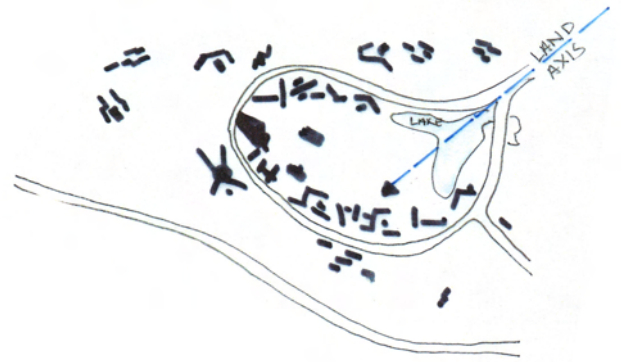


Figure 6 Griffith University, Nathan Campus: Birrell's land axis and planned linear building typologies.

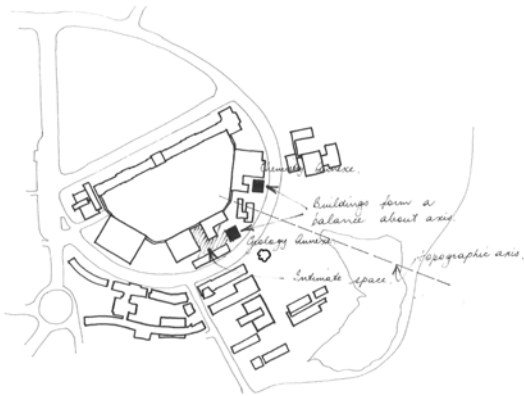


Figure 4 University of Queensland: James Birrell's drawing describing topographic axes.



Figure 5 James Cook University, Townsville: Birrell's landscape axes, drawn to macro landscape features.

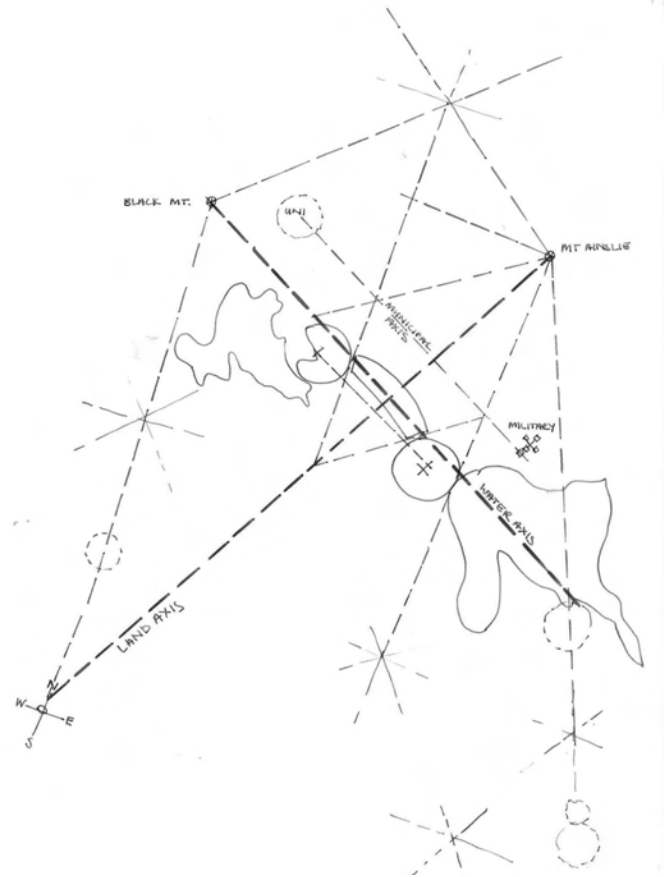


Figure 7 Plan for Canberra: Griffin's axes drawn out of landscape features connecting a series of formal and informal lakes.

Griffin's wife, Marion Mahoney Griffin, was known to draw the landscape features of Griffin's sites in immaculate detail before Griffin had a chance to start design for the site²⁶. Here design research is evident in the Griffin's work in that the idea of *drawing out*, both conceptual and abstract site conditions is evident. Birrell describes Griffin's plan for Canberra as 'one of the most exciting ever conceived as it builds on the picturesque effects of perspective'²⁷. Hence, it is obvious that drawing plays not only a representational role in Griffin and Birrell's work, but also a crucial role in the abstraction and conception of ideas.

Writing about the influence of drawing and redrawing in the work of Louis Kahn, Michael Merrill quotes Piet Mondrian (1957) – 'I don't want pictures. I just want to find things out'²⁸. Robert Venturi supports Mondrian's posture on the importance of drawing, writing: 'the architects repeated tracing and retracing of lines amounts to more than a mere transfer of information but is in an of itself a meditative sinking in to the plan, a kinesthetic grooving and reviewing of its information'²⁹. This research proposal argues that Birrell and Griffin's repeated marking of lines across the landscape is a *conceptual weave* of their design with the environment.

According to Birrell, Griffin treated the whole of Canberra equally and maintained a distance so he didn't get caught in the details of any particular area³⁰. Despite a lack of detail, Griffin's plan won the competition for Canberra as he had paid more attention and respect to the landscape around the suggested site, then second place competitor Eliel Saarinen who had a similar plan with axes but hadn't paid as much attention to the topography³¹. Griffin placed important buildings and neighbourhood centres on the small hills and planned a series of lakes in the basins of the land. As Birrell followed at the University of Queensland, Griffin suggested that all the flood planes be turned into lakes giving the city a water feature. The lakes follow the natural flood lines at informal places and in formal areas match the geometry of surrounding buildings and axes³².

The planning of Canberra 'was based on topography, orientation, expansion and interrelation,'³³ a weave of built form and planning with the environment. Firstly, Griffin divided up the activities and functions of the city and mapped the two axes across the landscape³⁴ (see figure 7), to 'gain monumental character and relationships'³⁵ with the topography. These axes are an example of drawing out of the landscape and drawing as mark making, discussed later in relation to Birrell's *conceptual weave*. In his plan for Canberra, Griffin's water axis joined the series of lakes and

housed the University. The land axis is shorter and starts with recreational activities at the Mt Ainslie end and connects Parliament and Capitol Hills with a series of government buildings in-between. This axis contains all ceremonial activities. Birrell notes, Griffin's planning of the axes along lakes and garden frontages rather than planning roads along these axes. Griffin proposed 'great garden vistas and sweeping lawns'³⁶ as natural views along the axes rather than views of cars or the mechanics of the city, conceptual weave of landscape and the city.

As the new city had no existing architectural style, Griffin suggested all buildings and materials form a 'homogeneity in expression and harmony with the whole natural environment beyond any ordinary opportunity'³⁷ (see figure 8), a philosophy Birrell espoused and followed at the University of Queensland (see figure 9). Birrell was renown for his use of a palette of raw finishes, 'pioneering work'³⁸ with concrete and its careful relationship with the terrain and bush site at the University of Queensland.



Figure 8 Plan for Canberra: Drawing out Griffin's weave with the environment - enclosure and territory.



Figure 9 University of Queensland: Drawing out Birrell's weave with the environment - enclosure and territory.

²⁶ Ibid.

²⁷ Birrell, "Current Building in Canberra," 26.

²⁸ Merrill, *Louis Kahn : Drawing to Find Out : The Dominican Motherhouse and the Patient Search for Architecture*, quotes Piet Mondrian (1957) on the inside cover.

²⁹ R Venturi (1977). *Complexity and Contradiction in Architecture*, [2nd] ed. (New York: Museum of Modern Art New York in association with the Graham Foundation for Advanced Studies in the Fine Arts Chicago), 88-89.

³⁰ Birrell, *Walter Burley Griffin*.

³¹ Ibid.

³² Ibid.

³³ Birrell, *Walter Burley Griffin*, 82.

³⁴ Birrell, *Walter Burley Griffin*.

³⁵ — — — *Walter Burley Griffin*, 79.

³⁶ Ibid.

³⁷ Birrell, *Walter Burley Griffin*, 103.

³⁸ J Taylor (1990). *Australian Architecture since 1960*, 2nd ed. (Red Hill, A.C.T.: Royal Australian Institute of Architects National Education Division), 122.

Griffin believed the detail of a building was in its relationship to the landscape. Birrell suggests that the detail of Griffin's work was not in his houses themselves but in the 'town plan, planting of trees and development of the landscape'³⁹. He wrote, 'Griffin had an almost magical sympathy for the nature of materials'⁴⁰. Such observations of Griffin are clearly evident in Birrell's work at St Lucia and also in his plans for other campus' in Queensland. At the University of Queensland, Birrell never made a holistic master plan for the campus but instead worked on plans for areas of the campus where he could make a change. Birrell like Griffin in his plan for Canberra, studied the topography of the University in detail. Birrell was known to direct the location and planting of native Australian trees around the campus and favoured blue stone rock in retaining topographic elements⁴¹. Brit Andresen wrote, 'Birrell's campus work shows an acute awareness of Walter Burley Griffin's planning concepts, including the use of axes generated by landscape elements and the siting of buildings in relation to topography'⁴².

Birrell situates Griffin in a movement labeled *new-naturalism*, which involved a group of architects who were re-discovering 'the true tradition of building and with it a sense of appreciation for natural landscape'⁴³. This movement can be linked back to Semper's texts from the mid-eighteen hundreds that boldly suggest a re-acquaintance with intrinsic architectural elements and finding the essence of nature in architecture. Subconsciously linked to Semper, James Birrell espoused built form's essential relationship to the environment. In Birrell's biography of Griffin, he asserts Griffin as an equal to Frank Lloyd Wright and in no way his student⁴⁴. Wright and Sullivan, fellow Chicago architects also considered part of the new-naturalism movement, did not directly reference Semper but were known to paraphrase his definition of style and both developed pressed bricks that they regarded as textiles⁴⁵. Frampton suggests Sullivan's work was a 'fusion of nature with culture', which took the form of 'a petrified textile'⁴⁶.

Frank Lloyd Wright writes about knitting together concrete blocks to yield any desired form. He even refers to himself as a "weaver" – 'his conception of the textile block as an all enveloping woven membrane'⁴⁷. Frampton describes Frank Lloyd Wright's Usonian houses, as 'conceived as having woven walls', these walls were 'woven at more than one scale'⁴⁸ – both at the detail level between the three layers of wall, but also at a conceptual scale of 'a three dimensional

gridded cage'⁴⁹. Wright developed his Usonian houses as a kit-of-parts, which had to be put together in a particular sequence (like Birrell's J.D. Story Building – see *crafted weave*). The combination of weave at both these scales resulted in layers that were 'interwoven'⁵⁰ spatially.

Wright writes 'the entire fabric is reinforced concrete'⁵¹. Frampton names Wright's Broadacre city 'his ultimate oriental rug', concluding that 'the Wright textile tectonic' evoked conditions of 'culture and agriculture... once again being one and the same'⁵². Weave conceived at a number of scales (detail, conceptual and sequential) results in a spatially interwoven experience. The multiplicity of scales and different levels of conception of Frank Lloyd Wright's late work as a weave with the environment is similar to the weave uncovered in work of James Birrell in the J.D. Story building.

Conceptual Weave

Conceptual weave describes the connection between Birrell's schemes and the environment, to an almost cosmic order (see figure 10). As suggested by Semper, the weave and its relationship to the environment can be seen as intrinsically architectural and is drawn out in the marking of land axes in James Birrell's work (see figures 1, 2, 4, 5 and 6). Andresen highlights the connection between Birrell's study of Walter Burley Griffin and Birrell's planning work at St Lucia highlights 'the use of axes generated by landscape elements and siting of buildings in relation to topography'⁵³. According to Michael Keniger, when Birrell arrived at the University of Queensland planning was non-existent, more over being treated like a housing sub-division rather than working with the sites topography and landscape⁵⁴. Birrell sight lines, hence conceptual weave, seemed revolutionary to the University⁵⁵.

In the case of the J.D. Story Building and many of Birrell's other built works, the design was not only for the building itself but its 'positioning was intended to have significances beyond the buildings itself'⁵⁶. Brit Andresen describes Birrell as having an 'instinct and commitment to'⁵⁷, planning ideas for each building giving them a 'contextual role which in turn amplified their fundamental significance to the whole territory'⁵⁸ (see figure 11 and 12). This *instinct* describes Birrell's conceptual weave with the greater environment in each of his projects.

At building scale, as explained in the group exemplar analysis, the J.D. Story Building is a conceptual weave of the structural pieces as conceived by Birrell. Meaning Birrell has gone back to the most basic principles of pre-cast

³⁹ Birrell, *Walter Burley Griffin*, 53.

⁴⁰ ——— *Walter Burley Griffin*, 55.

⁴¹ J Birrell, A Wilson, and J Macarthur (1997). *Birrell : Work from the Office of James Birrell* (Melbourne: NMBW Publications).

⁴² B Andresen (2001). "J.D. Story Administration Building," in *Tall Buildings : Australian Business Going up, 1945-1970*, ed. J Taylor, S Stewart, and Australia Business Arts Foundation (Sydney: Craftsman House), 210.

⁴³ Birrell, *Walter Burley Griffin*, 26.

⁴⁴ ——— *Walter Burley Griffin*.

⁴⁵ Frampton, *Studies in Tectonic Culture : The Poetics of Construction in Nineteenth and Twentieth Century Architecture*.

⁴⁶ ——— *Studies in Tectonic Culture : The Poetics of Construction in Nineteenth and Twentieth Century Architecture*, 100.

⁴⁷ ——— *Studies in Tectonic Culture : The Poetics of Construction in Nineteenth and Twentieth Century Architecture*, 109.

⁴⁸ ——— *Studies in Tectonic Culture : The Poetics of Construction in Nineteenth and Twentieth Century Architecture*, 114.

⁴⁹ Ibid.

⁵⁰ Frampton, *Studies in Tectonic Culture : The Poetics of Construction in Nineteenth and Twentieth Century Architecture*, 116.

⁵¹ ——— *Studies in Tectonic Culture : The Poetics of Construction in Nineteenth and Twentieth Century Architecture*, 120.

⁵² Ibid.

⁵³ Andresen, "J.D. Story Administration Building," 210.

⁵⁴ M Keniger (2005). "Architecture as Culture RAI Gold Medallist James Birrell," *Architecture Australia* November/December.

⁵⁵ Ibid.

⁵⁶ Andresen, "J.D. Story Administration Building," 210.

⁵⁷ Ibid.

⁵⁸ Ibid.

construction and inverted them. It is odd in this case that the walls hold up the floors. The wall panels are needed before the floors can be put in and the floor panels are thinner than the wall panels. This method of construction is strange, and involves a piece-by-piece construction forming the conceptual weave - like a basket, textile, knitting or crocheting. Hence, the standard stacked process of pre-cast construction is inverted to a weave in this building.

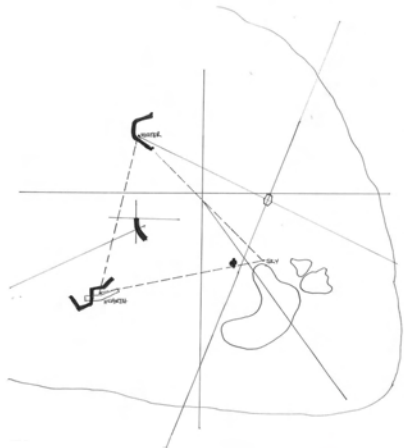


Figure 10 University of Queensland: Campus weave - cosmic order.

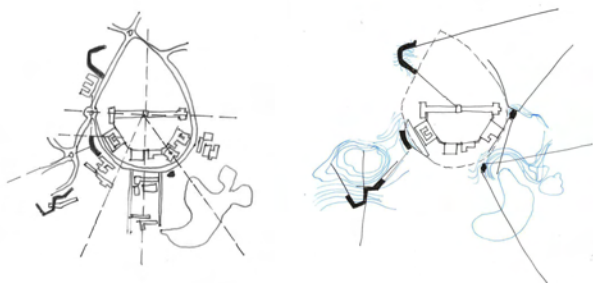


Figure 11 (left) University of Queensland: Birrell's interventions with existing & formal axes.
Figure 12 (right) University of Queensland: Birrell's interventions as enclosure & territory.

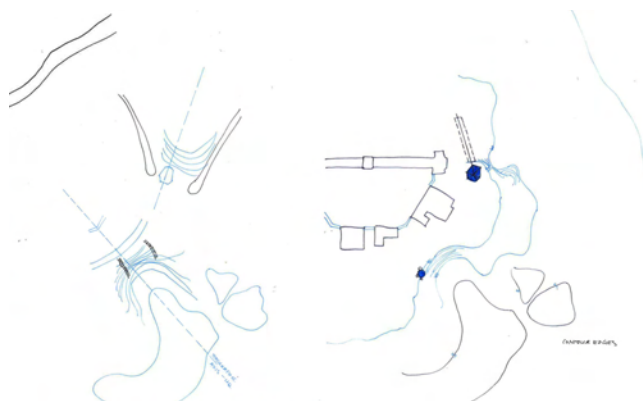


Figure 13 (left) University of Queensland: Birrell's topographic axes, pedestrian movement down the contours. Figure 14 (right) University of Queensland: Birrell's landscape markers, pedestrian movement across the contours.

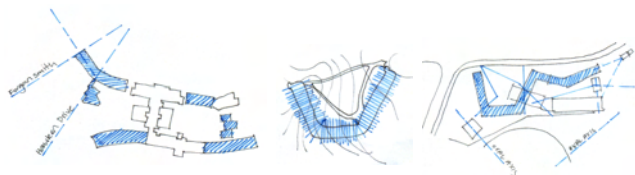


Figure 15 (left) University of Queensland: Birrell's scheme for the J.D. Story building & series of other linear buildings creating a series of courtyards. Figure 16 (center) University of Queensland: Birrell's Hartley Teakle building acts as a scenographic device to hide the Forgan Smith building. Figure 17 (right) University of Queensland: Birrell's Union College, formal & landscape weave generates a series of courtyards.

Campus Weave

Brit Andresen suggests the J.D. Story buildings form was a catalyst for a series of planned curved buildings by Birrell that connect a series of 'interwoven linear spaces'⁵⁹. The interwoven nature of these spaces links to the conceptual weave, a paradox between the endless weaving nature (like knitting or crocheting) of the J.D. Story building façade (see figure 18 and 19) and the containment of enclosure and territory by the building form (see figures 15, 16 and 17). As shown in campus sketches and by careful crafting of the form of the building, Birrell describes how the form could weave on and on (like knitting or weaving) around the campus. This endlessness is a paradox, as Birrell uses the woven edges to contain territories, creating courtyards and public rooms outside the Great Court.

Wilson and Macarthur write that Birrell's linear buildings at the University of Queensland 'are seen as extruded bars bent to cut to fit the landscape'⁶⁰. Following a series of experimental buildings investigating 'significant form' and 'memorable shapes'⁶¹, in the J.D. Story Building (see figure 15), Hartley Teakle Building (see figure 16) and Union College (see figure 17) at the University of Queensland, Birrell developed a series of linear buildings. He used a repeated extruded section in these three buildings for its rationality and economy. As well as, their efficiencies and form defining enclosure and territory within their surrounding landscape (see figure 12), Birrell's linear buildings at the University of Queensland are also playing with scenographic ideas. Although Birrell doesn't classify his buildings as brutalist, Macarthur notes that brutalism was 'the heir of the picturesque'⁶². Birrell is revealing picturesque notions when he describes the form of the Hartley Teakle building as scenographic to hold off the view of the Forgan Smith Building as in Birrell's opinion the Forgan Smith building was appearing 'under-scaled'⁶³.

Don Watson writes, Birrell was 'integrating arcs with the lay of the land' a technique often used by Griffin⁶⁴. In his article on campus planning, Birrell encourages architects to focus on the space in-between buildings and criticises architects spending too much time working on the fabric of buildings. He references Frederick Gibberd writing; 'it is the spaces between buildings that count'⁶⁵. Birrell's campus plans aim to allow for topographic connections across the site⁶⁶ (see figure 14), with pedestrian traffic moving around a series of level courtyards between buildings and veering of the contour down what he labels 'topographic axes'⁶⁷ (see figure 13). He aimed to set up subconscious readings of the landscape through the relationships set up between his buildings. Hence, developing a higher cosmic order weave across the campus.

⁵⁹ Ibid.

⁶⁰ Birrell, Wilson, and Macarthur, *Birrell : Work from the Office of James Birrell*, 9.

⁶¹ Ibid.

⁶² — — — *Birrell : Work from the Office of James Birrell*, 10.

⁶³ Ibid.

⁶⁴ Birrell, Wilson, and Macarthur, *Birrell : Work from the Office of James Birrell*, 15.

⁶⁵ Birrell, "Neighbours on the Campus - Planning at St Lucia and Townsville," 152.

⁶⁶ — — — "Neighbours on the Campus - Planning at St Lucia and Townsville."

⁶⁷ J Birrell (1966). *Preliminary Architectural and Planning Implications of Major Projects Included in the Fourth Triennium 1967/1969 University of Queensland* (Brisbane: University of Queensland), 9.

Crafted Weave

Finally, the particular craft in the making of the 'H' pieces in the J.D. Story building and similar finesse with which Birrell developed materials and details describes the crafted weave. Taylor praises Birrell's work in the J.D. Story Building for its progressive use of concrete and labour during the construction process⁶⁸. Birrell pioneered the technologies involved with precast walls and floors, as well as, techniques in curved glass walls (although not suitable for the Queensland climate). The hit-and-miss brick detail of Birrell's most literally woven and crafted façade, was not only used in the Hartley Teakle building (see figure 21) at the University of Queensland but tested in Birrell's first project out of Technical College, the Sheep Dips at Parkville⁶⁹ (see figure 20). According to Taylor, Birrell (as demonstrated in his work) has an aversion to 'the applied' and 'the clad'⁷⁰. As mentioned earlier, Birrell's meeting with Sir Freddrick Gibberd in the United Kingdom, as well as, the inventive spirit of craftsmanship in Brisbane following the Second World War, influenced Birrell's original and inventive use of pre-cast concrete in many of his projects.

Conclusion

Birrell's work displays literal, abstracted and conceptual craftsmanship true to Semper's proclamation of enclosure as weave. In the case of the J.D. Story building, Jarred Dorham wrote;

*The J.D. Story Administration Building expresses imaginative qualities in the way the form of the building interacts with the context of the University in the way the fabric of the building is in critical contrast to the fabric of the Great Court, in the link between the prefabricated part and the modification of the entire form and in the way that a sensitivity to the way the elements join each other is observable.*⁷¹

Dorham's statement summarises this analysis of Birrell's work and its relationship to the campus at a number of scales. In conclusion, analysis of the wall as one of Semper's four elements and intrinsically linked to the craft of making, weaving and the woven, the wall can be considered the architectural mediator of the environment. Abstract, representational and conceptual drawings have been discussed to analyse how redrawing and drawing out can form a conceptual weave between drawn lines and the environment, which leads to literal mark making. Semper established a link between weave and the environment, which as been drawn out both conceptually and literally in the work of James Birrell.



Figure 18 University of Queensland: Abstracted stitching of the weave on the J.D. Story building facade.

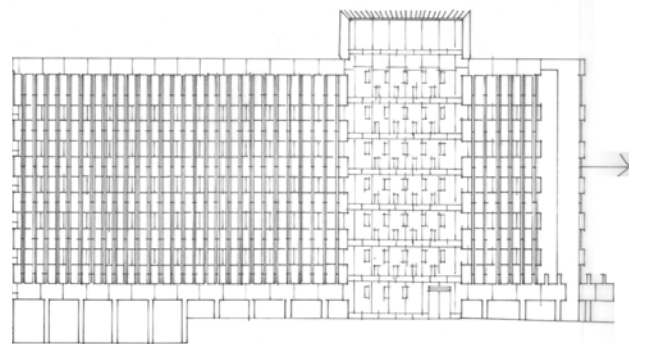


Figure 19 University of Queensland: Birrell's J.D. Story building facade.

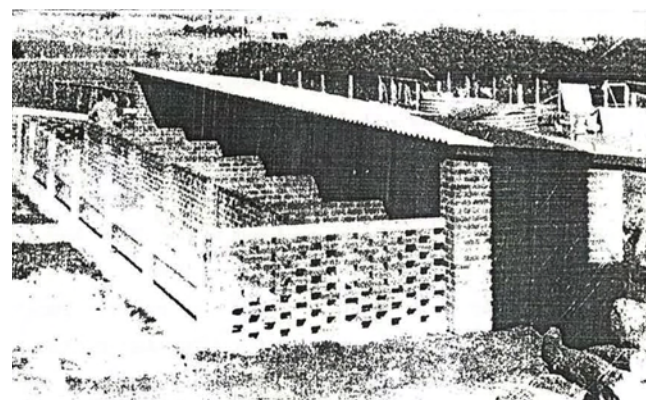
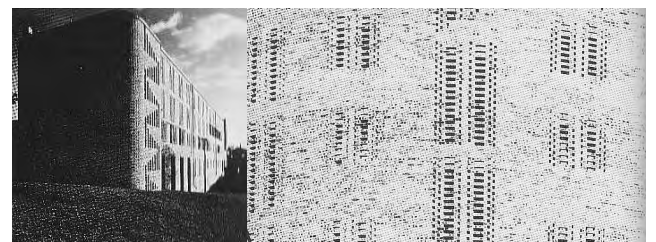


Figure 20 Sheep Dips, Parkville: Birrell's first project out of technical college.



Figures 21 and 22 University of Queensland: Hartley Teakle Building woven façade.

⁶⁸ Taylor, *Australian Architecture since 1960*.

⁶⁹ Mackee, "James Peter Birrell : Beginnings 1928-1955".

⁷⁰ — — — *Australian Architecture since 1960*, 123.

⁷¹ J Dorham (2005). "Three Institutional Works by James Birrell a Discussion" (1 CD-ROM; [electronic resource] University of Queensland), 30.

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