

RESEARCH ARTICLE

On the Buses: Mobile Architecture in Australia and the UK, 1973–75

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During the early 1970s, within a broader climate of social, political and institutional upheaval, students of architecture sought opportunities to redefine the architectural project beyond traditional education and practice. While these activities often involved highly speculative drawn and modelled projects, DIY structures or performance-based works, this paper examines instead the use of mobile architecture through a series of retrofitted bus projects from the period. Perhaps the most well-known example, the AD/AA/Polyark bus, was the outcome of collaboration between *Architectural Design*, the Architectural Association London and Cedric Price. In 1973, the same year the AD/AA/Polyark bus departed London, students at the University of Queensland, Australia, also embarked on tours of rural Queensland and New South Wales in their adapted double-decker bus, the Mobile Design Research Unit. The following year students at the University of Sydney undertook an eight-month tour of Australia as part of their own retrofitted bus project, the Australian Communications Capsule.

While the AD/AA/Polyark project was an extension of the Architectural Association, both the Mobile Design Research Unit and the Australian Communications Capsule appear to have operated outside of any formal arrangement with the university. Through their mobility, the buses facilitated modes of interaction between architectural thinking and the broader community, while creating physical distance between these practices and their institutional connections. At stake was the question of architecture's agency within its broader socio-political context. This paper describes a moment during the early to mid-1970s when mobility operated as a tool for alternative modes of architectural education and practice.

Introduction

For many schools of architecture in the early 1970s, active forms of participation and experimentation surrounding new forms of communication and movement were common, as students and staff members sought to redefine the limits of traditional architecture. Architectural experimentation during this period took different forms ranging from publications, speculative unrealised projects and practical experimentation involving new technologies, materials and forms. Each of the three mobile initiatives described in this paper involve action and participation outside of the conventional curriculum, in opposition to and critique of the institutions of architecture specifically and the dominant modes of production more broadly. Those involved with these projects responded to the increased separation between architecture (as a practice and as an educated discipline) and the evolving demands of post-war society as the lack of user participation in the architectural process was brought to the forefront. The university environment offered the freedom to explore the limits of traditional

disciplinary boundaries, allowing students to investigate the potentials of architecture with a greater separation from the realities of practice.

As mobile endeavours, each bus project described in this paper, and the associated architectural program, represents an attempt to diversify both the discipline of architecture and architectural pedagogy. The AD/AA/Polyark bus was primarily a travelling architectural exhibition that aimed to break down barriers between architectural institutions in the UK. The student-led Australian examples engaged with a constructivist view toward learning and brought into question architecture's relationship to the broader community with a clear social emphasis. While the intentions of each bus initiative ultimately differed, in program, scope and management, they shared the central idea that the act of travel could facilitate a greater exchange of ideas, counteract perceived states of isolation within both the architectural community and the broader public and ultimately expand the potential of architecture as prescribed by the conventions of modernism. In each instance, the bus as a mobile device provided the students greater access to a diverse set of resources at a time when new concepts and technologies relating to the exchange of knowledge and information were being investigated on a global scale.

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The AD/AA/Polyark Tour

In February 1973, the AD/AA/Polyark bus set off on a two-week journey of the United Kingdom.¹ An ex-London County double-decker bus was purchased by the Architectural Association (AA) and used as the device to link the seven cities (and learning institutions) of Cambridge, Nottingham, Sheffield, Newcastle, Edinburgh, Bath and Kingston. Broadly speaking, mobility was a tool to achieve greater connectivity between individuals, agencies and institutions within and outside of the discipline of architecture as well as to increase access to a greater variety of research, resources and criticism for students of architecture studying in the UK (NELP 1971: 818).² Perhaps most importantly, the broad ideological agenda of the AD/AA/Polyark bus tour pronounced a distinction from a university system which many students, architects and educators regarded as out-dated, corresponding to a global moment of uncertainty regarding architectural education (Sunwoo 2010: 125).

A detailed account of the AD/AA/Polyark bus tour is featured in the Cosmorama section of *Architectural Design (AD)* Issue 4 published in 1973.³ Peter Murray, a former technical editor of *AD*, explains that the bus tour was originally intended to function as an extension of the publication in order to demonstrate to audiences the content of the magazine through an expanded medium (Murray 1973: 201). The eventual collaboration with the AA and the architect and educator Cedric Price ultimately added to the intellectual complexity of the final project by giving the tour an educational focus that realised Price's idea of displacement as a process linked with learning (García-Germán 2014).

The AD/AA/Polyark bus tour can also be understood as a part of a significant contextual shift within the program of the AA. The appointment of the architectural educator Alvin Boyarsky in 1971 was instrumental in establishing the AA as part of an 'international avant-garde architectural network', effectively encouraging critical modes of thinking through the introduction of progressive pedagogical practices (Sunwoo 2009: 32). For example, the class of 1972/1973 were taught in a rotational system consisting of four different 'Briefing Units', forming part of Boyarsky's educational model aimed at giving students a selection of diverse theoretical positions and design methodologies (Sunwoo 2012: 24). The AD/AA/Polyark project formed part of one of these units, administered by tutor Stefan Szczelkun (Sunwoo 2012: 32). Szczelkun initially purchased the double-decker bus on behalf of the AA for first-year students to convert into a mobile teaching device, without an established intent or program. Upon learning of this undertaking Murray approached the AA about a collaboration that would transform both Szczelkun and *AD*'s initial aims for the bus (Murray 1973: 201).

The basic structure for the tour appears to have built upon many of the ideas Price first conceived in the late 1960s. Price was an advocate for a renewal of architectural education in the UK and abroad. He believed that learning should form part of a holistic process that removed the constraints of an archaic modernist educational paradigm

(García-Germán 2014). The AD/AA/Polyark bus tour was in line with many of Price's earlier projects such as the Potteries Thinkbelt Scheme (1964); the National School Plan (1966); and the ATOM Project, published in 1969 (García-Germán 2014). In collaboration with Price, Murray established the intellectual program and schedule of the tour while the students were given the practical role of designing and retrofitting the bus as a part of the unit system course (Murray 1973: 201).

A group of first-year students carried out the design and retrofit for the double-decker bus conversion that was to accommodate 20 people. The ground floor of the bus consisted of spaces conducive to a travelling exhibition, with storage, seating and tables. Two operable 'flaps' each side of the bus were intended to function on a suspension system to extend the primary sleeping space on the upper floor of the bus. At the time of departure the suspension system and tent skin for the sleeping space extension was left unfinished and an ad-hoc 'service pod' which was to connect to the rear of the bus, containing the amenities, cooking facilities and waste tank, was also left behind (**Fig. 1**). Murray's *AD* article points to some of the downfalls of the bus conversion process: an unrealistic time frame and budget and lack of appropriate technical skills. He states, 'one lesson to be learnt must certainly be that in a real project of this kind the organisation and aims must be equally real' (Murray 1973: 202). Although the design was incomplete, the financial and practical issues appear to have been constructive for the students due to the 'real world' implications of the design-build activity.

To gain the necessary commitment from various schools of architecture in the UK, two months before departure, the head of school from each of the institutions affiliated with the Royal Institute of British Architects (RIBA) was contacted and an announcement posted in *AD*. Further correspondence between the six interested parties ensued and requests were made asking for staff to rally the interest of community groups and for students to gather suitable work for the mobile exhibition space. Despite careful planning, the tour was ultimately dependant on student and community participation, resulting in varying degrees of success and failure. The attendance by both the AA students and those from the participating universities were lower than expected, with only nine students (out of the 15 expected) on board at departure (**Fig. 2**) (Murray 1973).

As it was originally conceived, the bus was to act as an exhibition space for student work and to facilitate interactions between two or more groups of students and teachers at separate learning institutions. The outcomes of the tour shifted once the tour commenced, as it became apparent that community groups and even groups within the universities themselves were unaware of the tour (communication within schools proving a significant barrier) and with few exceptions, students did not prepare suitable work for display. As Murray states, 'all the output came from the bus, the shows were biased in one direction and the show lacked the input of a variety of ideas and viewpoints' (Murray 1973: 211). The issues surrounding this perceived mismanagement, as well as technological

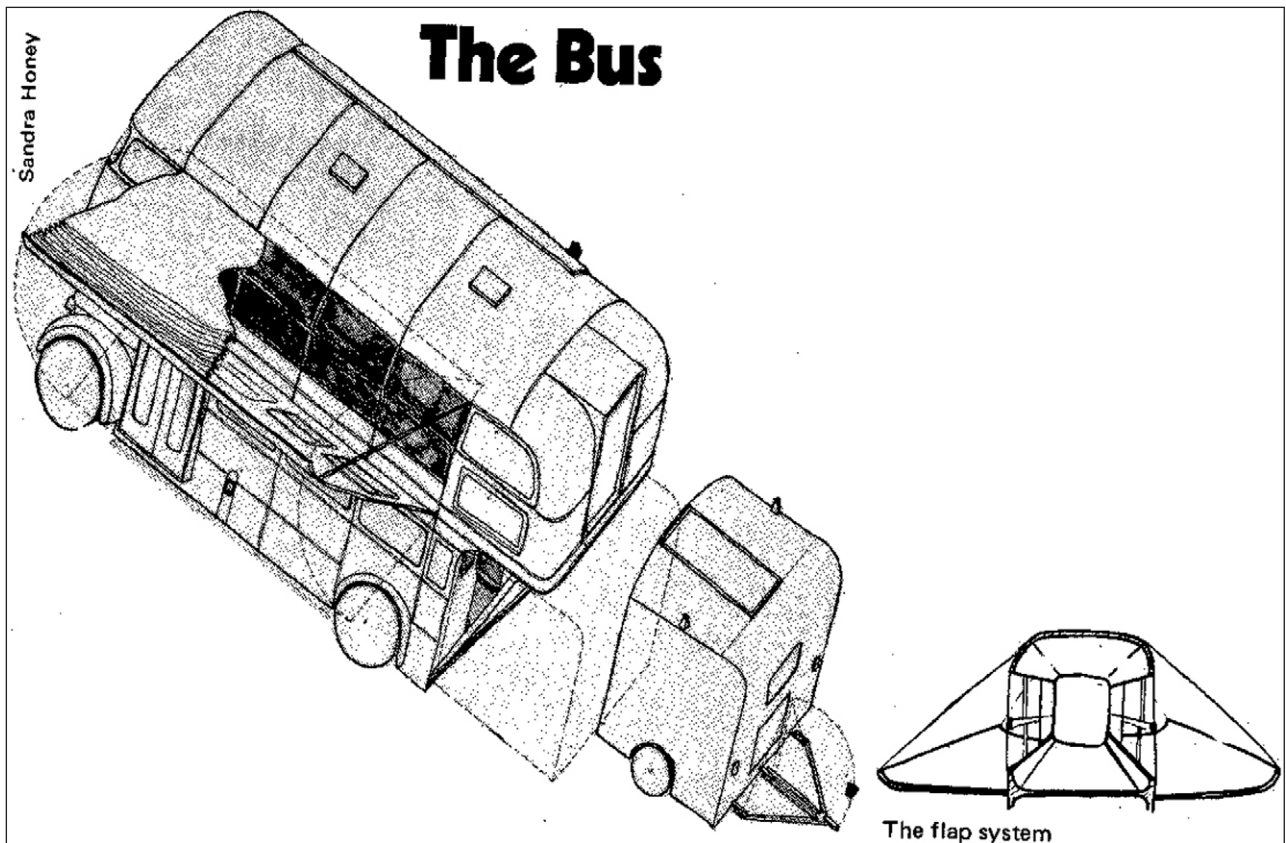


Figure 1: Drawing of the AD/AA/Polyark tour bus retrofit design by Sandra Honey. Image reproduction courtesy of Peter Murray (Murray 1973: 202).

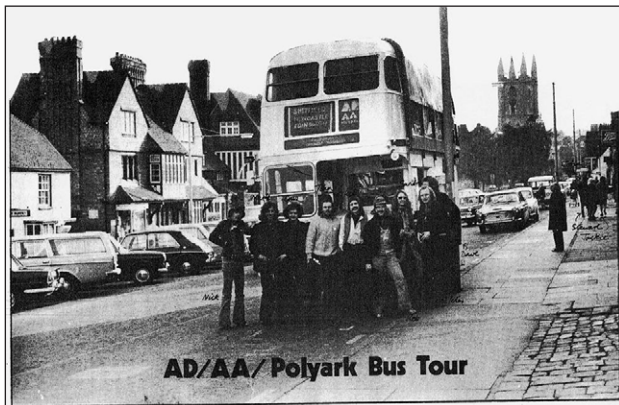


Figure 2: The AD/AA/Polyark bus behind first-year students of the AA and Peter Murray, 1973. Image reproduction courtesy of Peter Murray.

difficulties, were manifest in the Edinburgh University visit. The AA students had arranged exhibitions about North Sea oil, university development, and Scottish tourism. However, due to a combination of practical issues (finding an appropriate space) and technical difficulties with the video equipment, as well as uncooperative staff, the event (which had drawn the interest of about 80 students) was postponed and consequently lost momentum (Murray 1973: 209).

Despite ongoing issues with communication and participation, perhaps the most productive outcome of the tour, as Murray observed, was that it demonstrated

how new media practices and video equipment could offer exciting possibilities for architectural experimentation. Films showing Cedric Price, Rayner Banham, inflatables and domes formed the stock footage, but it was the research interviews by AA students that provoked the most intellectual stimulation and seemed to correspond most to the initial aim of stimulating critical engagement between students and staff members. Students intentionally probed other students and staff members, seeking to challenge accepted ideas and values about the discipline of architecture and architectural education (Murray 1973: 204). For example, the AA students asked first-year students at the University of Cambridge about the socially responsible role of the architect. While there was an overall lack of curiosity for the expanded notion of architecture, the conversations revealed certain criticisms relating to the rigid programming of the course and the narrow-minded nature of certain staff members at Cambridge. The interviews and resulting reactions, whether enthusiastic or hostile, were informative about the nature of architectural education at each institution and added a more complex understanding of how students and educators viewed architecture in relation to the wider socio-political context (Murray 1973: 211–12).

Pirrie and Brown reflect on the ways in which the AD/AA/Polyark tour illustrates the difficulties that 'designers, educators and researchers face when they attempt to move away from normative design practice' (2011: 598).

Pirrie and Brown argue that the main problem with the tour was that students simply transported normal modes of practice between locations instead of actively engaging with problems outside of the normal frame of reference (Pirrie and Brown 2011: 606). Despite these criticisms, the tour revealed the potential that mobile architectural experiments could have in breaking down the barriers between architectural learning institutions as well as between architectural institutions and the broader community. Murray's *AD* article demonstrates that hope was never lost in regard to the possibilities that mobility could provide and the role that this form of active engagement could play in reinvigorating both architectural education and practice. Murray concludes 'The tour was very much an embryo of the possibilities that such a mobile facility can give, but the events that happened, the reactions we received, both hostile and friendly, proved its usefulness' (Murray 1973: 211).

The Australian Communications Capsule

The historian Howard Malchow contends that British eco-radicalism and the general culture of student rebellion was more indebted to an American connection than to the orthodox left established by Marxist groups in European nations such as France and Germany (2011: 87). The Australian situation shared many of the same social and political concerns and outcomes present in both the UK and the US, and was thus another important transcontinental thread of influence facilitated by popular culture, new media practices and direct personal relations expedited by global travel. The Australian climate was especially conducive to many of the same forms of experimentation evident in the US (such as 'dropping out' and nomadism more generally) compared to the UK and with a much more expensive terrain to explore (and isolation to combat); these forms of mobile experimentation had a direct application to the Australian condition.⁴

In 1974, a small group of students from the University of Sydney thought to expand upon the actions of the AD/AA/Polyark tour and travel around Australia in a double-decker bus with a comprehensive ecological goal (P Pholeros, pers. comm., 6 March 2015). Behind the conception of the Australian Communications Capsule (ACC) were architecture students Phil Rose, Paul Pholeros and Wal Zagoridis, as well as school teacher Irene Zagoridis.⁵ The students involved thought that the skills acquired in the first three years at university would be better applied in a more practical sense to the broader community. More specifically, the students hoped to stimulate thought about the relative nature of beliefs and values (Rose, Pholeros, Zagoridis and Zagoridis 1975: 54).⁶ The tour was also about demonstrating to diverse communities the potential of nomadic forms of living in a time when the nuclear family and established living arrangements were being questioned (Rose et al. 1975: 52).

An account of the expedition is featured in the April 1975 student-edited issue of *Architecture in Australia*, entitled, 'Soft Architecture'. The issue aimed to document alternative approaches to traditional practice within the discipline of architecture and its educational

institutions in the form of a practical resource manual. According to organising editor Tone Wheeler, 'soft architecture' is 'responsive and responsible in contrast to the hard repressive architecture that led to the need for revolution' (Wheeler 1975: 50).⁷ The edition divides the aspects of 'soft architecture' into four overlapping areas of interest: 'working and learning', 'community', 'energy and materials' and 'conservation'. The ACC can thus be understood as part of a much larger countercultural imperative in Australia asking for change and immediacy in the built environment and its practices. Again, the traditional design- and object-orientated attributes of architecture were being questioned with a greater desire for participation in environmental processes and change.

In December 1973 a Leyland Titan double-decker bus was purchased from the New South Wales Public Transport Commission in Sydney for AUD\$1,000. The students worked full-time on the bus retrofit, largely financed through sponsorship deals and donations, for four months. The upper floor arrangement consisted of two bunk beds and an adaptable lounge area, providing sleeping spaces for five people. The old metal seats were welded together to form the base of the bunk beds, and the foam from the seating formed the mattresses. A kitchenette was also installed upstairs, accompanied by a small dining area. The lower floor consisted of the living area (complete with a space set aside for bean bags — a '70s essential), a small darkroom/storage area, a workbench and bathroom (**Fig. 3**). To improve the thermal performance of the bus, a sunroof was added, the roof was insulated with fibreglass and a plywood ceiling installed (Rose et al. 1975: 53). The exterior of the bus was painted blue and green, with the text 'Australian Communications Capsule' written in sign writing down each side, and the names of each sponsor covering the rear.

The bus departed Sydney on May 25, 1974, heading north on a counter-clockwise journey around the perimeter of mainland Australia. Learning institutions, perceived to be most conducive to this form of experimentation, were targeted due to the accessibility of a large scope of community members and the associated facilities, as well as the willingness of the participants to be open to new paradigms of thought. Following initial contact with the learning institution via mail, the basic structure of the operation involved a presentation, an activity session and an informal discussion to conclude. The hour-long presentation was typically conducted to a group of 30 to 40 participants, through slides, video, projections, talking and acting (**Fig. 4**). Instead of pushing their own individual values on the students of the institution, the University of Sydney students conceived creative games, activities and presentation methods to stimulate critical thought. Following the presentation, an activity session would take different trajectories according to the specific location: 'Workshop activities in the playground, experimenting with shape, colour, sound; a movement or drama activity which would investigate different types of environments either imaginary or real; or simply a seminar type discussion' (Rose et al. 1975: 55).

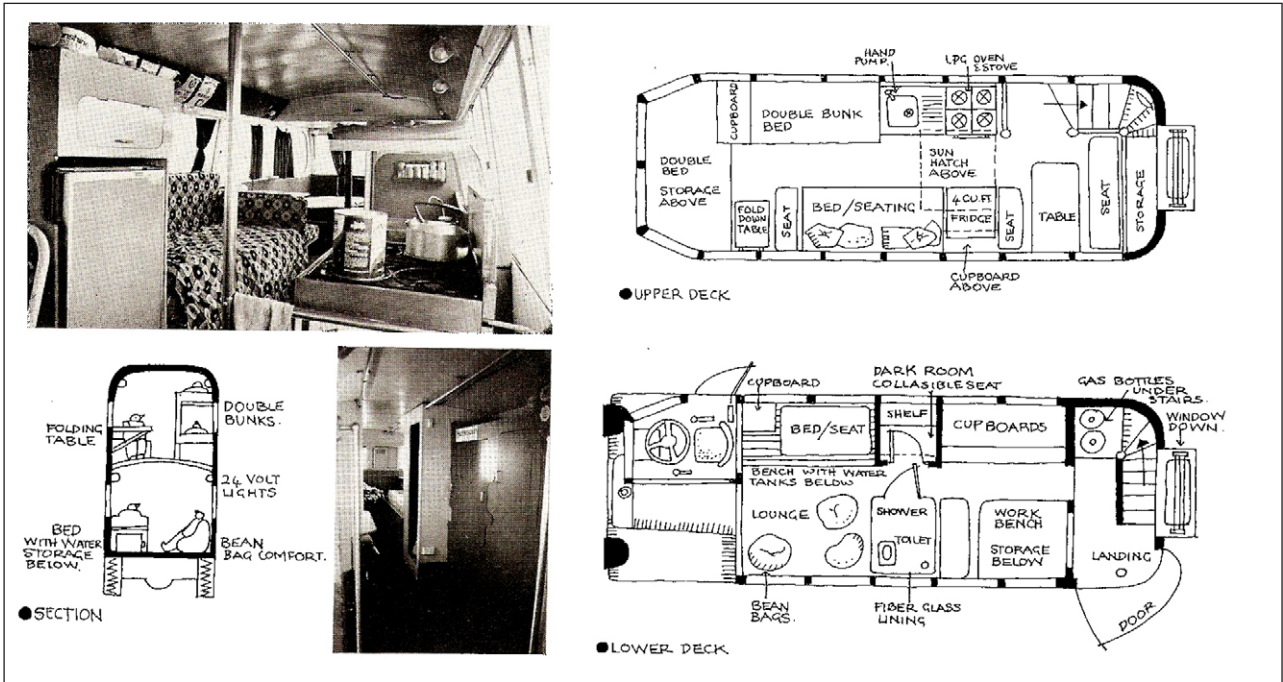


Figure 3: The layout and interior arrangement of the Australian Communications Capsule bus. Image reproduction courtesy of Architecture Media (Rose et al. 1975: 53).

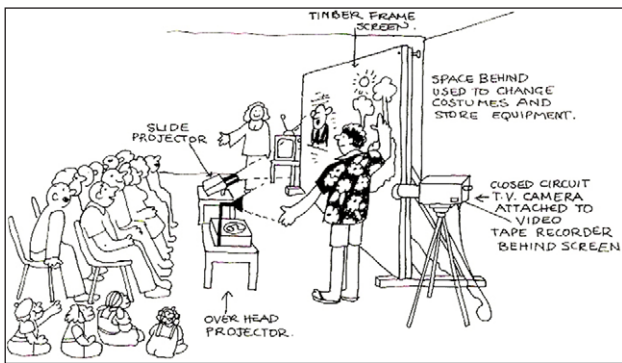


Figure 4: A sketch of the typical presentation set up. Image reproduction courtesy of Architecture Media (Rose et al. 1975: 54).

Community members and school students could for example experience the spatial characteristics of a 30-metre long orange inflatable tube, or use the video equipment to record aspects from the day's activities. To conclude the ACC visit, school students were permitted to visit the bus and were encouraged to informally discuss and engage with content from each learning exercise (Rose et al. 1975: 55).

After eight months on the road, over 100 different learning institutions had been visited (Fig. 5). The tour was not limited to primary and secondary schools; the bus visited universities, teaching colleges, reform schools, station schools, schools for the disabled and Aboriginal schools. Alternative community organisations were also approached, and the tour group staged public street events; however, in general, it was difficult for the ACC members to garner the kind of involvement that could be fostered quite easily within a learning institution. Despite observing that the active participation and enthusiasm

generally declined as students reached the higher grades of high school and college, overall, the University of Sydney students received an overwhelmingly positive response by the majority of learning institutions that participated (Rose et al. 1975: 56).

Several rural Australian towns were quite isolated, and the ACC group noticed a marked difference between rural and city children. The group called for this difference to be addressed with a more specific curriculum tailored to the learning needs of the rural Australian population. The group adapted their presentation method to present matters that were of relevance and comprehension to the rural children, acknowledging the difficulties these students faced, particularly when access to television and news sources were limited (Rose et al. 1975: 54). While the 'city children' were open to addressing larger concerns affecting the environment, the children from rural areas were more concerned with matters regarding their immediate environment, with young women in particular not seeing a future beyond acts of domesticity (Rose et al. 1975: 53).

Not unlike the AD/AA/Polyark tour and its intersections with broader changes within the university, the Australian Communications Capsule project can be situated as a part of a comprehensive suite of experimental and activist activities performed by students at the University of Sydney in the 1970s. The architectural historians Lee Stickells and Glen Hill have begun to uncover some of the alternative architectural initiatives at the University of Sydney during the early 1970s, tracing the countercultural legacy and reinstating an imperative for radical pedagogical initiatives to be included in the postmodern historical account of Australian architecture (see Stickells (2013; 2012)

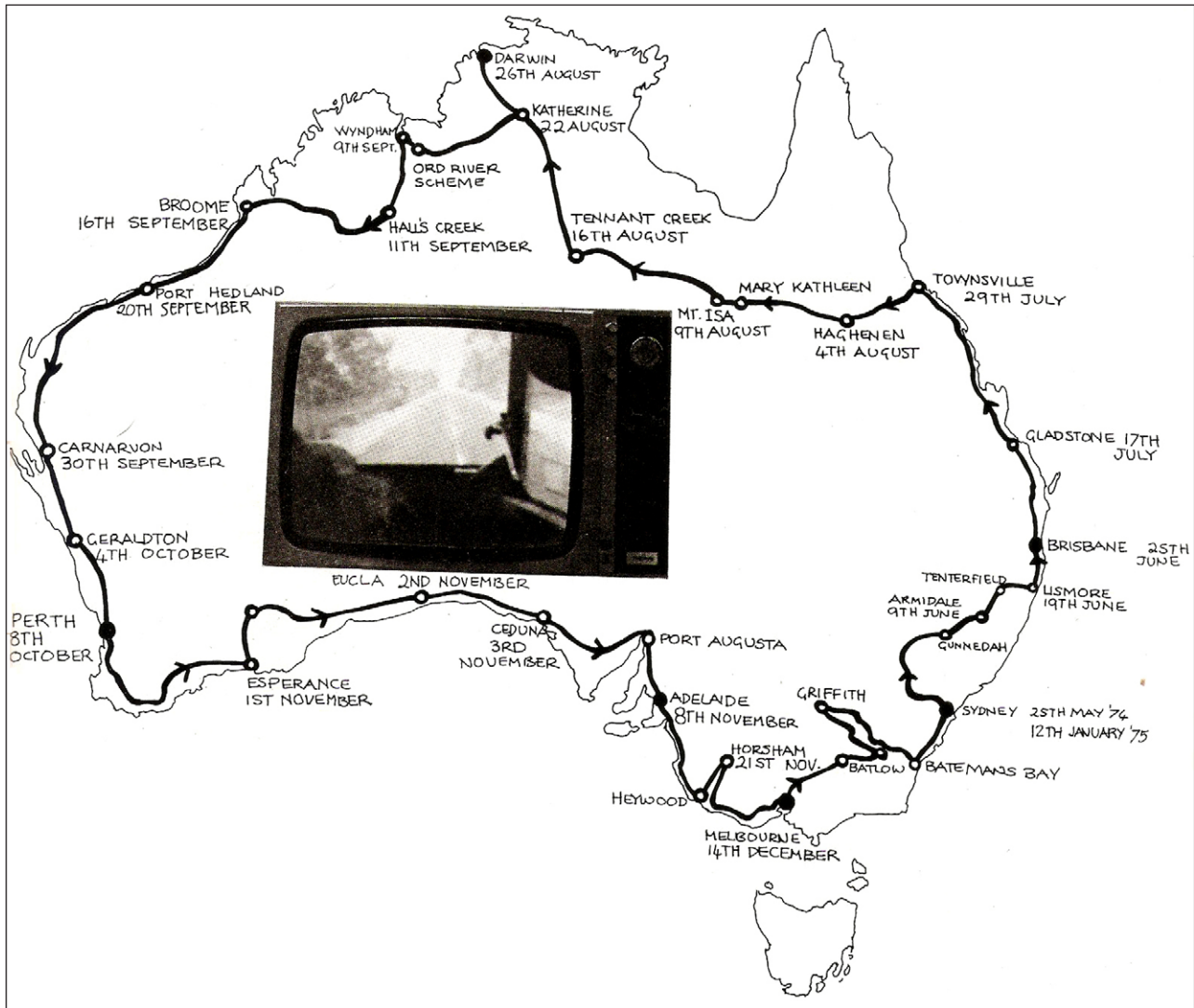


Figure 5: Map depicting the ACC journey around the Australian mainland. Image reproduction courtesy of Architecture Media (Rose et al. 1975: 57).

and Hill and Stickells (2013) for more on this topic). By 1972, students at the University of Sydney were becoming increasingly dissatisfied with the narrow and out-dated course framework, a conservative staff, the passive role of students and the gap between theory and practice (Stiles 1974: 63). A strike of architecture students at the university ensued in 1972. As a result of several weeks in which students refused to attend class, a new curriculum was developed in collaboration with the Dean, eventuating in a more flexible educational model (Stickells 2012: 1055).

A former student and participant aboard the ACC, Paul Pholeros, recalled the significance of the student strike in provoking 'a mood of exploration' and inspiring the students to apply their architectural training to the broader community (P Pholeros, pers. comm., 6 March 2015). The revised curriculum meant that projects that reconsidered architecture's social and environmental agency satisfied the requirements of the architecture course. In an article published in 1973 in *Architecture in Australia* about the strikes, a former student, Mark Stiles, explains, 'the idea that there was one

orthodoxy in architectural education, a single conception of what an architect was and should do, was finally destroyed' (1974: 63). As such, for the three architecture students involved in the ACC project, it counted as an elective in the fourth year of the architecture course at the University of Sydney (Fig. 6).



Figure 6: The Australian Communications Capsule bus. Photo courtesy of Paul Pholeros.

The Mobile Design Research Unit

The circumstances surrounding the AD/AA/Polyark bus and the Australian Communications Capsule were solidified in architecture publications that featured articles, written shortly after the tours, about their experiences and outcomes. In comparison, the accounts of the Mobile Design Research Unit (MDRU) have never been formally documented; instead the bus remained in the memories of those involved in the architecture program at the University of Queensland (UQ) during the 1970s. Research on the MDRU was therefore heavily dependent on the oral histories of the key students and staff members at UQ between 1972 to 1980. In some cases these memories are over 40 years old; the interpretation of this information is thus, as historian Lynn Abrams advises, contingent on the 'mutability' of memory and the subjectivity of the interviewer (2010: 23). While the accounts of the AD/AA/Polyark bus and the ACC bus are an interpretation of events shaped according to a moment in the past, the MDRU research consists of a series of dialogues that are inherently shaped by current circumstances, contexts and perspectives (Stogner 2009: 207).

The MDRU bus was collectively purchased by a group of UQ students from a Sydney car yard in 1973 for around AUD\$1,000 (Fig. 7) (B Wolfe, pers. comm., 16 April 2014). Such experiments at UQ can be largely attributed to seven key students: Anthony John, Kerry Spencer, Gary Mathison, Bruce Wolfe, Richard Sale, Dixon Andrews and Michael Witty, who in 1972 were second-year students (M Witty, pers. comm., 1 May 2014). Most of these students had experience in building and construction prior to and during their education. The multidisciplinary skills and knowledge of this actively engaged set of students therefore made them ideal for architectural experimentation involving practical engagement (M Witty, pers. comm., 1 May 2014).

The initial idea for the double-decker bus conversion came about by the difficulties of communal travel to events such as the 1973 Sunbury Pop Festival and Australian architecture conferences, which were typically held in the



Figure 7: The Mobile Design Research unit bus in original condition in the Great Court at UQ. Photo courtesy of Richard Sale.

capital cities of each state. During the inaugural trip from Sydney to Brisbane, the bus broke down on the outskirts of the New South Wales country town of Tamworth, and it was here that the students sought to validate the idea and turn the bus into something more than a collective transport option. The students termed the bus the 'Mobile Design Research Unit', citing a goal with environmental outreach tendencies in response to the prevailing social and political conditions and the urgency of environmental concerns in the late 1960s and early 1970s (B Wolfe, pers. comm., 16 April 2014).

In terms of the bus retrofit, various suppliers donated the majority of materials and parts, and enough money was raised to turn it into something that is remembered fondly by many of the past students (R Sale, pers. comm., 30 April 2014). The top floor of the original bus was replaced with a new structural floor to prevent noise penetration. The side windows were replaced with windows reclaimed from architectural salvage and above the front windscreen, a large picture window was installed so that the newly restored top level had views out to the front (Fig. 8). The top level was carpeted and used predominantly as a lounge area or a communal sleeping zone for overnight stays, with fold-down chairs along the sides (Fig. 9). A photography darkroom and architectural drawing boards were installed downstairs to enable students to travel, carry out design strategies and stage exhibitions (B Wolfe, pers. comm., 16 April 2014). The MDRU had no washing facilities or toilet on board and so the nomadic students would use public restrooms on long trips (J Salmon, pers. comm., 2 May 2014).

The students involved with the MDRU remember investigating environmental response strategies such as alternative energies, recycling, adaptive reuse and waste management and applying these studies toward hypothetical tasks. They studied a particular town and prescribed a function for a disused building or investigated what forms of renewable energies would be applicable



Figure 8: The exterior of the MDRU after the student-initiated retrofit. Photo courtesy of Jeremy Salmon.



Figure 9: Students sleeping on the upper level of the MDRU. Photo courtesy of Jeremy Salmon.

within the particular context of the town. One former student, Bruce Wolfe, recalls studying and applying speculative alternative energy solutions such as solar and methane power generated from a sewage treatment plant to the South East Queensland town of Esk. Like the students on board the Australian Communications Capsule, the UQ students recognised the inequalities of information access and distribution caused by the geographical isolation of rural Australian communities (B Wolfe, pers. comm., 16 April 2014). This opened up important possibilities for the concept of mobility and new communicative devices, which could act as important facilitators in the education of rural populations about contemporary concerns for the environment.

The fact that the MDRU was not initially associated with the prescribed coursework of architectural education at UQ is important to note. Although the students believed that the work of the MDRU was a valid expression of architectural principles, it was not formally recognised within the institution of the university, reinforcing the apparent separation between radical strains of architectural thought and the traditional conventions of architectural education at UQ. The MDRU bus ran intermittently throughout the decade, housed with various students around the city, falling into disrepair many times and experiencing continual renovation and appropriation by the student body at UQ, known as 'Bruce'. At one stage, expressing the countercultural aesthetic, the exterior of the bus was painted in red, orange and yellow (R Sale, pers. comm., 30 April 2014).

From around 1978, the direction of the bus seemed to shift from a predominantly extra-curricular student-led direction, which was an attribute of its conception, to a more collaborative endeavour between staff and students.⁸ In 1978, the staff directed a tour through northern New South Wales and on to Sydney to visit architectural projects and conduct design activities (J Salmon, pers. comm., 2 May 2014). The bus was also involved in a Brisbane Valley tour and O-Week (student orientation) activities in 1979. An article in a 1979 Projects Review document also outlines an elective the students could choose, to 'fix up student bus 'Bruce' (The Department of Architecture 1979). While the bus was being utilised as a collective transport option to facilitate the 'studio culture', the initial principles of communal participation and ecological awareness seem to have largely dissipated by the end of the seventies.⁹

Not unlike the AD/AA/Polyark tour and the ACC, the MDRU initiative can also be linked to the specific local context of architectural experimentation at UQ and in Brisbane. From the late 1960s through to the beginning of the 1980s, Brisbane experienced an extremely volatile period of revolt and widespread resistance to the values of mainstream society.¹⁰ The perceived isolation of the state of Queensland from the more dominant southern counterparts of Sydney and Melbourne, as well as a contentious political situation under State Premier Joh Bjelke-Petersen, gave rise to a unique socio-political context. There were many factors that made Queensland's governing system during this time unique and controversial, including an overrepresentation in the electoral system

of the rural sections of the population, the impetus for police corruption and Bjelke-Petersen's anti-democratic nature and authoritarian rule that banned public protest and demonstrations. The Bjelke-Petersen government and the Queensland Police were instrumental in politically repressing a significant portion of Brisbane's population, inevitably contributing to the growth of rebellious and anti-authoritarian actions (Stafford 2006: 12). This volatile local context would combine with polemical global issues such as opposition toward the Vietnam War and a push for greater civil and moral rights, creating a vibrant oppositional culture in Brisbane.¹¹

The University of Queensland served as a tangible link to radical activities and countercultural tendencies. Janina Gosseye and John Macarthur's recent paper, 'Angry Young Architects: Counterculture and the Critique of Modernism in Brisbane, 1967–72', outlines some of the ways in which Brisbane's architecture students challenged traditional frameworks (2014). While conventional forms of protest existed, such as the Springbok Tour Confrontation in 1971 and the Right To March Movement in 1977, certain students and staff members involved in the Department of Architecture at UQ also challenged dominant values by using creative experimental processes, such as theatre, film, exhibition, performance art and dome building as a form of political engagement and in doing so also questioned the conventional boundaries of the discipline of architecture and architectural education.

For the students at UQ involved in the MDRU, the concept of mobility was first introduced to counteract two central concerns. Primarily, the Brisbane students felt a sense of cultural isolation from key cultural centres and capital cities in Australia. This observation was also heralded by students involved with the Australian Communications Capsule; the *Architecture in Australia* article noted that 'most striking was the huge concentration of the population and energy in two conurbations, Sydney and Melbourne; the rest of our vast continent is virtually empty and forgotten' (Rose et al. 1975: 56). In a more altruistic manner, the students were also reacting to the isolation of rural towns, as well as to contemporary concerns about the environment. An indirect issue at stake within the extra-curricular project was that mobility was a mechanism against the systematic forces of the out-dated architecture discipline. Students challenged dominant lifestyles and mainstream values of the wider community, architectural education in general and the discipline of architecture itself, recalling a fundamental student desire for collaboration, hands-on involvement and self-expression.

'It might be better to travel hopefully than to ever arrive'¹²

An investigation into these mobile initiatives espoused by architecture students in the 1970s reveals an impetus for an extensive departure from architectural education's modernist legacy (see Hughes and Sadler (2000) for more on this topic). Not only did the bus initiatives share a common preoccupation for alternative forms of working, learning and community interaction, they each employed

mobility as the central device to achieve these objectives. By the 1960s architects were actively experimenting with different intellectual takes on mobilisation. As Simon Sadler explains, mobility promised 'to free architecture of fixed structure, making it more thoroughly transitory in time and space as if, in this age of the private motor car, physical mobility was commensurate with social mobility' (2000: 140).

Among the most prolific architects and groups engaging with such concepts were Cedric Price, Buckminster Fuller, the Mobile Architecture Study Group (Groupe d'Etudes d'Architecture Mobile – GEAM) created by Yona Friedman in 1958, Ant Farm (1968–78) from the United States and the British group Archigram (1961–74). The extent of architectural experimentation varied considerably, materialising in different forms and scales depending on the intended scope and program (Cresswell and Merriman 2011: 173): small-scale flexible architectural elements, such as Reyner Banham's inflatable living unit, Un-house (1965), devised for the nomadic occupant, and Ettore Sottsass' display design for a domestic mobile environment (1972), and audacious urban schemes, such as Ant Farm's Truckstop Network (1970–71), Archigram's The Plug-In City (Peter Cook, 1964) and Superstudio's Continuous Production Conveyor Belt City (1971).

The visionary architects practising in the 1960s and 70s were also heavily involved in publications that documented these new modes of architectural experimentation. The publications not only revealed how mobility could enhance the architectural project through new modes of experimentation but also told of the wide-ranging polemic and crises overhauling educational institutions in the Western world (Buckley and Colomina 2010: 12). While these publications inherently held critical place for the students at the AA (due to the prolific local output), Australian architecture students also familiarised themselves with a suite of international publications and little magazines that began to emerge from the 1960s, such as the *Whole Earth Catalog* (WEC), *Dome Book*, *Shelter I* and *Shelter II*, as well as publications outside of the discipline, such as *Limits to Growth* (1972), *Deschooling Society* (1971) and *The Medium is the Message: An Inventory of Effects* (1967). The more mainstream publication *Architectural Design*, widely read by international audiences, also began to reflect the radical changes within the discipline in the pages of the Cosmorama section. The spread of radical thought within the architecture discipline to many Western nations such as Australia can be largely attributed to the influential nature of media. Former Sydney University student Paul Pholeros cited the 1973 issue of *AD*, featuring the AD/AA/Polyark tour, as a direct motivation for the Australian Communications Capsule. Originally, the intention of the ACC was to travel to Europe to showcase the environmental education program to a much broader audience; however, the students thought a rational first endeavour would be to test the bus on an expedition around Australia (P Pholeros, pers. comm., 6 March 2015).

Issues involving the nomadic student and the isolation of individual schools feature heavily in Archigram's

eponymous publication, which viewed the ideal educational environment 'without hierarchy, and free of social, spatial or ideological institutions' (Sadler 2002: 254). Not unlike the preceding issues, *Archigram* no. 9 features articles that reveal a desire for architects and architecture students to involve themselves in critical practices relating to a wider socio-political context, dealing largely with concepts of physical transportation, communication networks and new modes of education. In this issue Cedric Price hints at the potential of the Polyark project, encouraging students to 'hit the road' in search of possibilities outside of the stunted university system (Price 1970: 4).¹³ Further to this, *Archigram* no. 9 also introduces the concept of 'Archizones', which sought to link different schools of architecture, progressive groups and architects in different parts of the world, from Archizone 1 in the United Kingdom to Archizone 11 in Australasia. This illustrates the comprehensive push for a greater connection of architectural networks inspired by the possibilities of travel, technology and new media.

Quite often, radical or countercultural architecture experiments around this time would only operate within the hypothetical domain. It is therefore no surprise that each of the bus initiatives were relatively short-lived and subject to a range of practical limitations, despite the fact that the university context proved a versatile place to test methods and ideas outside the mainstream. In an effort to illustrate the difficulties involved when deviating from traditional educational methods, Pirrie and Brown provide a critique of the Polyark project and its contemporary successor, Polyark II, a project enacted in 2009 by British architecture students (2013: 37). Pirrie and Brown argue that the 'transformative potential' of the initiative was lost because the project was too precise in 'packing up and transporting normative practice' rather than encouraging students to operate outside of their normal frame of reference (2013: 37). Peter Murray made a similar observation in a first-hand account of the original tour:

An event like the bus only works in a completely loose situation where people are around and anything can happen or, if it is placed in an organised situation, it must be *totally* organised if it is not to completely break down. (Murray 1973: 209)

Under Alvin Boyarsky's lead, the AA curriculum was restructured during the 1972–73 academic year, allowing for an enhanced breadth of subjects with far greater flexibility (Sunwoo 2009: 52). Perhaps the greatest difference between Australia and UK in this context arises out of the general conditions at the AA in comparison to the University of Sydney and the University of Queensland. With the expansion of the AA's unit system, the structuring of the institution changed and as such the students at the AA were afforded a great variety of new electives, exhibitions, history and theory offerings and lecture programming (Sunwoo 2012: 122). While the courses at both Australian universities did shift toward a more varied curriculum in the late 1960s to early 1970s, architectural education in Australia continued to struggle with

'the extent to which it should train students to engage with architecture as environmental design (contingent on social, economic, political and scientific contexts) or as a distinctive, autonomous practice whose knowledge base lay within its own historical objects' (Hill and Stickells 2012: 76). What emerges from the state of education in Australia is that students took matters into their own hands, so to speak. For the University of Sydney students in particular establishing their own elective was a test case against the system at a time when there was an apparent disconnect between what was being taught at university and what students felt they needed to learn in an increasingly technological society under certain pressures of late capitalism. By comparison, the AD/AA/Polyark tour was ultimately dependant on the commitment and interest of the students involved, more so than the intellectual proficiency behind the program.

The protagonists of the Australian bus initiatives each had an active engagement with every stage of the process, from initial purchase, fundraising and sponsorship, design and retrofit through to the program development, demonstrating a rich student desire for active engagement and participation. This fundamental difference in the student's role as a part of the inherent structure of the tour inevitably prompted different outcomes. The MDRU, initiated by certain students from the University of Queensland, was the most self-sufficient in nature as the bus retrofit and the ensuing tours did not initially count toward the students' architecture degree in any way. The MDRU, understandably the most informal of the mobility experiments in its approach, faced the practical limitations of both time (restricted by the university's timetable) and practical resources, such as money, use of equipment and storage. The AA students were also limited by strict time frames, but also by a prescribed intellectual program. The bottom-up nature of the Australian examples, on the other hand, created interesting opportunities for the students to dictate their own responses to unique conditions, resulting in unexpected learning outcomes. In recognition of the fluidity of circumstances and their capacity to respond, the students of the ACC in particular were able to adapt the program to suit the variable demands cultivated by mobilisation and the differences in context. The less rigid program design of the ACC and the MDRU no doubt increased the likelihood of contingent circumstances, but it is precisely this unpredictability that to a great extent is part of the allure of travel.

The ACC is also inherently different in intent from the other two projects, broadening the scope significantly to also include alternative means by which to liberate pedagogy for learning institutions more generally. This was an objective similar in many ways to a little known project from the early 1970s, 'The Odyssey School Initiative', spearheaded by College of Environmental Design lecturer Jim Campe at the University of California, Berkeley, which subverted traditional learning environments and ways of teaching. The initiative transformed a mail van ('The Eagle') into a mobile platform to educate Berkeley elementary children around an array of diverse social and ecological issues in an interactive manner (Caldwell 2015).

In much the same way as The Odyssey School Initiative, the ACC combined education with an environmental consciousness, a sense of play, liberated social values and the cultivation of new intellectual frameworks as a direct counterbalance to the state of mainstream education in Australia during the 1970s. These two projects also share many affinities with Ant Farm's Antioch Greyhound and Truckstop Network projects, which were not institutionally aligned yet demonstrate that mobile learning environments were conceived as viable learning models during the early 1970s (Olds 2009: 127). Ant Farm's continual progression of experiments reveals what the other institutionally aligned projects don't get a chance to: a move away from a support network based on the automobile. In a 1974 exhibition, *20/20 Vision*, organised by Ant Farm, gas pumps are represented as sculptural relics rather than as functional objects (Olds 2009: 127). In this way Ant Farm are able to contextualise their work relative to past projects, demonstrating an important change in Western society corresponding to the increased awareness of the oil crisis and new technological advances. In the mid to late 1970s a decrease in mobile experiments corresponds not only to a decline in countercultural experiments but also an increase in virtual communication networks as opposed to motorised transportation methods.

The link between counterculture and architectural pedagogy seems to be a site of continual reappraisal and of growing contemporary significance. For example, a graduate student symposium, *Teaching Architecture, Practicing Pedagogy*, focusing on the history of architecture education in the twentieth century, was held at Princeton University School of Architecture in 2011 and an exhibition and symposium, *Design Radicals: Berkeley in the '60s*, organised by Greg Castillo, was held in 2014 at the University of California. As a part of an ongoing research project with PhD students at Princeton University, called 'Radical Pedagogies', Beatriz Colomina directed the exhibition of the same name at the Lisbon Architecture Triennial in 2013 as well as the exhibition *Radical Pedagogies: ACTION-REACTION-INTERACTION*, at the 14th International Venice Biennale in 2014. In Australia, scholars have recently begun to place Australia's radical pedagogical initiatives amongst a larger set of international trends and tendencies, although experimental pedagogical initiatives still remain largely unexamined (see Hill and Stickells (2012); Hill (2012); Gosseye and Macarthur (2014)).

An examination of the bus initiatives as mobile pedagogical experiments can go some way toward adding further complexity to the growing body of work on not only counterculture and architectural pedagogy but also the intersections between travel and architecture in an expanded sense.¹⁴ Furthermore, a study such as this is useful in that it adds to the developing history of Australian countercultural architecture by ultimately providing a more precise link between Australia's radical pedagogical experiments and the more widely recognised set of international trends and tendencies.

The bus initiatives appeared at a time when architecture was being redefined, shaped by a broader consideration

for a series of networks, rather than as a constrained act limited by a singular perception of space. The act of travelling in each instance provided the students access to open-ended networks of relationships, sites and experience (Traganou and Mitrasinovic 2009: 2). The thought processes behind such forms of architectural experimentation are particularly important – perhaps more so than the direct effects – because of the implications they hold for architecture's real and perceived limitations. Despite inherent differences between each bus initiative, the three are united by a view of architecture as a process that privileged active participation, physical experimentation and community engagement. This form of architecture experimentation was not just about a particular style or mode, about environmentalism or dissent. It was about an ethos that integrated experimental, participatory practices with life experiences aided by the view that travel could be linked to the production of knowledge.

Competing Interests

The author declares that they have no competing interests.

Acknowledgements

Thanks must go to the former students and experts whose actions in the '70s were inspiring, and whose willingness and enthusiasm to offer knowledge and time was invaluable. I would also like to thank Dr. Alexandra Brown for her continual support and valuable feedback.

Notes

- ¹ The Polyark initiative came from the North-East London Polytechnic as an idea to link architectural resources and projects in learning institutions throughout the UK. In the early 1970s Cedric Price was engaged as a consultant to help make the concept feasible (NELP 1971: 818–819). The name AD/AA/Polyark signifies the collaboration between *Architectural Design*, the Architectural Association and Price's Polyark concept.
- ² These objectives also align with Alvin Boyarsky's International Institute of Design (1970–72). For more on Boyarsky's Institute, see Sunwoo (2009).
- ³ The Cosmorama section of the magazine typically published ideas and visions outside of normative architectural practice. *Architectural Design's* post-war editorial policies are outlined in Parnell (2012).
- ⁴ Architectural historians Felicity Scott, Simon Sadler and Caroline Maniaque-Benton have written extensively on 'dropping out' during the countercultural period.
- ⁵ The Australian Communications Capsule tour inspired the career trajectory of Paul Pholeros and the establishment of Healthabitat, an organisation committed to improving the living conditions of marginalised communities.
- ⁶ For example, one game they devised, the 'On the Spot Game', had participants answer questions about a chosen topic. The least socially acceptable answer was given the highest points, so after a round of questioning, the winner was the one least affected by social norms (Rose et al. 1975: 52).

- ⁷ Wheeler further explains that 'soft architecture, as a concept, originated from the ideas of low impact soft technology: the technology of ecologically responsible processes using natural replaceable materials, recycling and renewable energy sources like the sun and the wind' (1975: 73).
- ⁸ Bruce Wolfe stated that when the students first brought the bus up from Sydney, there was support from some members of staff but no direct interest.
- ⁹ Although no all-encompassing failure to acknowledge the project ensued, several former students note that the ecological frame of mind had subsided somewhat by the end of the 1970s.
- ¹⁰ For more on Brisbane's cultural history throughout this period, see Hatherall (2007), Evans and Ferrier (2004) and Stafford (2006).
- ¹¹ Additional global issues included, but were not limited to, environmentalism, gay rights, indigenous rights, feminism, capitalism and consumerism. For more on the contextual background of such issues, see Braunstein and Doyle (2001) and Stephens (1998).
- ¹² Price (1973: 203).
- ¹³ See Fraser and Rattenbury (2010) for a project entitled 'Ideas Circus' featured in *Archigram* no. 8 which shares many of the same ideals as the bus projects mentioned in this paper.
- ¹⁴ Traganou and Mitrasinovic (2009: 5) argue 'for the significance of travel in the conceptualisation, representation, production and consumption of architectural, urban and geographical space under various conditions of modernity.'

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How to cite this article: Harris, J 2016 On the Buses: Mobile Architecture in Australia and the UK, 1973–75. *Architectural Histories*, 4(1): 7, pp. 1–14, DOI: <http://dx.doi.org/10.5334/ah.186>

Published: 13 June 2016

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