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DESIGN RESEARCH ESSAY

No Fixed Form: The *Infra-Éireann – Making Ireland Modern* Pavilion and the Sites of Modernity

Gary Archibald Boyd[1] and John McLaughlin[2]

This paper explores the relationship between architectural design and research in the context of a particular example, the development of the Irish pavilion for the 14th architectural biennale in Venice 2014 (Infra-Éireann) and its reiteration and expansion in Ireland for the State's centennial celebrations 1916–2016 (Making Ireland Modern). Originally responding to Rem Koolhaas's call to investigate the international absorption of modernity, the pavilion sought to engage with the properties of the architectures of infrastructure in twentieth and twenty-first-century Ireland. Central to this proposition was that infrastructure is simultaneously a technological and cultural construct, one that for Ireland occupied a critical position in the building of a new, independent post-colonial nation state. Presupposing infrastructure as consisting of both visible and invisible networks, the idea of a matrix became a central theoretical and visual tool in the curatorial and design process for both the pavilion and its contents. To begin with this was a two-dimensional grid used to identify and order what became described as a series of ten infrastructural episodes. These were determined chronologically across the decades between 1916 and 2016 and their spatial manifestations articulated in terms of scale: micro, meso and macro. What emerged in the design and research process was a dialectic relationship between the pavilion and its content as logistical and conceptual concerns merged to realise an adaptive framed modular structure, imagined as an embodied manifesto and, analogous to infrastructure, as having no fixed form.

Keywords: Architecture; Ireland; Modernity; Venice Biennale; Exhibitions; Pavilion

Introduction

This essay reflects upon the relationship between research and design in the context of a particular example: the Irish Pavilion for the 14th Venice Architectural Biennale in 2014, titled *Infra-Éireann*, and its reiteration and expansion back in Ireland as part of that country's centennial celebration of the period between 1916 and 2016, titled *Making Ireland Modern* (**Figures 1** and **2**). The origins of *Infra-Éireann – Making Ireland Modern* lay in the negotiation of two apparently mutually contradictory statements separated by one hundred years. Entitled 'Absorbing Modernity', Rem Koolhaas's call for the national pavilions at the 14th Venice Biennale presupposed that there had been a flattening of national characteristics within twentieth-century architecture and their replacement with an international language borne from technological and cultural changes and transfers [1] (**Figure 3**). Writing a century earlier, Pádraic Pearse – poet, pedagogue and Irish revolutionary – proposed the reverse: he believed that an independent Ireland, whose cultural characteristics had already been eroded through prolonged colonial occupation, could re-make its own individual identity by embracing modernity. Unusually for Pearse, his proposition was utilitarian and pragmatic rather than romantic, with the deployment of vast infrastructure and technological systems being the means of realising this new cultural vision:

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Figure 1: *Infra-Éireann* pavilion at the 2014 Venice Biennale (photograph by Alice Clancy).

Figure 2: *Making Ireland Modern* pavilion installed in Cork.

Figure 3: The flattening of national characteristics (montage courtesy of OMA).

> A free Ireland would drain the bogs, would harness the rivers, would plant the wastes, would nationalise the railways and the waterways, would improve agriculture, would protect fisheries, would foster industries, would promote commerce, would diminish extravagant expenditure [2].

Pearse's proposal is conspicuously cited by Terence Brown at the very beginning of his seminal book, *Ireland: A Social and Cultural History* [3, p. 3]. Its positioning here became for us a provocation to re-engage Irish architectural culture with the socio-political landscape of twentieth-century Ireland. This narrative – which ranges from the policies of economic protectionism to the embracing of the European Economic Community, now the European Union – is one of the influx of technologies and cultural references into a small country on the edge of the continent: Ireland as both a launching pad and testing ground for a series of aspects of designed modernity. In placing architecture within this technological and cultural flow of national and international dimensions, the pavilion sought to explore the operations and role of infrastructure in the making of modern Ireland in the ten decades between 1916 and 2016. A simple idea emerged: each decade was to be afforded a different infrastructural theme, which in turn would occupy the structural bays of the pavilion (**Figure 4**).

Pavilion as Embodied Manifesto: Theory and Form

Murray Fraser has described design research as 'a two-fold movement [where] critical practice has to form its operations around a dialectical engagement between ideas and practices [and] a very real task as a mechanism for a wider critique of architecture itself' [4, p. 220]. In pursuing the latter, the pavilion as a transitory building type occupies a privileged position within the field of architecture. Relieved of the burdens of traditional construction, it can represent a type of speeded-up architecture able to intimately and precisely respond to and convey social, political, economic or other contexts [5, p. 86]. For Barry Bergdoll, for instance, the pavilion has often been a 'trampoline for invention' [6], while for Joel Robinson it is a 'small building with big ideas ... with the ability to challenge consensual culture' [7, p. 2]. Acknowledging this potential, the *Infra-Éireann – Making Ireland Modern* pavilion was conceived as an embodied manifesto that sought to reconnect to and celebrate a lost tradition of infrastructural modernism in Ireland. In its development, the acts of design, theory, research and curating were continually overlaid – the authors of this essay had the

combined roles of designers/curators/commissioners – and these influenced not only each other but also the emergence and development of key criteria: the incorporation within the pavilion's form of some of the infrastructural qualities of its contents, the logistical conditions attached to its delivery and assembly, and an implicit theoretical reading. A framework for the latter derived from what we perceived as the particular way in which modernity had been absorbed into Ireland in the nineteenth and twentieth centuries, which we felt also had continuing resonance with the contemporary condition.

This theoretical aim was aligned to the search for an appropriate physicality for the pavilion as a type of anonymous infrastructural vernacular. The relationship between form and theory would eventually resolve

Figure 4: Infrastructures within the structural bays in the Venice Biennale pavilion (photograph by Alice Clancy).

itself into two phenomena with overlapping physical and metaphysical attributes: the grid or network, and the frame. Both the design and curatorial process here required engagement with and interpretations of a series of theoretical texts and spatial precedents ranging from reflections on modern economic systems of networked production and society; meditations upon the cultural uses of the grid in twentieth-century art; and finally, on the operative deployment of the frame in a range of built prototypes.

The absorption of modernity in twentieth-century Ireland was characterised and experienced not by heavy industrial development, the mass production of housing and the emergence of a fully-fledged Welfare State – as for example in Britain – but rather by a dispersed and decentralised modernism that was effected at different but no less pervasive scales and intensities. Outcomes included the Rural Electrification Scheme, the industrialisation of farming, and the vast horizontal harvesting of the midlands peat plains, among others. Extendable and alterable, without a particular beginning or end, the sites of architecture here were as much invisible systems as physical places in Ireland. It constituted a condition that seems to prefigure what Zygmunt Bauman later termed 'liquid modernity' – the epoch of invisible and omnipresent networks that increasingly dominate the organisation of Western societies [8]. For Bauman and others such as David Harvey and Manuel Castells, 'liquid modernity' or 'light modernity' is the latest in a series of spatial fixes that occur due to the inherent contradictions of Capitalism. In the case of the late- twentieth and early-twenty-first century, emergent networks released 'fixed' capital from its hitherto spatial restraints – the factory, the city – and 'liquefied' it so that it was able to cross territories and borders, opening up new markets, and dissolving previous impediments to profit such as high labour costs.

There are, however, many continuities between the new condition of 'liquid modernity' and its previous iterations. Drawing on Karl Marx's description of 'the annihilation of space by time', observers such as Bauman, Harvey and Paul Virilio have all defined modernity and its aftermath in temporal terms. The widespread application of just-in-time, lean production methods initiated by the Japanese car manufacturer Toyota in the 1980s was based upon a forensic reading of, and critical response to, the Fordist organisational principles of the American motor industry at the time. The scientific management of time and motion – so critical to Fordism – had already been exported from the American factory not only to companies in other Capitalist countries but also to the Soviet Union and state-run equivalents in the Eastern Bloc. Their elaboration at Toyota and elsewhere during the 1980s, however, prefigured a far more pervasive adoption that, fuelled by the development of the computer and then the internet, has been able to generate ever-more precise means of calibrating time, accelerating communications, and quantifying productivity in spheres of life as diverse as the supermarket and the university. Virilio, in his 2000 book *The Information Bomb*, suggested that the tendency towards instantaneity – 'the abolition of time intervals' – and the interlinking of networks has significant consequences:

> We are not seeing an end of history but we are seeing an end of geography. Whereas until the transport revolution of the nineteenth century the old time intervals produced an auspicious distancing between the various societies, in the age of the current transmission revolution, the ceaseless feedback of human activities is generating the invisible threat of an accident befalling this generalised activity – an accident of which the stock market might count as a symptom [9, p. 9].

As well as responding to these phenomena of networks and ideology, our decision to foreground infrastructure in the Irish Pavilion also allowed the avoidance of two clichés surrounding the production of the built environment in twentieth-century Ireland. The first of these clichés, expressed often from an external point of view, was the Irish built landscape was somehow dominated by religion, i.e. Roman Catholicism. The second cliché was about the architectural discourse within Ireland itself that tended to valorise handicrafts and object-based production, with participants often curating the past in such a way as to legitimise this position in the present. Both of these old clichés tend to ignore the fact that, by the beginning of the twenty-first century – as a result of a series of political decisions that began decades before – Ireland had turned itself into one of the most globalised countries in the world, being for instance a notable hub in the growing network of electronic communications. One of the aims of the research expressed in the Irish Pavilion for the Venice Biennale, and its subsequent iterations, was to demonstrate the historical continuities and consistencies of this globalised condition from the start of the twentieth century.

Of significance in establishing our position was an essay by Bruno Latour entitled 'Why has Critique Run out of Steam?' [10]. In this piece, Latour questions the 'auratic' significance afforded to what Martin Heidegger had defined as 'things', one-off items borne from the exercise of craft, in contrast to the ignored presence of the ubiquitous everyday 'objects' of mass-production. Latour suggested that there should be a

shift in emphasis from the crafted thing to the mass-produced object, accompanied by an attempt 'to talk about the object of science and technology, the *Gegenstand,* as if it had the rich and complicated qualities of the celebrated *Thing*'. Part of the intention of the Irish Pavilion – as well as the project's ancillary publications and events – was therefore the kind of exercise proposed by Latour, a 'gathering' of artefacts in order to rethink and revalue their significances: ideally to effect a conflation of objects and things.

A well-known painting by the Irish artist, Sean Keating, formed one of the first means through which the project engaged with the territory of infrastructure. Painted in the early 1930s, it depicted the 1920s construction of the vast hydro-electric power station that dammed the River Shannon at Ardnacrusha. The foreground is filled with allegorical figures representing both the remnants of Ireland's past – a soldier, a priest, an alcoholic – and also, inversely, the future as represented by a young family gazing toward the newly completed barrage, which is bathed in light (**Figure 5**). On one level it seems like an apotheosis of Pearse's vision through the harnessing of a great river and the realisation of a great piece of infrastructure. Also of significance was that the power station – so integral to the nascent Irish State's image of itself and so far-reaching in its consequences for its people – was designed and constructed by a German company, Siemens-Schuckert. Another reading of the dam's iconic form is provided by the painting's title, which is *Night's Candles Are Burnt Out*. As a metaphor for the awakening of Ireland from the nightmare of its colonial history, this title also bore a more prosaic but equally radical meaning: the simple switching on and off of electric lights. This new technology not only dispensed with candles but also allowed a profound altering of the daily social and working lives of the population. This aspect, however, is something that lies unseen, outside the visual frame of the painting.

Paul N. Edwards has written on the intimate connection between modernity and infrastructure:

> Infrastructures simultaneously shape and are shaped – in other words, co-construct – the condition of modernity. By linking micro, meso, and macro scales of time, space and social organisation, they form the stable foundation of modern social worlds [11, p. 186].

Simultaneously omnipresent and invisible – the term *infra* means 'beneath' – Edwards points out that infrastructure tends only to become conspicuous when it is either new or broken. Yet Keating's painting, along with the physical artefact of the power station at Ardnacrusha, gather together and express vast, unseen and unknowable systems in a single moment. From this, we interpreted the meso-infrastructural scale defined

Figure 5: Sean Keating, *Night's Candles are Burnt Out* (courtesy of Oldham Art Gallery and Museum).

by Edwards as being that of the building, the space of interface between physical human experience and the larger, invisible networks.

No Fixed Form: Grids and Modularity

Rosalind Krauss and Hannah Higgins have both discussed the inorganic nature of the two-dimensional matrix in art. For Krauss, the grid is something that is flattened, geometricized, ordered, anti-natural, anti-mimetic, and anti-real. It is a description that accords with the definition of infrastructure as consisting of entirely man-made systems, stretching out in all directions without beginning, end or centre, and largely indifferent to topographical conditions. As Krauss also writes:

> Logically speaking, the grid extends, in all directions, to infinity. Any boundaries imposed upon it by a given painting or sculpture can only be seen – according to this logic – as arbitrary. By virtue of the grid, the given work of art is presented as a mere fragment, a tiny piece arbitrarily cropped from an infinitely larger fabric [12, p. 60].

Albert Pope is another who saw the open-ended grid as a prototypical construct, one which enabled rapid and orderly urbanisation but which was progressively eroded within the late twentieth century into a series of more closed and finite forms. The first grid that we conceived of in the production of the *Infra-Éireann – Making Ireland Modern* pavilion concerned the organisation and classification of information (**Figure 6**). Taking consideration of Ireland's own history, we slightly adjusted Koolhaas's proposed century of modernity from 1914–2014 to 1916–2016. This period was then divided up roughly into ten separate decades, each of which was defined by an infrastructural episode. Each of these decades was ultimately represented by particular buildings as objects created at the meso-interface scale:

Decade	Infrastructure	Macro	Meso	Micro	Researcher
Introduction					Gary A. Boyd & John McLaughlin
1914–1924	Clearing the site - Foundation of state	Abercrombie Plan	Destruction of GPO and Sackville St.	Green postbox	Gary A. Boyd
1924–1934	Powering the State	Shannon Electrical Scheme & BNM	Ardnacrusha Siemens-Schuckert	Turf Extraction Machine	Gary Doherty
1934–1944	Health / Welfare	Primary School Network	Hospitals	Object	Ellen Rowley
1944–1954	Urban Transportation	Donnybrook Garage	Busaras Michael Scott	Green bus	Sarah Lappin & Una Walker
1954–1964	Media Communication	Athlone Transmitter	RTE Scott Tallon Walker	Wireless	Kevin Donovan
1964–1974	Aviation	Foynes Seaplane Port to Shannon	Shannon Airport	Aer Lingus logo	Anna Ryan
1974–1984	Education	RTCs Building Design Assoc	Birr Community School P+M Doyle	School Desk	Aoibheann Ni Mhearainn
1984–1994	Telecommunication	Telecom Eireann Digitsation	Athlone Exchange Noel Dowley	TE Minitel Terminal	Brian Ward
1994–2004	Roads	National Road Network	M1 Motorway	Toll Booth	Denis Linehan
2004–2014	Clouds and Data	Smart City	Data Farm	Intel Galileo Board	John McLaughlin
Coda					Gary A. Boyd & John McLaughlin

Figure 6: Original researcher content matrix.

1916–26, *Negation* (the destruction of the General Post Office, Dublin)
1927–36, *Electricity* (Ardnacrusha hydro-electric power station, County Clare)
1937–46, *Health* (Merlin Park Sanatorium, Galway)
1947–56, *Transportation* (Busáras, Dublin)
1957–66, *Television* (RTÉ Campus, Dublin)
1967–76, *Aviation* (Shannon Airport, County Clare)
1977–86, *Education* (Birr Community School, County Offaly)
1987–96, *Telecommunications* (Rosleven Telephone Exchange, Athlone)
1997–2006, *Motorways* (M1 Airport Interchange, County Dublin)
2007–16, *Data* (Dublin Data Belt, Dublin)

The final section of this first grid concerned the researchers that we had engaged to collaborate with us, and which introduced another aspect of indeterminacy. Each of them given one decade/episode to investigate, these researchers operated within the broad parameters of the matrix but were also tasked to access archives and retrieve material that was essentially unknown to us. Their assignment was hence two-fold: firstly, to find the raw visual material that would eventually become the content of the Irish Pavilion for the Venice Biennale and subsequent exhibitions; and secondly, to contextualise this material through a series of critical essays. The latter, while contributing to the evolution of the pavilions, also became an autonomous product – a book, published in 2015 after the Biennale had ended [13]. As well as defining specific buildings to represent each of the infrastructural episodes, this process of research also identified a series of Irish architects – some well-known, others less so, and still others anonymous – who had designed these contributions.

A further aesthetic interpretation of the scalar categories of micro, meso, macro was applied to the material to realise four sub-categories used in the exhibition pavilions: *filmic/image*, *territory*, *building* and *detail* (**Figure 7**). The *filmic/image* aspect generally consisted of a photograph that evoked, in an instant, the iconic and sublime qualities of the particular episode. *Territory* looked at the immediate contextual landscape of the representative projects. For example, the site plan of the tuberculosis hospital at Merlin Park was seen as important because this curative terrain was essential to the entire clinical operations of the institution (**Figure 8**). In the case of Shannon Airport, there was a drawing included that expanded upon the relationships between the drained, man-made ground beneath the runways and then the flight-paths and globalised connections of the airspace above (**Figure 9**).

The category of *building* in each case was essentially a general arrangement drawing of what we determined as the meso-scale: the built artefact. *Detail* could then refer to some specific aspect of a construction drawing – for example, the layout of the steel reinforcement bars for the reinforced concrete in the motorway interchange – or else it could capture some aspect of lived experience, like the German technician who was photographed in the 1920s working on the turbine at Ardnacrusha (**Figure 10**). With the exception of the *filmic/image* category, all of the other aspects were able to be either photographs or drawings, with the latter in turn being either archival images or new representations produced by us. There was as a result a degree of ambiguity and overlap between the images. Classification was never absolutely clear, but instead tended to be open to more than one reading, embedding the idea of scales and visual qualities that are nested and interlinked.

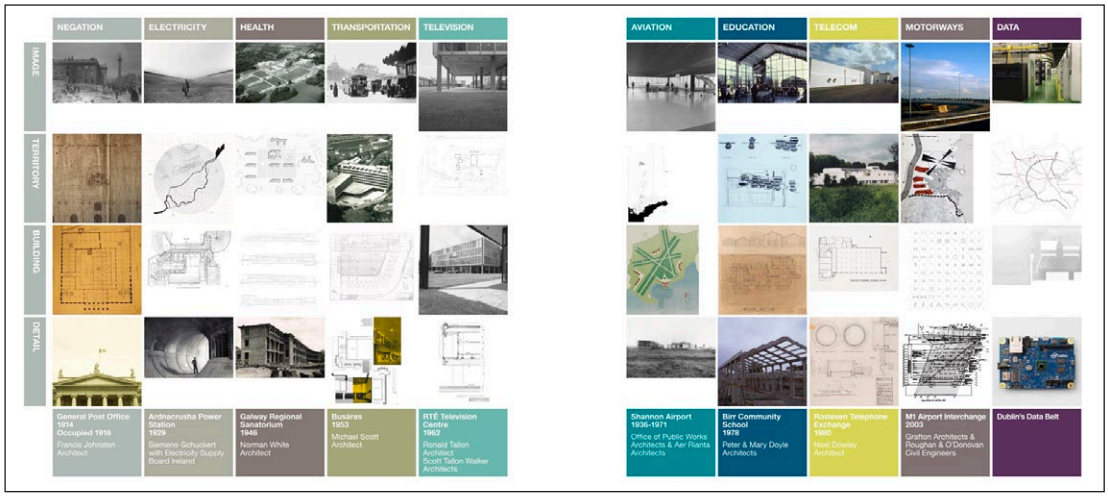

Figure 7: Contents panel for the *Making Ireland Modern* pavilion.

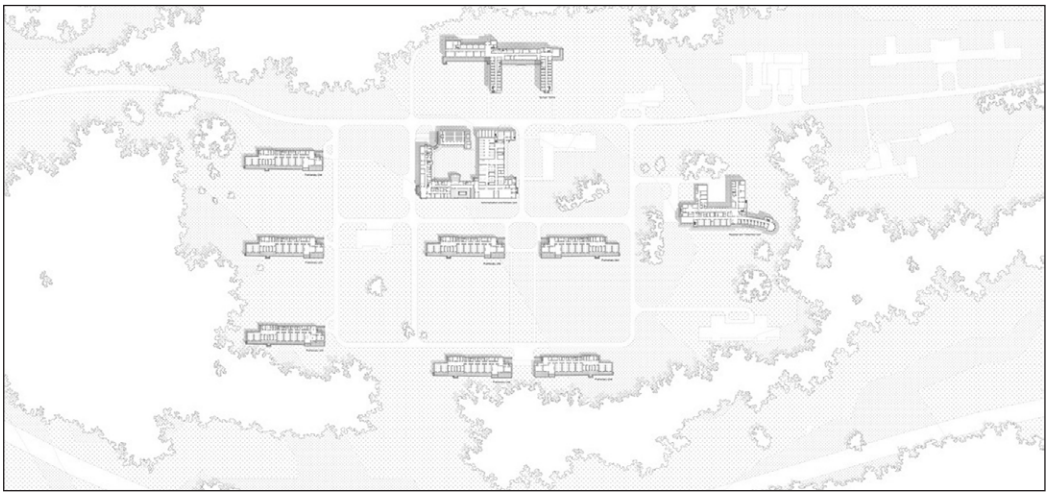

Figure 8: Merlin Park Sanatorium territory as redrawn for the 2014 Venice Biennale pavilion.

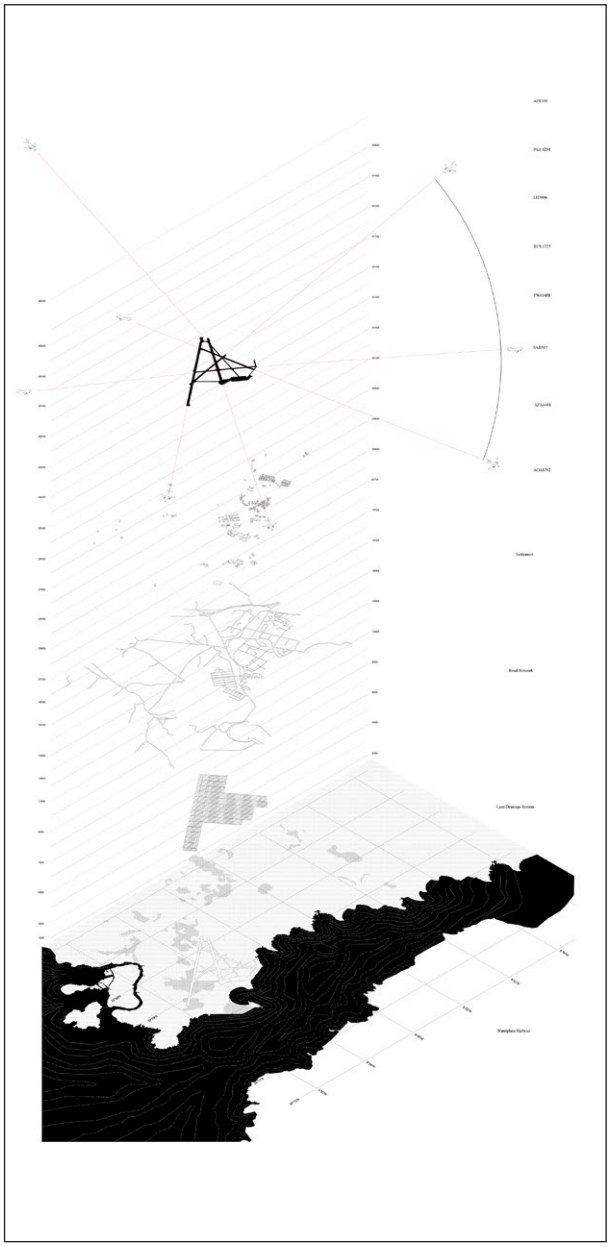

Figure 9: Axonometric of Shannon Airport as redrawn for the 2014 Venice Biennale pavilion.

Figure 10: German technician in the turbine at the Ardnacrusha hydro-electric power station (photograph courtesy of ESB Archives).

Coinciding with the retrieval and articulation of the visual material for the exhibition was the search for the best means of displaying it. Like the notion of overlapping what were in fact mutually influential infrastructures from the different decades, the design of the Venice pavilion and its subsequent iterations reacted to both its emerging contents and the method of their structuring. The first infrastructural episode was deliberately chosen as an act of negation. The attempted seizure of control over Ireland's communications system at the General Post Office in the famous 1916 Easter Uprising was an event that had both national and international dimensions. Closely connected to the conflicts of the First World War, it would also instigate the process that led to eventual realisation of an independent Ireland in 1921–22. The final episode selected for the exhibition, in contrast, dealt with the proliferation of new data-storage facilities along the orbital motorway that now encircles Dublin in the Irish capital's southern, western and northern fringes. This landscape of sheds – generated by the fiscal necessity of storing European Union data within the latter's borders, a lenient corporation tax policy within Ireland, and moderate climatic conditions that remove the need to use air-conditioning for these sheds – is now where much of the internet's 'Cloud' data now lives.

These two Irish episodes, located at either end of the twentieth century, also have significant qualities in common. Both are defined locally as a building or event, but were in actuality the consequences of far wider international conditions. But more significantly, both contain elements of another type of grid: the steel frame. For Colin Rowe writing in the 1950s, the application of the steel frame to tall buildings in Chicago in the second half of the nineteenth century set in motion nothing less than a revolution in architecture. De-materialising structure into such a precise resolution, he argued, 'became the answer not to the specific problem, office space, but to the universal problem, architecture' [14, pp 105–6]. The steel frame as an icon of modernity appeared in the General Post Office firstly, and then partially in the building's refurbishment just prior to its destruction in 1916. In its later re-building in the 1920s Irish Free State, a steel frame was used throughout to re-frame the eighteenth-century structure into a major piece of twentieth-century infrastructure. In the early-twenty-first century, the rapid growth of the internet is demanding a fast and flexible response from the spaces that contain it (**Figure 11**). The dramatic expansion of Microsoft's Dublin data storage operations between 2009 and 2014, growing from 30,000 to 54,255 square metres, was only achieved through the application of a modular, steel-framed, anticipatory architecture capable of responding to future requirements.

Figure 11: Interior of a typical data centre (photograph courtesy of Colt Industries).

Figure 12: Tallon House, Dublin (photograph courtesy of Scott Tallon Walker Architects).

In its efficient reduction of mass to a series of points and lines, and its potential for flexibility – plus, in its unadorned state, its unending nature as a neutral, expendable and alterable grid – the architectural frame can be seen as the physical continuation of the invisible systems and networks that govern the production and reproduction of infrastructure generally. In this, the steel-framed shed represents a type of systematic architectural vernacular that operates among the flows of information. Our early discussions about the design of the Irish Pavilion centred upon international examples of framed houses and exhibition spaces, including Frederick Kiesler's *City of Space* (1925), Eduardo Persico and Marcello Nizzoli's *Medaglio d'Oro* (1934), Ludwig Mies van der Rohe's *50 × 50 house* (1951), Paul Rudolph's *Walker Guest House* (1952), and, more locally, Ronnie Tallon's own 1969 house in Dublin (1969) (**Figure 12**). These noted precedents presented a dematerialised architecture through a series of Modernist motifs: the precision of the frame and of the space allowed to flow freely through it; a series of diminishing thresholds; detachment from the ground underneath; and, often, the rendering of the actual structure in white. All of these shifted perceptions from ideas of locality, authenticity and the expressive quality of materials to ones of disconnected and abstract placeless-ness. All likewise became integral to the design of our pavilion (**Figure 13**).

Another aspect of the design concerned the qualities of modularity found within both international precedents and certain buildings included as part of our exhibition. The endlessness of infrastructural networks had for us a resonance in the artist Sol Le Witt's *Incomplete Open Cubes* (1974), which then generated further discussion on adaptive and flexible systems. Related to this point, Le Corbusier and Jean Prouvé's Heidi Weber Museum (1960) in Zürich offered an example of a volume that was articulated by a square modular frame whose components defined the interior space as well as its edges. Also of further significance was the Birr Community School by Peter and Mary Doyle, which we had chosen for the episode on *Education* infrastructure. Constructed in the 1970s, the school used a generic, concrete portal frame that was common in the design of factories. The frame was hence cheap, enabling economies in the cost of materials to be transferred to improving the spaces within the building. Altering in sectional height, and stepping across itself in plan, the manipulation of the frame created a variety of rooms surrounding a generous social 'street'. The architects described this medium-sized project simply as an iteration of larger or smaller versions in a system of non-specific architectures. For the Doyles, it was therefore 'important, philosophically, that you could take away parts of that structure as well as add to it. Ideally, there is no fixed form' [15, p. 14] (**Figure 14**).

The television building designed by Ronnie Tallon of Scott Tallon Walker for the Irish national broadcasters, RTÉ, was another notable influence. Outwardly, the appearance of this building – as well as the rest of the complex in the Donnybrook suburb of Dublin – owes much to the American architecture of Mies van der Rohe. But in contrast to Mies's compositions, Tallon's television centre is an anticipatory architectural complex also influenced by Max Bill's meditations on the flexibility and additive properties of the square. Designed before anyone really knew what television was going to be, the entire campus, including all the buildings, was configured according to a 20-foot (6-metre) square module to allow future additions and adaptations (**Figure 15**). The main building itself – whose façade was realised as a dry, demountable system – has since been extended twice since its original construction. Nobody can see where the join is.

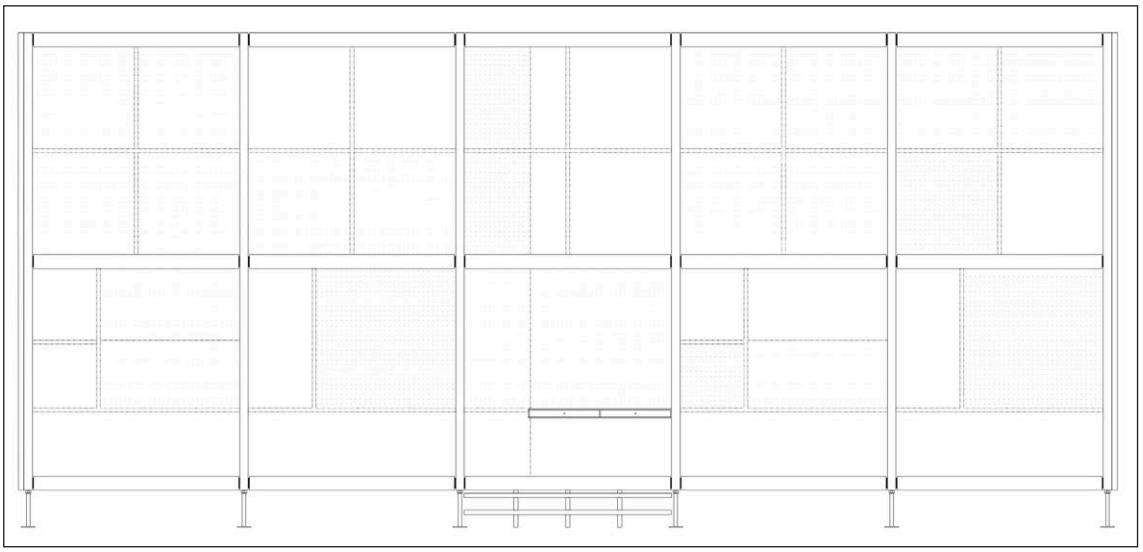

Figure 13: Elevational drawing of the *Infra-Éireann* pavilion.

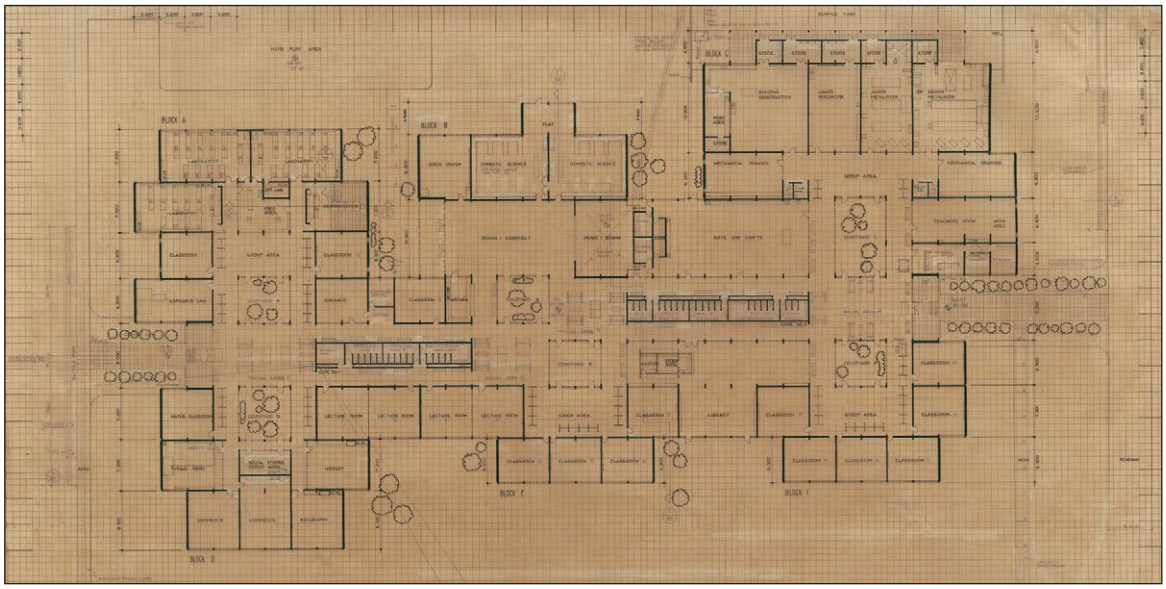

Figure 14: Plan of Birr Community School by Peter and Mary Doyle (drawing courtesy of Irish Architectural Archive).

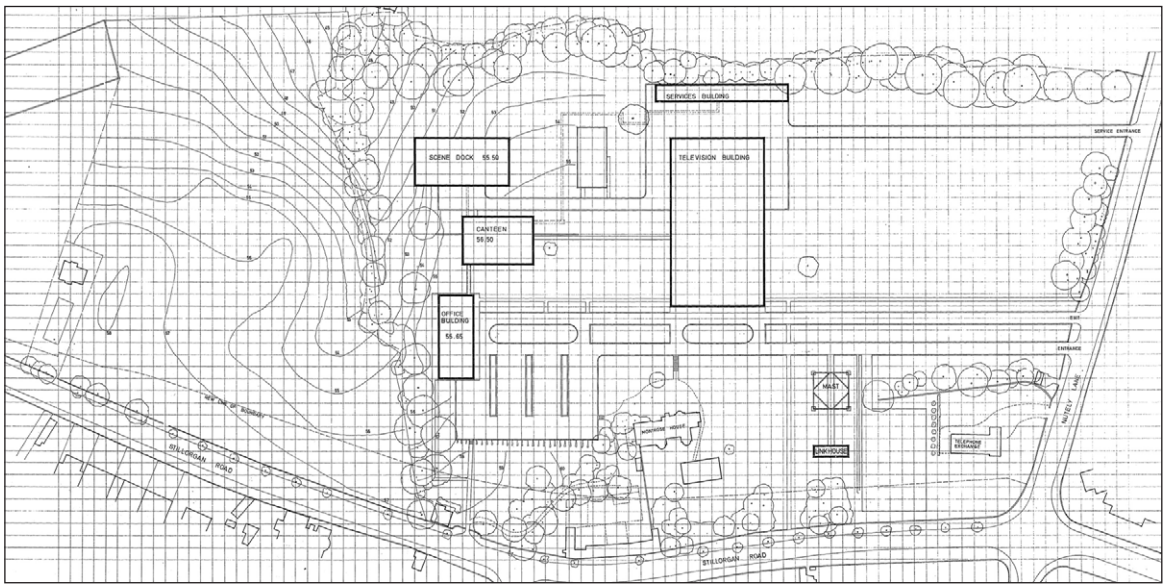

Figure 15: Ronnie Tallon's layout for the RTÉ complex, Dublin (drawing courtesy of Scott Tallon Walker Architects).

Logistics

While our pavilion was originally designed around the spatial constraints of the *artigliere* section in the imposing Venice Arsenale, from the very beginning the pavilion was conceived – just like RTÉ and the Birr Community School – as an iteration whose form was inherently temporary and contingent. This was simultaneously a conceptual and logistical concern. Travelling to Venice involved both temporal and spatial constraints. Set-up time was extremely limited and the entire pavilion, all its contents and the tools and devices for its erection all had to fit within a single shipping container (except for one model, of Dublin's Busáras by Michael Scott and Associates, which was finished too late and so had be to transported with us as baggage on a popular low-cost airline even though it weighed more than the permitted limit for a single item). Moreover, after the Venice Biennale, the pavilion was going to have to return to Ireland for a subsequent tour based upon another set of criteria, which would only emerge later. In fact, the pavilion for Venice took the form of a ten-bay structure that was arranged as two-by-five bays in plan, with each of the bays consisting of a double cubic volume that measured precisely 2339 mm × 4678 mm. For its redesign for the subsequent Irish tour, the pavilion design was expanded to a fifteen-bay structure that was arranged as three-by-five

bays in plan. Responding also to a very different audience – Irish, national and mainstream, rather than the international and architecturally aware crowd in Venice – the five additional bays incorporated a series of talismanic yet mass-produced *objects*, along the lines suggested by Latour, which were connected to the various infrastructures (**Figure 16**). Hence there was a field telephone from Ardnacrusha, a tissue incinerator from Merlin Park, the clock from Birr Community School, a motorway sign from the M1, and so on. Between the 2014 Venice Biennale and the reshaped exhibition in Ireland in 2016, the pavilion had, fittingly, rested within an anonymous warehouse just off Dublin's M50 ring road. For the Irish tour it occupied a university building in Galway, a former church (converted into an arts venue) in Cork, and the nineteenth-century Real Tennis Court in Dublin. The differences in these spaces resulted in an alteration of the entrance sequence for the various venues. For each, the set-up time was a week or less.

Our pavilion's frame was made of laminated timber, prefabricated and painted white in a workshop in Dublin. All aspects of the pavilion, including its contents, were flat-packed like a piece of IKEA furniture to fit within a shipping container (**Figure 17**). Sub-divisions of the square structural frames, whether vertical or in the roof, were ordered according to the proportions set out by Le Corbusier in *Le Modulor* and deployed in the Heidi Weber Museum (**Figure 18**). Each bay contained an infrastructural episode whose contents were either fixed between the vertical columns or else hung from the roof. Nothing except the pavilion's own structure touched the floor. The issue of repeated, serial demounting was solved by the deployment of a reusable structural connector: the Sherpa fixing device (**Figure 19**). This not only meant that the pavilion could be easily disassembled and re-erected but also – combined with its modularity – allowed for its transformation in subsequent iterations into other configurations. This degree of flexibility was enhanced by the raising up of the pavilion's floor to detach it from the ground underneath. In the Venice Arsenale, this responded directly to the threat of flooding, but in general – like the prototypical Modernist villa – it allowed a distancing away from and an implied indifference to the immediate local conditions. The steel scaffold-feet foundations for the pavilion were as lightweight, flexible and as mobile as its other elements, emphasising its condition as an assembly rather than a singular object. Further adaptations to the substructure were required in the Real Tennis Court in Dublin, where the presence of a suspended limestone floor necessitated the spreading of the pavilion's load across a series of additional horizontal members.

Conclusion: Inside the Frame

In his book, *Inside the White Cube* (1976), the artist and author Brian O'Doherty offered a critique of the rarefied space of the art gallery [16]. The 'white cube', he argues, is not a neutral container but instead represents an ideological construct that innately posits a disconnection between the artworks it presents inside, and

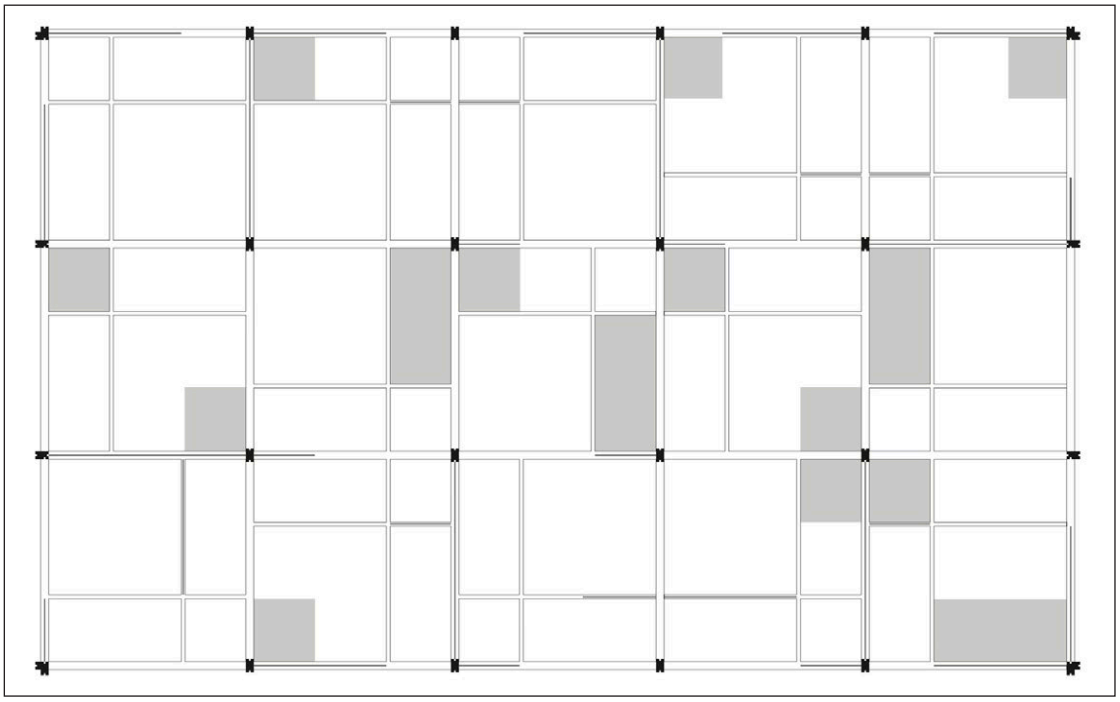

Figure 16: Plan drawing of the *Making Ireland Modern* pavilion showing the generic position of objects.

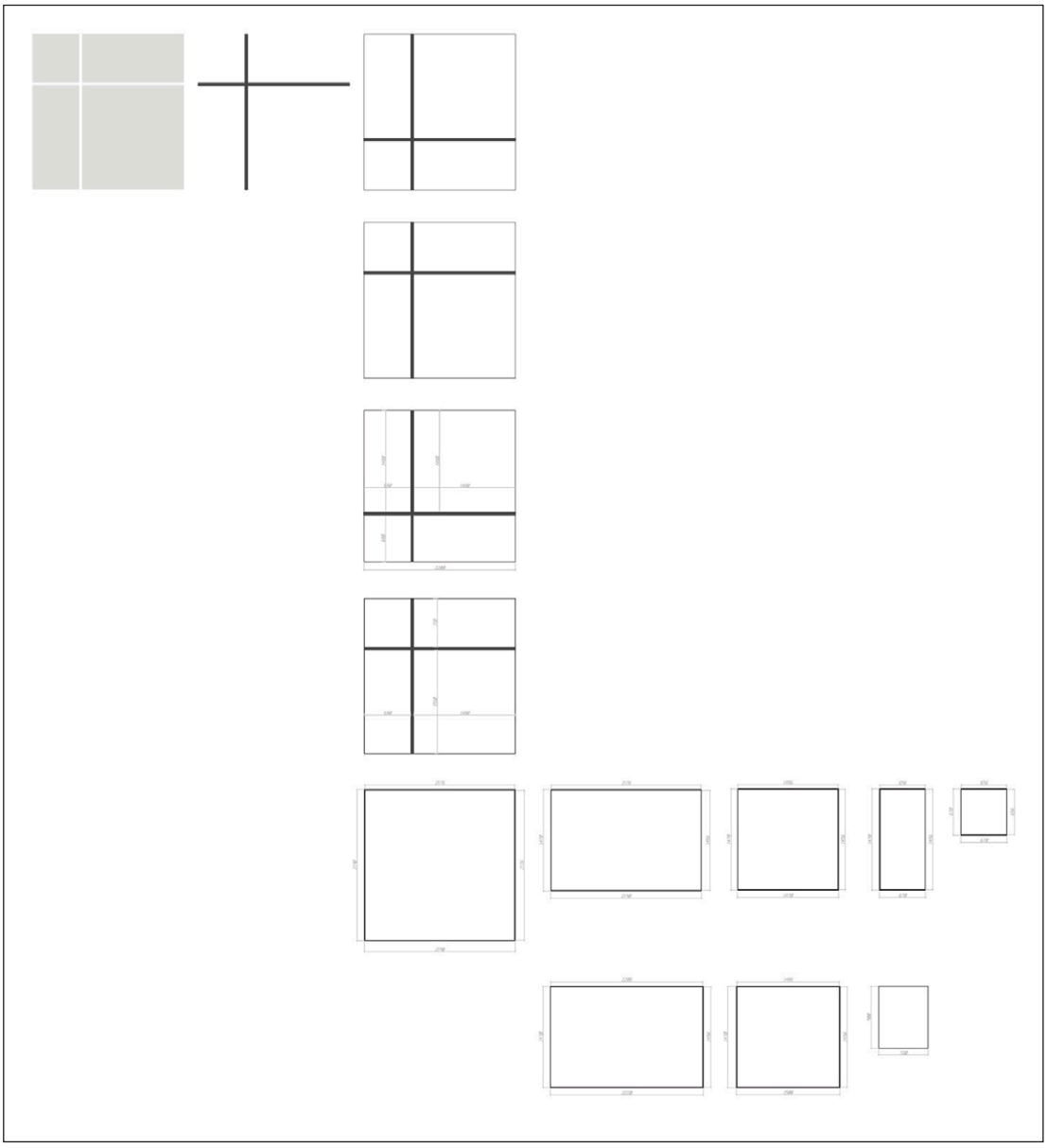

Figure 17: Drawing of the modular components for the *Making Ireland Modern* pavilion.

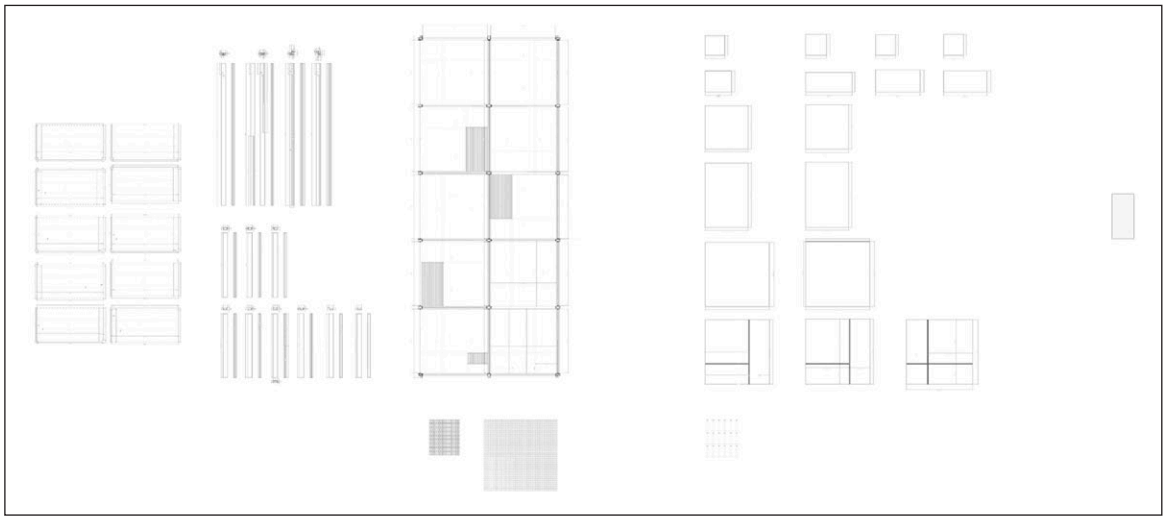

Figure 18: Drawing of the original *Infra-Éireann* pavilion as unpacked.

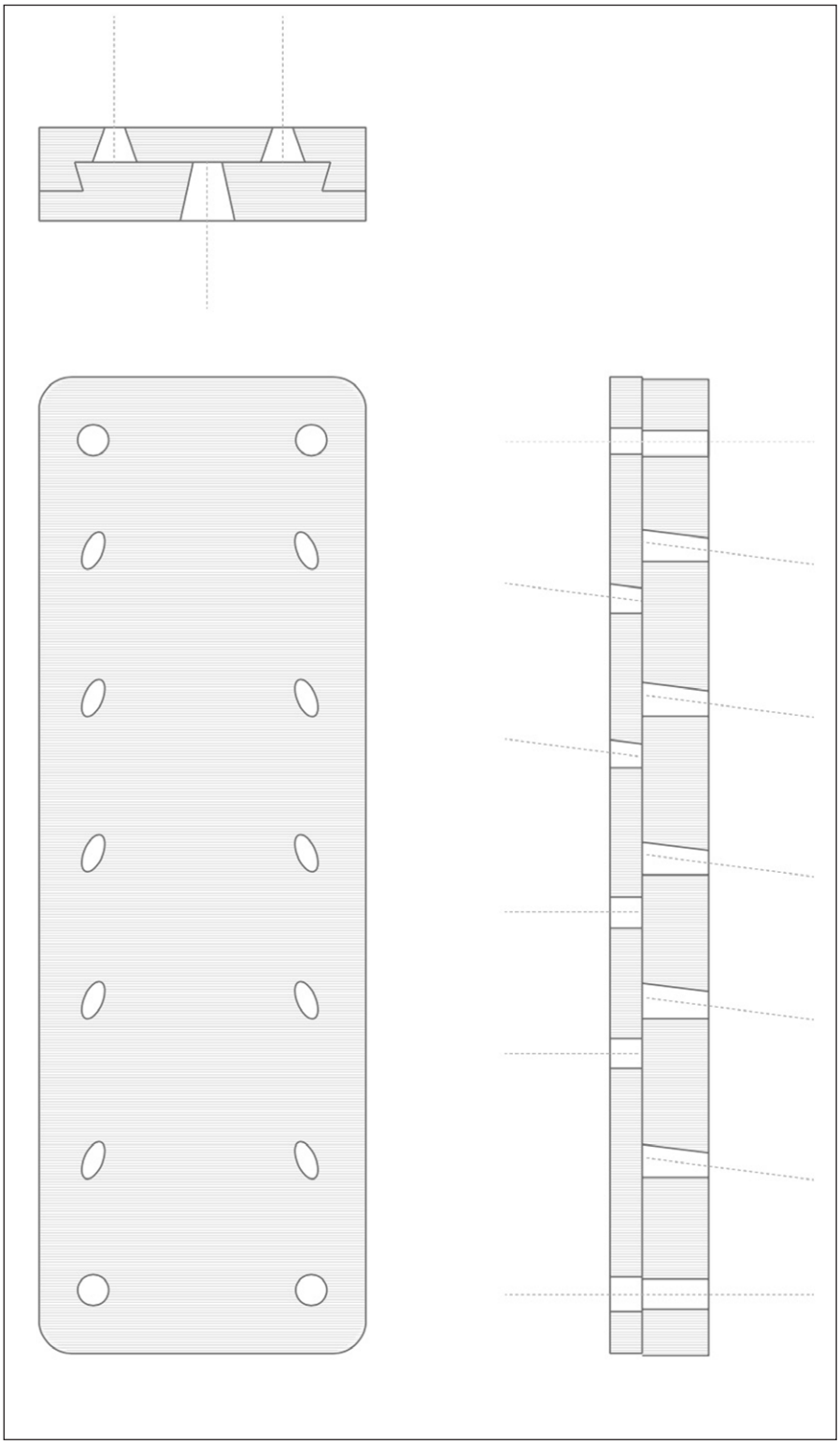

Figure 19: Drawing of a Sherpa fixing s20, hwd 110 × 40 × 12 mm, screws 25pcs fully threaded, load-bearing capacity 20 kN.

their social and political context outside [17]. Rem Koolhaas and others have suggested a similar disconnection between the contemporary socio-economic condition – defined by the likes of Zygmunt Bauman as 'liquid modernity' or by Manuel Castells as the 'space of flows' – and an architectural culture that tends to valorise the autonomous '*Thing*', a disconnected artefact which is somehow free from these wider phenomena, and which is only realised through the creative instinct and tacit judgement of its author, the architect. This has often entailed a laudatory attitude to the qualities of specific, local contexts – the vagaries of place – and

their attendant histories. While participating in the global flows of capital and information – including the deployment of advanced information technology and the supply of cheap labour – architecture has often simultaneously defaulted to discourses that focus instead upon materiality, meaning and tradition, and the ways in which these are embedded within the design of the single, bespoke building. Architecture is thus conceived as an isolated work of art somehow free from commodification and social production, an architecture excluded from the trans-territorial absorption of modernity that exercised Koolhaas in his conception of the 2014 Venice Biennale.

Writers such as Stan Allen have criticised the shift from a Modernist architecture of transparency and depth to one of representation where meaning resides on the surface. Instead, Allen proposes practices that are 'less concerned with what things look like and more concerned with what they do' [18, p. 53]. Other current practitioners and theorists such as James Corner and Charles Waldheim share this call for a wider kind of practice capable of operating across a range of scales and complex conditions, whose output might be the definition of fields of relationships as well as, or instead of, the production of buildings. The suggestion here is the reclamation not only of territories previously lost to architecture but also of a key Modernist ideal: architecture as an instrument capable of transforming the human condition rather than merely expressing it. In *Weak and Diffuse Modernity*, Andrea Branzi calls for 'reversible, evolving, provisionary forms … architecture that is less composite and more enzymatic, [and that] surpasses the limits of building as a structural and typological concentration … becoming an open system of environmental componential work' [19, p. 10]. This vision begins to provide the means for architecture to slip beyond its institutional and disciplinary boundaries to creatively engage with the larger questions – regarding urbanism, the provision of food, the disposition of energy and other resources and services – that exercise a highly networked contemporary existence. For Branzi, however, it is not the first time that architecture has been compelled to go 'beyond architecture'. Infrastructural architectures, operating across networks, and between public and private spheres, offer one such example from earlier times, as our pavilion showed. Here, it is clear that architecture exists both within and beyond the artefact.

The polemic embedded within the form, structure and organisation of the *Infra-Éireann – Making Ireland Modern* pavilion is hence an attempt to make apparent the historical connections between aspects of Irish

Figure 20: The *Making Ireland Modern* pavilion in 2016 at the Real Tennis Court venue in Dublin (photograph by Ros Kavanagh).

architecture and some of the conditions of its own production. Twentieth- and twenty-first-century Ireland contains an infrastructural past and present that is simultaneously cultural and technological as well as economic and political. Within this are sited responsive, adaptive, anticipatory architectures that invoke both the physicality of buildings and the opportunities and consequences of complex and ephemeral landscapes. Like Brian O'Doherty's observations on the condition of the 'white cube' gallery, these Modernist architectures themselves provide a critique of the conception of architecture as a collection of neutral, autonomous, reactionary objects. Collectively, in their negotiation of system, network and form across public and private realms, they also represent a means of reconsidering architecture's continuing relevancy in Ireland, and beyond. Simultaneously acting as a *cadre* (frame) and *agencement* (framework), our pavilion embodied a structured space imagined as essentially provisional and – as with infrastructure – as having no fixed form. As an armature that attempted to both hold and present material *and* a way of seeing, it sought to express the flow of connections between its own contents, structure and construction, and the series of conditions that have shaped modernity both in Ireland and elsewhere (**Figure 20**). Presenting content chronologically, the flow of space allowed by the frame sought to collapse episodes over time to convey the nested and symbiotic nature of infrastructural production. Finally, as an analogue of infrastructure itself, the exhibition's termination in the present-day – initially 2014, then 2016 – was designed to provoke a perceptual extension of the frame towards a digital future in which the interconnectedness of architecture and invisible networks is set to intensify exponentially.[1]

Competing Interests

The authors have no competing interests to declare.

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[1] The production team for Infra-Éireann/Making Ireland Modern production team consisted of Irene Brophy, Cathal Curtin, Tara Kennedy, Aoibheánn Ni Mhearaín and Tomás Prendeville. Additional drawings were made by Naomi Sheehan.

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