

Let's begin with an imaginative exercise. What if we were to put together a speculative taxonomy of drawings made by architects to tell stories about their projects? This might include evocative drawings educing qualities of various inhabited and imagined worlds, mappings that speak of social, cultural and contextual characteristics of architecture, and composite *analytiques* assembling forms and details at different scales. I suspect that the intellectual genealogy of such drawings would largely pre-date modern architecture or sit outside its canons, rooted in traditions of creative practice that are regularly imagined to valorise individual genius over modern technical productivity. Nevertheless, there might be a few examples from architectural modernism to include: Lubetkin and Tecton's inventories of functional objects, for example¹; or James Stirling's 'worm's-eye' axonometrics, projected upwards as if seen from below.²

The genealogy of axonometry is unusual in the history of architectural drawing. Because it is most familiar from the depiction of machines and assemblies, it is typically assumed to belong with the rationalising, systematising and technologising impulses of modernity, and many assume that its storytelling capacity thus remains limited.³ Its connections with modernity link it to an intellectual history that connects J.N.L. Durand's early-19th-century systematic geometric categorisations of plan form,⁴ and historian August Choisy's late-19th-century studies of structure,⁵ with early modernism's mid-20th-century functionalist emphasis on the plan as the generator of form.⁶

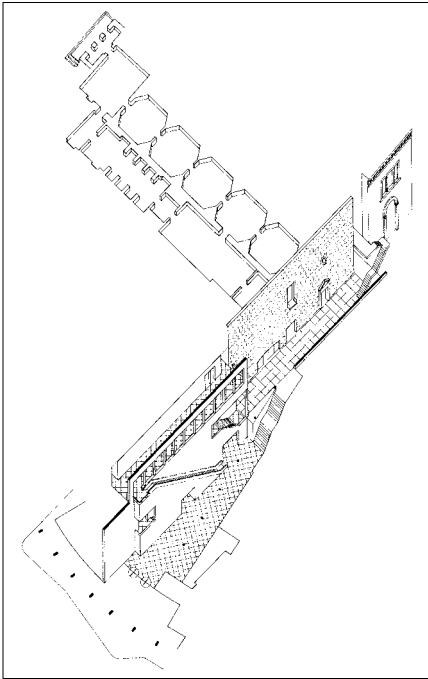
I will explore here the storytelling potential of what I call 'selective axonometrics', focusing on two drawings produced by British-based practice Dixon Jones Architects during the 1990s. Dixon Jones, who were best known for projects including extensions to London's Royal Opera House (1996–99) and National Portrait Gallery (1994–2000), imagined themselves more articulate in drawing than in speaking or writing.⁷ The first drawing we will consider was made for an unrealised competition entry to extend the National Gallery of Ireland in Dublin. The second was for a project that was built, a new Study Centre for Darwin College in Cambridge, UK.⁸ Edward Jones had been employed by James Stirling, whose work remained a key influence upon Dixon Jones's office, and their use of axonometry can be seen as an extension of Stirling's practices and ideas.⁹

The storytelling potential of these two drawings stems not from what the drawings show but what they omit. They go further than Stirling's axonometry to selectively combine aspects of plan, volume, internal

elevation, *parti*, material finish and furniture. These are partial representations, offering only glimpses of the overall form and internal volume of the projects, while dealing primarily with architectural characteristics and qualities. In what follows, we will examine these drawings in detail before situating them in a broader cultural landscape. Beginning with a close reading of the two drawings that engages with architectural experiences, theories and histories, I interpret them as emerging from a distinctive post-war British culture of architectural axonometry, one in which the work of James Stirling figures large. The point of this approach is to seek architectural and cultural insights from the drawings themselves.¹⁰ The article concludes with a reflection on the storytelling capacity of selective axonometrics.

Selective axonometric 1: extension to the National Gallery of Ireland

The first selective axonometric (Fig.1) was drawn in 1996. It describes a proposal to extend the National Gallery of Ireland in Dublin, for which a competition was held, subsequently won by Benson + Forsyth. The drawing, later published by Dixon Jones Architects in their first monograph,¹¹ is highly discerning about what it includes. Much more of the design is left out than is shown. It is not immediately clear where the division between inside or outside lies, or what is front and what is back.



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The drawing is barely concerned with the gallery and archive areas, which comprise the greater part of the project's architectural accommodation, and it similarly omits office, service and ancillary spaces. It also seems relatively uninterested in the functional effectiveness of the spaces shown, which was likely to have been a priority of the client's competition brief. It does not address the assembly of parts, the operations of construction on-site, or light, heat and acoustics. Instead, the drawing emphasises public routes, and the qualities, volumes and surfaces of those routes, by stripping everything else away.

The eye is drawn into the image by its representation of material textures. Most prominent are the contrasting geometries of an orthogonal and a diagonal grid indicating distinct floors, and a stretcher-bond patterned wall. The textures focus the reader's eye on certain surfaces. It is clear that these are graphic devices rather than representations of real materials – the grids are too big to depict regular paver, flagstone, brick or block dimensions. But the textures nevertheless recall reassuringly weighty and gracious finishes, most probably stone and brick. They indicate a material palette appropriate to dignify a significant public building.

The drawing accentuates foyer and circulation spaces, highlighting their prospective drama. This evokes the modern, cinematic idea of the *promenade architecturale* – discussed most famously in Le Corbusier's 1923 book *Vers une architecture* – extending 19th-century theories such as those of August Schmarsow, according to which architectural space is primarily appreciated through movement.¹² Le Corbusier's early houses, notably Maison La Roche Jeanneret (1925) and Villa Savoye (1927), can be understood as studies in promenade, where ramps and stairs stage glances and glimpses to unfold a sequence of spaces.¹³ Alongside the drawing's expression of material, its overall composition emphasises the flow of space as experienced by the visitor.

Although there remains an assurance of architectural mass in the drawing, the walls shown are depicted as thin planes. Where these are significant new or existing surfaces, they are drawn with a thickness that likely accords with their real dimension. In comparison with the adjacent oversized grids that hint at material texture, they consequently appear rather slender. In addition, a few walls of seemingly lesser significance,

which are perhaps included largely for the sake of the composition of the drawing, are rendered as pure planes, delineated by just the thickness of a line. The slenderness of all these surfaces – whether apparently materialised with a thickness or reduced to a line weight – locates the architecture squarely in the conventions of an architectural modernism that preferred the visual language of thin, apparently suspended planes over the weightiness of masonry construction. Just as Dixon Jones's axonometric drawing assures us of dignified materials by slight representational means, its planar composition pledges adherence to modern tenets of form and construction.

Alongside its material textures, the drawing renders certain architectural elements in detail: three flights of stairs; an escalator; a handful of door and window openings; and a fragment of a neo-classical elevation. Detail accords these an importance in the image equivalent to that of the textured material surfaces. The selection and placement of these architectural elements suggest the composition of orchestrated views from one space to another. Together with the drawing's material textures, they demonstrate not only the idea of promenade, but also how that promenade is choreographed through spatial sequences of compression and release and the alignment of axes and views. In combination, the elements and textures chosen illustrate how the public would experience a series of spaces moving from street entrances towards the galleries and works on show.

The image does not indicate human figures. Most architectural drawings ask us, as readers, to project ourselves into their prospective worlds whether figures are depicted or not. The composition of this drawing seems to compel us to situate ourselves within the spaces of the project, by showing enough to apprehend the corporeal scale of the spaces while nevertheless only hinting at the full extent of their volume. We are invited to imagine the experience of climbing the stairs, riding the escalator, glancing down from the eyrie-like upper gallery, or looking up into the tall entrance space. Although the drawing contrives an elevated 'bird's-eye' view that no one could ever experience, it has little to say about light, shadow or sound, and remains largely abstract. Nevertheless, it manages to evoke human experience by giving just enough prompts to allow its viewers to imagine themselves roving around within a series of lofty architectural volumes.

In a drawing where almost everything is omitted, it is important to pay attention to those parts of the drawing which are accorded less significance, but which nevertheless remain included. While the most highly worked parts are articulated by texture and detail, and the planar composition of primary elements, other aspects of the design are indicated only in plan. The proposed entrance at the bottom of the drawing, for example, is shown only as a plan outline. A string of marks indicating column bases and a single boundary line describing the extent of the ground floor hint at an oversailing canopy, the geometry of which is reminiscent of the distinctive entry covering of Aino and Alvar Aalto's Villa Mairea in Noormarkku, Finland.¹⁴ The twin revolving doors, drawn only in plan, align with the edge of the floor texture within, suggesting the threshold between the street and the interior. The historic entrance portico of Dublin's existing National Gallery, which is shown at the top of the drawing, is recognisable from its plan form, with steps indicated beneath, hinting at the façade's tripartite neo-classical composition. Beyond that portico, the plan of the existing galleries is extruded downwards in a projection of depth. This graphic device differentiates the established gallery from the newly proposed spaces. The historic rooms are shown as if they were a kind of archaeological dig, excavated from the ground below. The drawing thus presents the existing rooms as an older layer of architectural history, pre-dating a contemporary one yet to be added.

The drawing operates by establishing a graphic hierarchy between its elements, gathering them together in relation to the imagined totality of the proposed architecture that the image selectively omits. It is worth thinking about how that hierarchy is established. The drawing suggests a conceptual assembly for the design that is distinct from its probable material construction. The basis of the drawing is, firstly, the proposed plan, to the extent that it is indicated here, represented in part as a single line. Secondly, the existing historic gallery spaces – which remain subsidiary to the emphases of the drawing – are shown in outline, subtly asserted by the idea of archaeological depth. Next comes a set of largely unadorned surfaces (like the wall that the escalator climbs, and another behind the upper eyrie), which establish the overall planar composition of the architectural assembly. Finally, articulated as the most prominent and eye-catching parts of the drawing, are the key textured surfaces and detailed architectural elements. These engage the viewer's primary attention, establishing the message of the drawing. By emphasising particular characteristics of the architecture and effacing the rest, the drawing elucidates the so-called *parti* of the project: the organisational diagram imagined by the architects as a device for organising strategic and detailed aspects of the design.

The drawing thus employs omission to tell a story about the organisation of the design and its values. But what story does it tell? Beyond the immediate disposition of key areas, the message, it seems, is that galleries ought to be open, accessible civic spaces. Institutions like this should not seem like stuffy organisations hidden away up steep steps behind an imposing façade. The drawing counters such ideas of the gallery, where art and culture remain rarefied and people might easily imagine that they do not belong. Instead, the National Gallery is re-presented here as a refreshed institution, one that signifies it is open to everyone and a part of the civic realm beyond. Indeed, this idea of gallery as civic space has potential to serve as a wider symbol of liberal democratic virtue. Art can be public as well as private property, available to everyone, where cultural education is supported as a public good. The design strives for an appropriate architectural register that taps established codes of urban public space, while simultaneously elevating those familiar codes and dignifying them with good materials and fine detailing. A gallery, the drawing suggests, has potential to be both eminent – subtly distinct from the world around, recognising the cultural significance of the artefacts it shows – and widely accessible, somewhere everyone can imagine themselves belonging. This idea of the gallery is more familiar now than it was when the drawing was made, at a time when older notions of the recondite status of cultural institutions remained widespread.

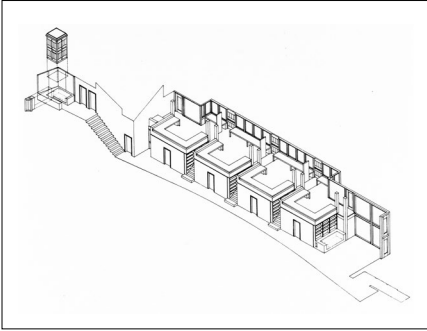
Alongside this wider story, a second is suggested by the architects, one intended to give assurance that they could be appointed to the project with confidence. The careful articulation of the drawing – its highly controlled representational limits, its hierarchies of emphasis and subtle codings, its material and architectural references, and its cultural refinement – assert how its authors are capable of designing thoughtful institutional spaces. The drawing hints that they bring reserves of cultural capital appropriate for a prominent national commission.

While the drawing is no comprehensive depiction of a proposed architecture, it is – through its selectivity – remarkably effective at explaining the public ambitions of the design.¹⁵

Selective axonometric 2: library for Darwin College

The second image we will explore (Fig.2) is another parallel projection. Published in the same Dixon Jones monograph, it was made slightly earlier

than the National Gallery of Ireland drawing, in 1994, to describe what became a realised design for a new library, the Study Centre at Darwin College, Cambridge University, UK.¹⁶



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This drawing again employs the device of omission, sharing various characteristics with the previous example. Similarly, distinctions between front and back, and inside and outside, are not immediately clear. The drawing establishes key architectural organisational devices and the project's guiding values. Most architectural fabric has been cut away, with more of the design left out than is shown. Comparable graphic hierarchies are at work, and the drawing likewise suggests a conceptual assembly of the architecture. The implied outer extent of the plan once more provides the foundation for the drawing, partly represented here as a single line. Choices are made about what to show and what to omit, with a group of surfaces – in modernistic planar composition – projected up from the base, some drawn only as thick as the line that delineates them. On to this base are added a set of highly articulated surfaces, and detailed architectural elements, which first engage the viewer's attention.

Compared to the drawing for the National Gallery of Ireland extension, the boundaries of the design's interior are shown more completely. While movement through a choreographed sequence of spaces is clearly important, the celebration of route is less significant and entrances are initially hard to discern. Where the Dublin drawing conveys a dynamic feeling deriving from entrance and promenade, this seems more static, emphasising an inhabited perimeter that promises instead a place to dwell.

In this case, the most articulated parts of the drawing comprise bookshelves, readers' benches, and an enclosing screen of windows. This asserts the project's function – for studying and the keeping of books. It is also seemingly a reminder of Louis I. Kahn's gnomonic description of an ideal library, with which the authors of the drawing were probably familiar: 'A man [*sic*] with a book goes to the light. A library begins that way.'¹⁷ Kahn coined this aphorism while working on designs for a library for Phillips Exeter Academy, New Hampshire, USA, completed in 1972. That building has a square plan with chamfered corners, in which stacked floorplates are edged with perimeter readers' carrels in timber, with – towards the building's centre – lines of bookstacks laid out around a lofty void.¹⁸ The carrels are individual, each having a small window that opens towards the campus beyond. Larger windows, placed above the run of carrels, serve to light the stacks behind. Light and view are thus carefully articulated together. Kahn sought to imbue the idea of the library with personal and cultural significance, offering this organisational template as a kind of archetype. His aphorism encapsulates what he imagined as a replicable *parti* – an internalised realm of bookstacks located near, but separate from, artfully lit contemplative places where individual readers can concentrate, whose windows may offer a view beyond, all defined by carefully wrought material and environmental conditions.

The Dixon Jones drawing recalls Kahn's template for an ideal library. It emphasises fitted furniture which, here, is drawn out in detail. The graphic texture is not provided by applied grids like the Dublin drawing, but instead by delineating every bookshelf and step. The resulting pattern of shelving thus indicates how the design divides the primary volume of the project into four bays, organised by staircases linking a radiused lower corridor with an upper reading platform whose rhythm is set by a group of rooms at the lower level (that contains rare and precious books). The upper platform – which readers can take their books to – is defined by a perimeter bench from where readers can look outwards or inwards. Further spaces are similarly defined by furniture elements. This building, the drawing suggests, is imagined as if it were one inhabitable piece of furniture.

The window screen that forms the background of the drawing is depicted with an insistent but varied modulation. While the rhythm isn't immediately straightforward to discern, this – like the Exeter Library – indicates that the design has an underlying geometric order. Indeed, the detailed articulation of the window screen becomes a dominant element in the drawing. It emphasises the outward focus of the readers' spaces at the upper edge of the library, in contrast with the introversion of the lower corridor.

Materiality is implied rather than depicted here. The dimensions of bookstacks and window frames, and the line of columns at the top of the stairs, suggest the material logic of timber. The articulation of the joinery – particularly the solid shutters interspersed between window benches – again recalls Louis Kahn, in this case the Margaret Esherick House of 1961.¹⁹ Kahn discussed how certain windows of that house separate out functions of light and ventilation into a pattern of fixed glazed windows and opening solid shutters, all constructed in oak with shadow-gap panel detailing. The same separation of light and air, and similar timber detailing, recurs in the perimeter window screen in the Dixon Jones drawing. It emphasises that, although contemporary libraries have typically become sealed air-conditioned spaces, this is a passively lit and ventilated space in which environmental conditions have been carefully considered. Furthermore, at the top left of the image, projected upwards using dotted lines, is a cuboid lantern. Careful inspection shows that this is not primarily for admitting light and instead comprises further Kahn-like solid timber shutters that open to provide passive stack ventilation. The emphasis placed on this element further reinforces the project's environmental ambitions.

The Cambridge project is smaller than the Dublin competition entry. Its architecture is more internalised, more focused and more static. The design similarly encodes knowing references to modern architectural sources. Spaces are once more depicted around axis, route and view, with reassuringly familiar materials. The drawing shows the private realm of a rarefied college rather than public space but the architecture nevertheless has civic ambitions. Like the Dublin project, the Darwin College Study Centre drawing tells a story about society configured in architectural form, albeit a different kind of society. Individual spaces are clustered for concentrated study within a limited community, forming a closed society of people working alone, together. Focusing on relationships between reader and reader, and between reader and book, the drawing depicts a place of shared cultural endeavour. Dignified by light and view, familiar materials, and a well-tempered environment, knowledge – as reading – is imagined here as a public good that is worth honouring and protecting.

My reading of these two drawings focuses on how they tell stories. Both trade in omission by leaving out what seems secondary so they can recount how each project is organised and what its core values are imagined to be. Both account for a particular architectural register by selectively combining plan, volume, internal elevation, *parti*, material, detail, furniture, route and implied inhabitation. In doing this, both simultaneously articulate wider cultural and social ideas.

Cultures of axonometry

The drawings discussed here go further than just 'showing' and 'displaying' a project. They propose configurations of shared experience and endeavour, depicting alternative versions of what might be called the public interior.²⁰ The Dublin drawing does not only show the key spaces of the competition project. It suggests that civic institutions can be imagined as common public places, an idea emphasised by deploying spatial and material codings familiar from street or square. Similarly, the Cambridge drawing does not only depict reading spaces for a wealthy college.

It seems to imply that the place of knowledge within society can be occasioned by making space for communities of readers and books. Through fine judgments about what to leave out and what to include, the architects' intention to tell such stories exceeds what might be achieved by similar drawings in which everything is represented with equivalence.

While any type of architectural drawing – plan, section, elevation or perspective – can employ omission selectively to emphasise key aspects of a project, and therefore articulate stories about the projects they depict, the axonometric drawing has distinct potential. As Edward Jones of Dixon Jones notes:

The axonometric combines plan, section and elevation into a single image. This makes it an ideal drawing to summarise a building proposal.²¹

I argue that the two Dixon Jones drawings discussed here go beyond their capacity to summarise because they also communicate cultural meanings to knowledgeable readers. They nod to the canons of modern architecture. They recognise the planar conception of space celebrated by early modernists; modernism's emphasis on the plan as the generator of form; Aino and Alvar Aalto's so-called organic geometries; and Louis Kahn's celebrations of *parti* and material. But perhaps their most recognisable reference is inherent in the medium of axonometry itself. In particular, they echo a distinctive culture of axonometric drawing in post-war Britain, where axonometry was imagined as a vital agent for scrutinising and extending modern form.

The office of James Stirling, briefly mentioned above, was significant to this culture, first as Stirling and Gowan and latterly as Stirling Wilford. Here, axonometric drawing gradually moved from a comprehensive description of building form as a whole to a tool for the selective appreciation of architecture through the scrutiny of its parts. To understand how Dixon Jones tell stories through their selective axonometrics, it is important to appreciate this graphic culture.

For convenience I will draw upon Fabiano Ccozza's expansive definition of axonometry, which he claims includes 'all variations of parallel projection (orthographic, isometric, dimetric, trimetric, rectangular, oblique, cavalier, military, cabinet), in opposition to perspective, or central projection'.²² In Britain, however, axonometry has typically been defined more tightly,²³ tending to be understood as a subset of isometric drawing. Isometry is a form of parallel projection typically presenting three surfaces of an object, where each surface is drawn to a known scale, and each surface can be measured for its dimensions. In this context, an axonometric is an isometric drawing made where the plan of the depicted object is tilted at 45 degrees to the horizontal, none of its faces being parallel to the picture plane. Importantly, the plan itself remains undistorted, meaning that these drawings can be directly projected upwards from an orthographic plan drawing underlay. Consequently, a circle drawn in plan will also appear as a true circle in the axonometric projection.

To eyes accustomed to perspectival recession, axonometric drawings typically look almost – but not quite – right. Ccozza notes:

The proportions of the subject are correct, but the 'posture' has something unusual. In real life, as in perspective representation [...] near objects look bigger than distant ones. Conversely, the point of view in axonometry is outside the scene [...]. Axonometric space conveys depth but not distance.²⁴



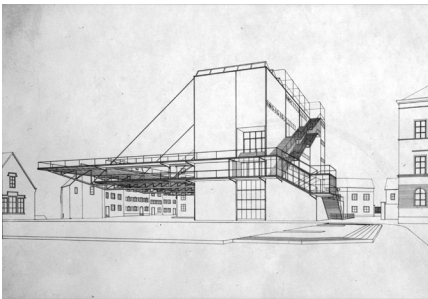


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Axonometric drawings can exude a markedly uncanny quality. They do not interpellate us in the way that perspectival constructions do. Depth may seem uncertain and conditions of front, back, top and bottom appear reversible, as in the familiar optical illusion of the axonometric cube, unless fastened down by some supplementary graphic device, such as the material patterns in Dixon Jones's National Gallery of Ireland drawing, with which we began.

The 19th-century architectural historian François-Auguste Choisy recognised the narrative potential of axonometry. Choisy drew a sequence of striking drawings projected upwards to explain Roman vaulted construction in his 1873 book *L'Art de bâtir chez les Romains*,²⁵ further developing these techniques towards the 1899 book *L'Histoire de l'architecture*.²⁶ In the mid-19th century, axonometry prospered in various 'scientific, cartographic, machine, and military' drafting practices.²⁷ But Choisy developed the technique specifically for the study of architecture. Writing about the architectural origins of axonometry, Edward Jones describes *L'Histoire de l'architecture*, 'with its 1,700 illustrations manically drawn by Choisy himself',²⁸ as:

highly influential, particularly with a younger [post-war] generation who had an emerging interest in the abstract. The projections emphasised structure, surface and volume in elegant patterns of black and white, rather than illustrating the accidents of stylistic appearance. As Reyner Banham points out [in the 1960s] Le Corbusier [had] appropriated images of Choisy almost as his own in *L'Esprit nouveau* and *Vers une architecture*. He observed that from 'an architecture that aims above all at a severe beauty of line, new types more abstract and more simple emerge'.²⁹



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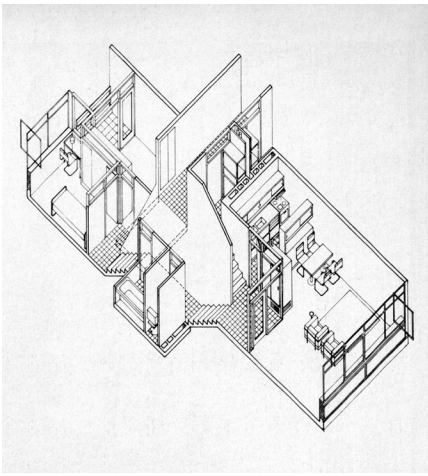
This quality of laconic abstraction lent axonometry authority in post-war Britain because it echoed functionalist priorities of the time and seemed to offer potential for analysing plan, section and *parti*. Sally Farrah has discussed what she calls 'the technology of axonometry' – the use of axonometry for analysing modern form – which she locates in post-war Britain.³⁰ Her argument extends the genealogy of its visual apparatus, linking Corbusier and Ozenfant's early Purist canvases with Theo van Doesberg and Cornelis van Eesteren's *Contra-Construction Project* (1923) (Fig.3), Gerrit Rietveld's drawings for the Schröder House (1924) and El Lissitzky's Proun paintings (1919–27) (Fig.4). As Jones reflects, referring to the drawings of Dixon Jones alongside those of sympathetic contemporaries:

Our manner was characterised by the use of single thin ink line drawing (Rotring pen number 0.3) without shadow or tone. This minimal representation was inspired by drawings from the Heroic period of modern architecture, particularly those of Hannes Meyer [Fig.5], the page layouts of Le Corbusier's *Oeuvre complète*, and more distantly the perspective drawings of Letarouilly [Fig.6]. Our appreciation of the thin black line was partly a reaction to other over-expressive forms of representation. In these, the architectural idea had become confused and merged with its expression.³¹

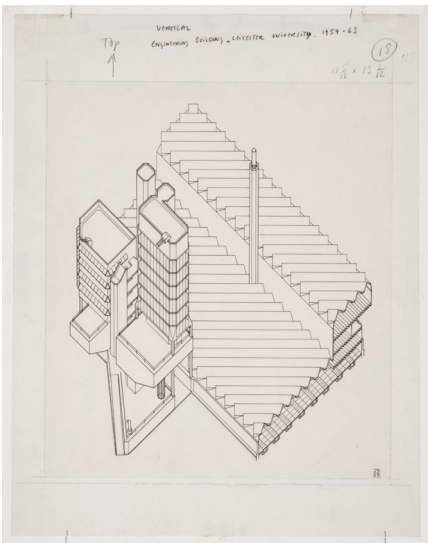


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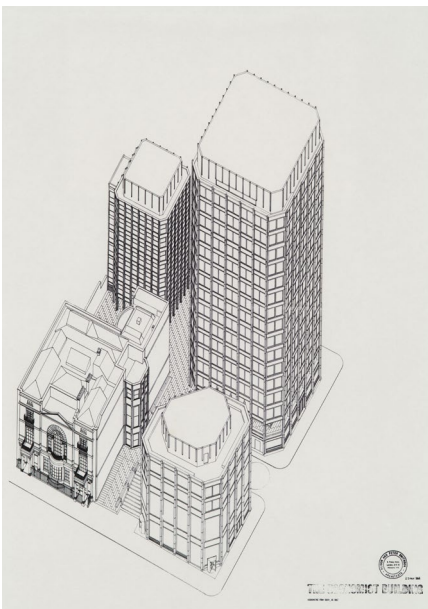
Jones's notion that representation can enable an architectural idea to be pared down to its essence, separated out from obfuscating aesthetic effects, is significant. Here it becomes assumed that a supposedly pure, abstract formal idea can be isolated, as an archetype or a structural pattern. By the 1960s, the still-exciting medium of axonometry – associated with modern social and cultural ambition, functionalism and planar composition – had become connected to contemporary attempts to identify persistent formations that structured observable phenomena.³²



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It seemed that the use of axonometry could supplement modern architects' favoured tools of plan and section with a new conceptual apparatus.

Farrah examines two books she understands as representative of this fashion: Michael Carapetian, Kenneth Frampton and Douglas Stephens's *British Building 1960–1964* and Peter Eisenman's 1963 PhD thesis *The Formal Basis of Modern Architecture* (published much later, in 2018).³³ Both presented architectural analysis in thin line 'bird's-eye' axonometric drawings, and both were indebted to the work of critic and theorist Colin Rowe.³⁴ For each project catalogued in their book, Carapetian, Frampton and Stephens published an axonometric to express 'a rational approach to the formal, functional and social problems inherent in [...] design'.³⁵ One image in particular, drawn by Frampton (Fig.7), showed an interlocking flat type, echoing a famous drawing from Corbusier's office showing a related interlocking pattern at the *Unité d'habitation* in Marseille.³⁶

From the 1960s into the 1980s, the practices of James Stirling increasingly tested how such a conceptual approach to axonometry could become 'a way of thinking architecture from the inside, avoiding prescriptive theory [...] conceived and extended in three dimensions'.³⁷ As Anthony Vidler writes:

while many architects, after Le Corbusier, found the plan as generator, only later projecting perspectives and axonometrics for presentation purposes, for Stirling the axonometric ruled. It was, like Moretti's plaster models of spatial sequences as solid volumes, a truly volumetric way of working, and it showed the plans, sections and elevation in true scale all at once [...]. [The] axonometric was the preferred way of developing a design as a sketch scheme, after which it was to be resolved in plan, and then again, as shown by hundreds of small marginal drawings, rendered back into axonometric for study.

[...] 'Lucid and explicit in its content', Banham concluded that a good Stirling drawing held the intellectual idea of its design and its technical materialisation in balance [...].³⁸

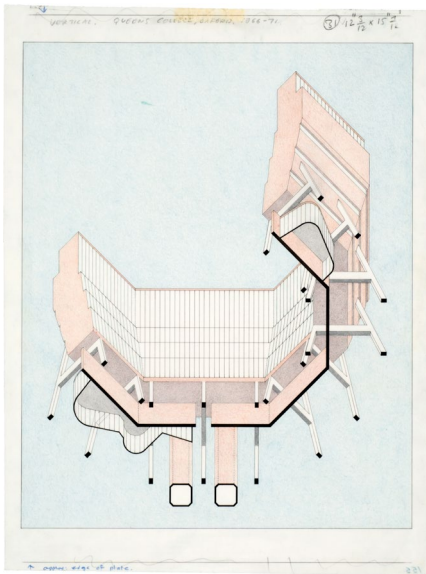
Stirling's axonometric drawing practice probably began with quick sketches but grew over time into a deliberate and valued tool for design inquiry. The axonometric drawing was refined to demonstrate what the architects conceived as the fundamental qualities and diagrammatic organisation of a project. It is unclear whether Stirling and his colleagues knew about Eisenman's axonometry, but they certainly knew Colin Rowe's diagrammatic analytical work, which inspired Eisenman's studies via Rowe's widely read essay 'The Mathematics of the Ideal Villa',³⁹ and they valued Choisy's historical studies.⁴⁰

Axonometric drawings figure in Stirling's earliest designs with James Gowan – for example in a 1957 competition for housing in Preston; a project for a school Assembly Hall in Camberwell in 1958; and, memorably, in the highly expressive Leicester Engineering Building of 1959 (Fig.8).⁴¹ Edward Jones drew a version of the latter image for the *Architectural Review* when he worked in Stirling's office. In these drawings, 'bird's-eye' axonometry was employed to elucidate the tectonic expression of a project as a whole. Other British architects of the time, such as Alison and Peter Smithson, used similar drawings for the same reason (Fig.9). Towards the end of the 1960s and into the 1970s, the use of 'up', or 'worm's-eye' axonometrics – like that drawn for the Florey Building in Oxford, 1971 (Fig.10) – became a leitmotif of Stirling's projects. These 'worm's-eye' projections combined a holistic view with a summary of the building's diagrammatic organisation in plan, albeit providing only a highly abstract sense of the latter. Parallel projections of parts, rather

than the whole, also began to gain prominence with the Florey project, as illustrated in a drawing showing an offsetting staircase. Nevertheless, the parts depicted still appear as complete elements.

Vidler argued that it remains difficult for historians to trace the shifts in the drawing practices of the Stirling offices because ‘so much was redrawn for publication and exhibition in 1974’⁴² when the first monograph of the firm was printed.⁴³ However, he attributed the arrival of Luxembourgish architect Léon Krier at James Stirling and Partners in 1969 to further developments in the firm’s use of axonometry. A key drawing – which is a direct antecedent of the Dixon Jones drawings discussed above – shows a 1971 competition entry for Olivetti’s headquarters in Milton Keynes (Fig.11). Here, the projection gets cut away to concentrate on the interior promenade rather than a holistic exterior view. Edward Jones recalls the shifting use of axonometric and parallel projection in Stirling’s office:

Rather than imitating Choisy, Stirling digests and appropriates the [...] axonometric to his own ends. The anatomical drawings of the German museum projects from the mid-1970s onwards – particularly Düsseldorf, Cologne, and Stuttgart – reveal with remarkable clarity the essence of the design, places of arrival, the architectural promenade etc. As Stirling once remarked, ‘What is left on the image is the minimum required to convey the maximum information with the greatest clarity – related to how we “understand” the building as distinct from the way it might in reality look.’ This act of understanding is for the designer, not necessarily a presentational device. It is the private rumination of the architect.⁴⁴



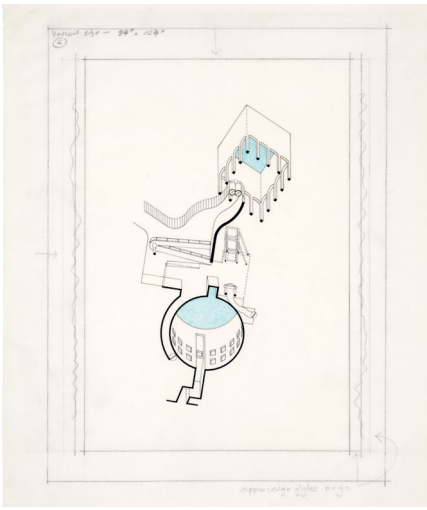
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Stirling Wilford’s later axonometric drawings – embracing historical references – seem to meld inquisitive analytical drawing with a fascination for older thin-line imagery, such as that of Karl Friedrich Schinkel, Letarouilly and Meyer. Arguably the best-known drawing from this time is a ‘worm’s eye’ axonometric of the entrance and courtyard of Stirling Wilford’s competition entry for the Düsseldorf Museum in 1975 (Fig.12).⁴⁵ This drawing isolates key volumes and architectural elements around a route, both inside and outside, suggesting a composition of significant objects. Only conceptual elements of the design that serve to characterise the project are described. Selectivity – discernment about what to draw and what not to draw – increasingly became the decisive characteristic of Stirling’s axonometric drawings.



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This brief account indicates a shift that emerged during the years that Stirling’s practices operated: from axonometric drawings that depicted the whole of a project to those which showed a selection of its parts as a metonym of the whole. Going beyond Stirling’s use of the technique, Dixon Jones added further layers of material, furniture and signs of inhabitation alongside diagrammatic organisations of space. Selective axonometric drawings, extending from Stirling to Dixon Jones, thus solicited the powers of axonometry to combine architectural fragments, dynamising relations between elements of interior and exterior, geometry and volume, axis and promenade, plane and material. Echoing the emphasis that modernism placed on plan and section over elevation, façade treatments were increasingly effaced. Narratively, whether made for a wider audience or just for the architects themselves, the selective axonometric mobilised discrete architectural fragments in order to produce a representation that could act as a synopsis conveying a project’s vital qualities: a kind of drawn academic abstract. Such possibilities of the technique would be acknowledged in the work of other architects inspired by Stirling’s axonometry, including Future Systems in the UK⁴⁶ and Steven Holl in the USA, whose early work often employed what is known as cavalier perspective (Fig.13).⁴⁷

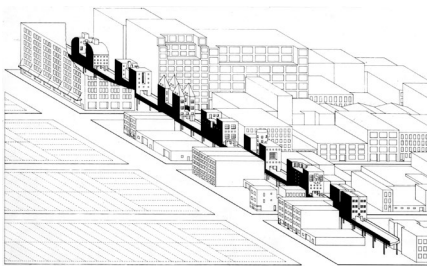


12—

Storytelling by omission

While axonometry is regularly cast in the shadow of more beguiling modes of architectural representation, the two selective axonometrics discussed in the first part of this essay seem telling. At a time when architectural practice typically favours photorealistic representations that appear to present a seamless and saturated visual field, the two drawings by Dixon Jones offer a lesson in concision, description and evocation. They appear precise and detailed while withholding much. The technical modality of axonometry – associated with machinery and technical reliability – connotes precision. At the same time, the drawings exercise a narrative power by association with traditions of representation in which the draftsman draws attention to ideas by emphasising certain aspects of what is to be represented and passing over others.

Selective axonometry may not be a radical, activist technique compared to other graphic approaches that tapped the intellectual currents of the inter-war period and the 1960s. Nevertheless, conversant with the values and canons of modern design and representation, it is adept at articulating subtle architectural judgment. The drawings remain more conceptual than utilitarian. They do not describe physical construction so much as the abstract construction of space. While they may seem more like studies for the imaginary assembly of a conceptual architectural model than evocations of atmosphere or dynamism, their thin line quality and aperspectival construction enables a complex array of connotations.



13—

Selective axonometrics can simultaneously educe the organisation of a project, its imagined 'essence', and its social and cultural ambitions. They suggest a quasi-ritualistic spatial narrative of sequential encounters between architectural elements for which axonometry is the perfect medium, conserving fidelity to plan but introducing selected volumetric devices encountered *en route*. Drawn for the architect as much as for the client, they are made for scrutinising and extending architectural organisation as much as for describing it to others. Sampling together decisive elements to indicate direction, they serve as a weathervane for discerning the values of a design and its architectural register.

Even the ambiguity embedded in selective axonometrics is precise, taking these drawings beyond description into interpretation. Bringing together external and internal public space, they can illustrate formations of society – depicting a gallery as an accessible civic space, for example, or a library as a place of shared cultural endeavour – affirming patterns of collective inhabitation. The strength of selective axonometrics arguably lies in their power to depict the composition of imagined human relationships in volumetrically conceived space, interpreted through speculative fragments of social and material organisation.

In his book *The Semiotic Challenge*, Roland Barthes characterises storytelling as a cross-cultural phenomenon present 'in all periods, all places, all societies'.⁴⁸ To cite Alfred Schulz and Thomas Luckman's commentary on Barthes, we are born into a world of narrations which make up the 'unexamined ground of everything given in [our] experience'.⁴⁹ In her essay 'Storytelling as a Cultural Practice and Life Form', Christina Schachtner argues that:

Narratives or narrations combine various episodes, points in time, and places, linking them to each other to create a meaningful relationship. They consist of elements of meaning which, when combined, result in an overall meaning which is not, however, inherently definitive.⁵⁰

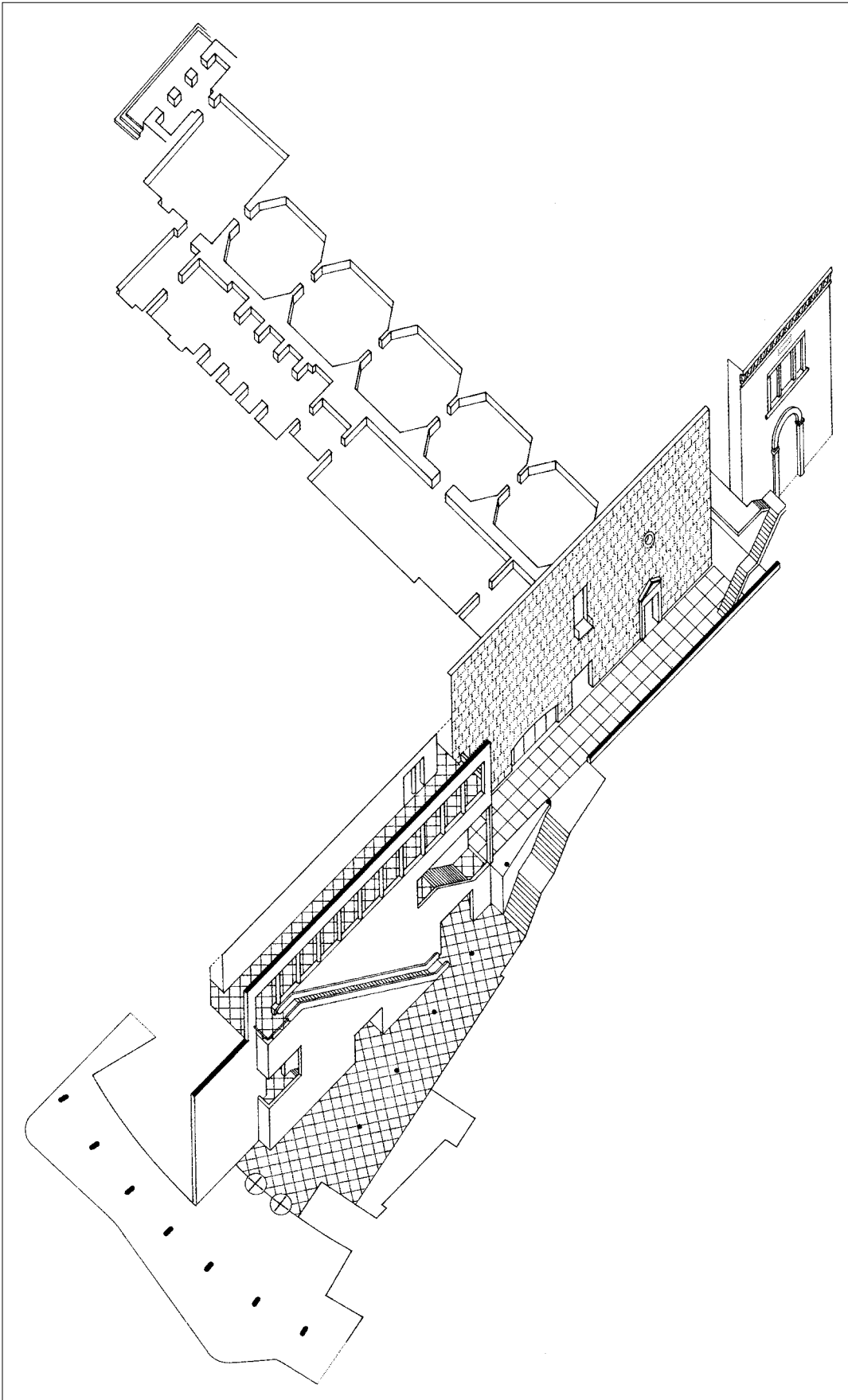
The selective axonometric drawings discussed here bring together volumes, objects, forms and anticipated temporalities of architectural experience in an episodic manner, not as a way of projecting an understanding of the world but as an instrument with potential to configure it. Schachtner continues:

The purpose of narratives is not to reproduce reality [...] but to search for meaning. In the process of narrating, things are selected, structured, accentuated, or left out, with the goal of gaining a new perspective on what has been experienced.⁵¹

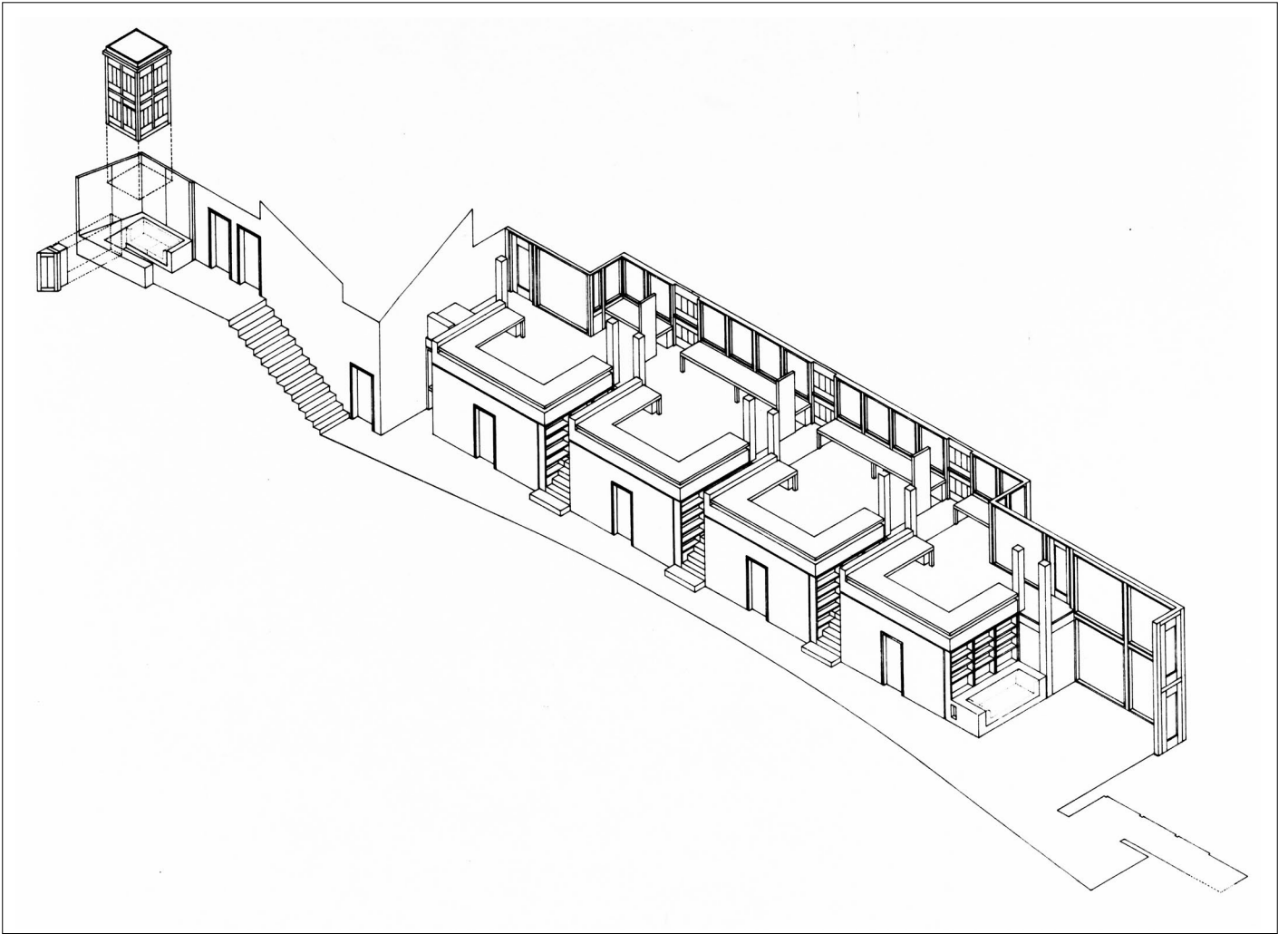
Schachtner thus highlights how omission and selectivity remain central to the structuring of narrative and the construction of meaning. What is left out in storytelling, she emphasises, matters at least as much as what is said.

I began this article by speculating about what might be included in a possible taxonomy of drawings made by architects to tell stories about their projects. One could also speculate about another taxonomy, concerning elision in architectural drawing. Forgetfulness, for example, suggests absent-minded or oblivious neglect. Emptiness can evoke meaning through absence.⁵² Erasure, meanwhile, entails deliberate deletion. The selective omission at work in the drawings discussed in this paper is of another kind, one that involves meticulousness, studiousness and care. It is an omission that emerges from a rigorous creative practice. This drawing practice explores architectures not just to comprehend their disposition of spaces, and their conceptual assembly, but also to narrate the cultural resonances of their resulting configurations. These selective axonometrics suggest that to draw is to discern, where to discern is to think, and to think is to care.

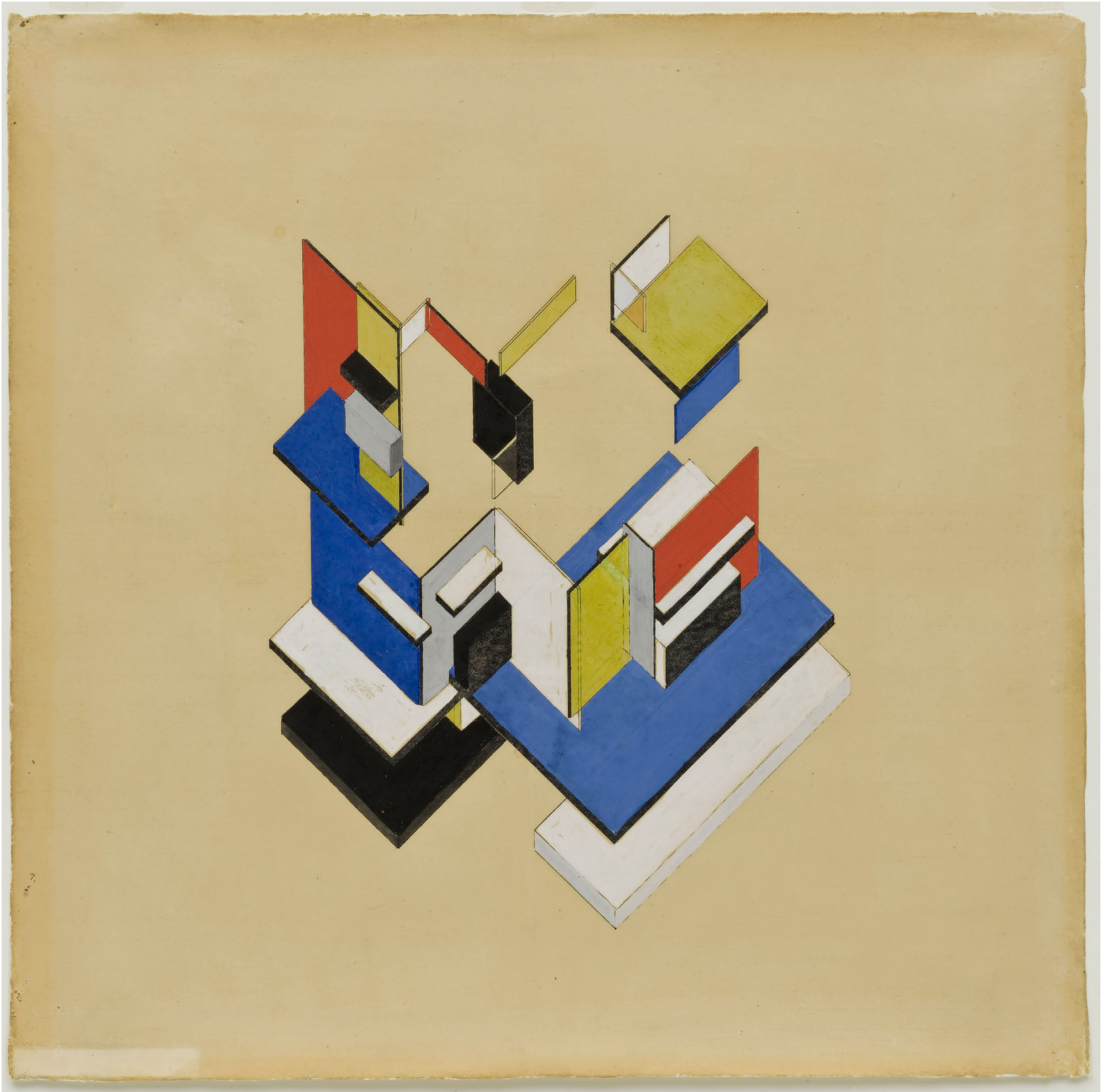
- 1 Malcolm Reading and Peter Coe, *Lubetkin and Tecton: An Architectural Study* (London: AA, 1992).
- 2 Anthony Vidler, *James Frazer Stirling: Notes from the Archive* (London: Yale Center for British Art and the Canadian Centre for Architecture, 2010).
- 3 Alberto Pérez-Gómez and Louise Pelletier, *Architectural Representation and the Perspective Hinge* (Cambridge, MA: MIT Press, 2000), 314.
- 4 Jean-Nicolas-Louis Durand, *Précis of the Lectures on Architecture*, ed. Antoine Picon (Los Angeles: Getty, 2000).
- 5 Hilary Bryon, 'Measuring the Qualities of Choisy's Oblique and Axonometric Projections' in *August Choisy (1841-1909): L'Architecture de l'art de bâtir*, eds Francisco Javier Girón Sierra and Santiago Huerta Fernández (Madrid: Reverte, 2009), 31-62.
- 6 Antony Vidler, in *Histories of the Immediate Present* (Cambridge, MA: MIT Press, 2008), imagines an intellectual genealogy for modernism that connects the theories of Emil Kaufmann to those of Colin Rowe, finding the intellectual origins of modern design in the formal analysis of geometry, referring back to the work of Durand in the 18th century and Choisy in the 19th.
- 7 '[A]t that time we were verbally reticent but graphically extrovert'. Edward Jones, 'The Inseparability of Drawing and Architecture: A Conversation', *made: Materials Architecture Design Environment*, 3 (2006), 4-17 (6).
- 8 Ian Latham and Mark Swenarton, eds, *Jeremy Dixon and Edward Jones: Buildings and Projects 1959-2000* (London: Right Angle Press, 2002). While I argue that the two examples chosen here are the best examples of the idea of the selective axonometric explored here, other similar drawings appear in the same monograph, relating to the Royal Opera House extension, Covent Garden, London, 1984-89, 51; National Gallery extension competition, London, 1984, 52; Clay and Glass Museum competition Toronto, 1986, 86; Royal Opera House extension, Covent Garden, London, 1984-2000, 102; National Portrait Gallery Ondaatje Wing, 1994-2000, 125; and the Henry Moore Institute, Leeds, 1988-93, 151.
- 9 Pamela Buxton, 'Hindsight: Jeremy Dixon and Edward Jones', *RIBA Journal*, 10 October 2021. <https://www.ribaj.com/culture/hindsight-jeremy-dixon-edward-jones> [accessed 23 December 2023]. Edward Jones says in interview: 'Jim Stirling has been consistently ... influential and supportive. He was the main assessor on the Mississauga and Venice bus station competitions, and his presence on both juries was a reason for entering.'
- 10 Adam Sharr, *Reading Architecture and Culture: Researching Buildings, Spaces and Documents* (London: Routledge, 2010). Following methods of close reading from cultural studies, I am less concerned with the authorship of these drawings and more with what the drawings do, what they say, how they work and what they mean.
- 11 Latham and Swenarton, *op. cit.*, 198-99. The drawing was made by David Naessens.
- 12 In English translation as Le Corbusier, *Towards an Architecture*, trans. John Goodman (Los Angeles: Getty Research Institute, 2007); Mitchell W. Schwarzer and August Schmarsow, 'The Emergence of Architectural Space: August Schmarsow's Theory of "Raumgestaltung"', *Assemblage*, 15 (1991), 48-61.
- 13 See a longer discussion in Sharr, *Modern Architecture*, *op. cit.*, 57-62.
- 14 Richard Weston, *Villa Mairea: Alvar Aalto* (London: Phaidon, 1992); Richard Weston, *Alvar Aalto* (London: Phaidon, 2007).
- 15 That said, the project remained unsuccessful in the competition.
- 16 Latham and Swenarton, *op. cit.*, 158-63. The drawing was made by John Moran.
- 17 Louis Kahn, *Between Silence and Light: Spirit in the Architecture of Louis I. Kahn* (New York: Shambhala, 2008).
- 18 Glenn E. Wiggins, *Louis I. Kahn: The Library at Philips Exeter Academy* (New York: Van Nostrand Reinhold, 1997).
- 19 David B. Brownlee and David G. de Long, *Louis I. Kahn: In the Realm of Architecture* (London: Thames and Hudson, 2005).
- 20 Mark Pimlott, *The Public Interior as Idea and Project* (Prinsenbeek: Jap Sam Books, 2015).
- 21 Jones, *op. cit.*, 7. While presented as an interview between Richard Weston and Edward Jones, Jones drafted this text in its entirety.
- 22 Fabiano Coccozza, 'Axonometry: The Grip of Thought on Space - A Short Survey of the Relation between the Act of Planning and a Visionary Visualization Technique', *Proceedings of the International and Interdisciplinary Conference IMMAGINI? Image and Imagination Between Representation, Communication, Education and Psychology*, Brixen, Italy, 27-28 November 2017, 2: <https://www.mdpi.com/2504-3900/1/9/884> [accessed 23 December 2023].
- 23 Ray Lucas's book is a good example: *Drawing Parallels: Knowledge Production in Axonometric, Isometric and Oblique Drawings* (London: Routledge, 2019), 3-4.
- 24 Coccozza, *op. cit.*, 2.
- 25 See Bryon, *op. cit.*
- 26 François-Auguste Choisy, *Histoire de l'architecture* (Paris: Bibliothèque de l'Image, 2001).
- 27 Nancy Goldring, 'The Long View' in *The Architect's Newspaper*, 2 October (2012): <https://www.archpaper.com/2012/10/the-long-view/> [accessed 23 December 2023].
- 28 Jones, *op. cit.*, 7.
- 29 *Ibid.*
- 30 Sally Farrah, 'The Technology of Axonometry in 1960s Britain: Kenneth Frampton and Peter Eisenman' in *Proceedings of the 35th Annual Conference of the Society of Architectural Historians of Australia and New Zealand*, eds Michael Dudding, Christopher McDonald and Joanna Merwood-Salisbury (Wellington: SAHANZ, 2018), 174-87.
- 31 Jones, *op. cit.*, 6. The figures have been added by the author.
- 32 For a discussion of this fashion, see Sean Keller, 'Fenland Tech: Architectural Science in Postwar Cambridge', *Grey Room* 23, Spring (2006), 40-65; and Adam Sharr and Stephen Thornton, *Demolishing Whitehall: Leslie Martin, Harold Wilson and the Architecture of White Heat* (London: Routledge, 2017), ch. 4.
- 33 Michael Carapetian, Kenneth Frampton and Douglas Stephens, *British Building 1960-1964* (London: A+C Black, 1965). Peter Eisenman, *The Formal Basis of Modern Architecture* (Baden: Lars Müller, 2018).
- 34 See Anthony Vidler, *Histories of the Immediate Present: Inventing Architectural Modernism* (Cambridge MA: MIT Press, 2008).
- 35 Carapetian, Frampton and Stephens, *op. cit.*, 7.
- 36 *Ibid.*
- 37 Vidler, *James Frazer Stirling*, *op. cit.*, 238.
- 38 *Ibid.*, 241.
- 39 Later republished in Colin Rowe, *The Mathematics of the Ideal Villa and Other Essays* (Cambridge, MA: MIT Press, 1976).
- 40 Vidler, *James Frazer Stirling*, *op. cit.*, 241.
- 41 Alan Berman and Quentin Lake, *Jim Stirling and the Red Trilogy: Three Radical Buildings* (London: Frances Lincoln, 2010).
- 42 Vidler, *James Frazer Stirling*, *op. cit.*, 274.
- 43 The so-called 'black volume': John Jacobus, *James Stirling: Buildings and Projects 1950-1974* (London: Thames and Hudson, 1975).
- 44 Jones, *op. cit.*, 7. Jones's closing statement seems curious given the Stirling office's production of axonometrics for publication and their celebrated use for storytelling purposes in the office's oeuvre.
- 45 Lucas, 'Stirling's Axonometric Traps' in *op. cit.*, 23-42.
- 46 Diego Scara, Jan Kaplicky and Deyan Sudjic, *Future Systems: 0000* (London: Phaidon, 2005).
- 47 See for example Steven Holl, 'Bridge of Houses' in Steven Holl (ed.), *Pamphlet Architecture 1-10* (New York: Princeton Architectural Press, 1998).
- 48 Roland Barthes, *The Semiotic Challenge*, trans. R. Howard (Oxford: Blackwell, 1988).
- 49 A. Schutz and T. Luckmann, *The Structures of the Life-World*, trans. R.M. Zaner & H.T. Engelhardt Jr. (London: Heinemann, 1974), p.4. Cited in Christina Schachtner, 'Storytelling as a Cultural Practice and Life Form' in *The Narrative Subject: Storytelling in the Age of the Internet* (London: Palgrave Macmillan, 2020).
- 50 *Ibid.* Online access, no pagination.
- 51 *Ibid.*
- 52 So-called 'counter memorials' offer a good example. See James E. Young, *The Texture of Memory: Holocaust Memorials and Meanings* (New Haven: Yale University Press, 1993).



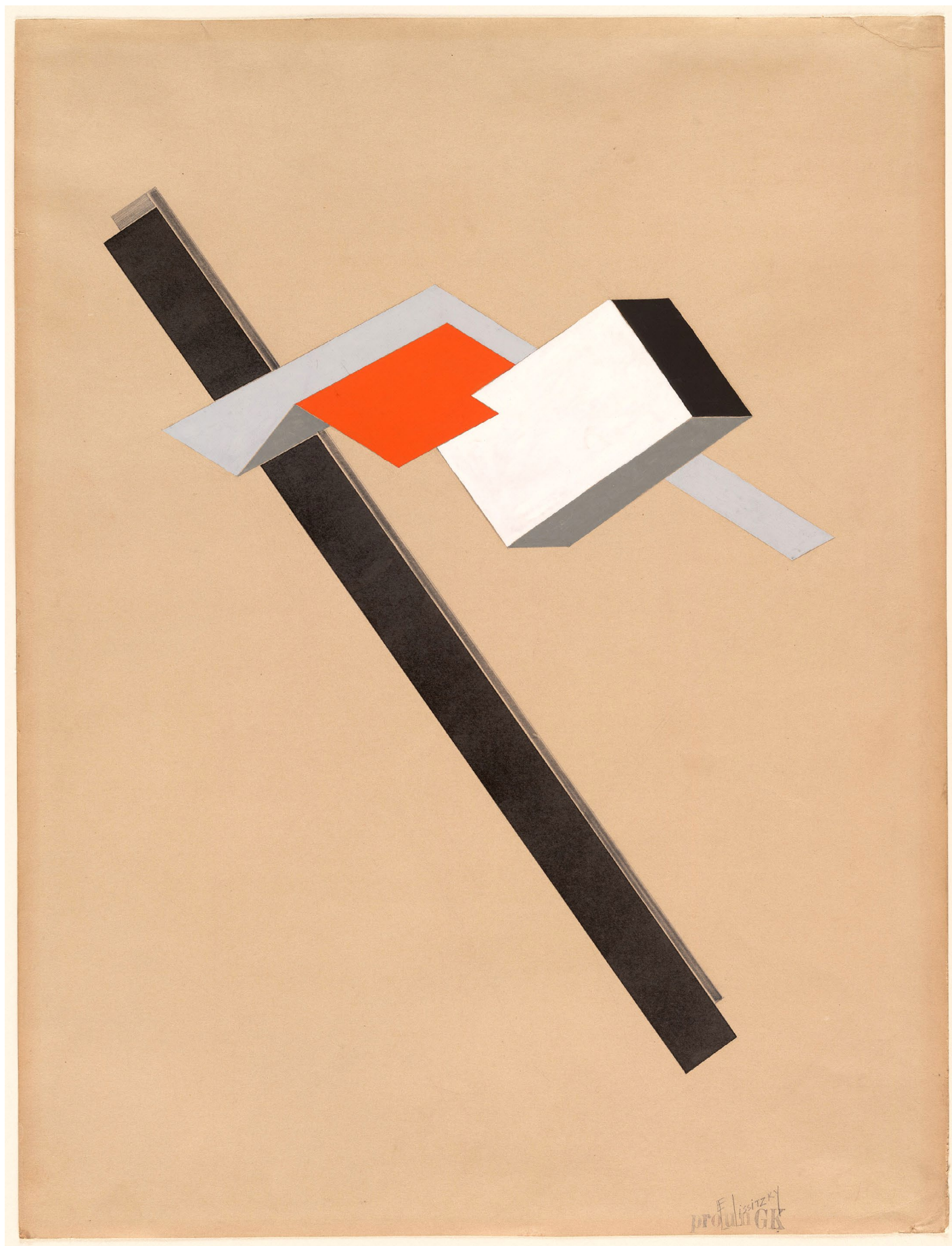
Dixon Jones, competition entry for an extension to the National Gallery of Ireland, Dublin, Ireland (1996).
Courtesy Dixon Jones Architects, drawn by John Moran.



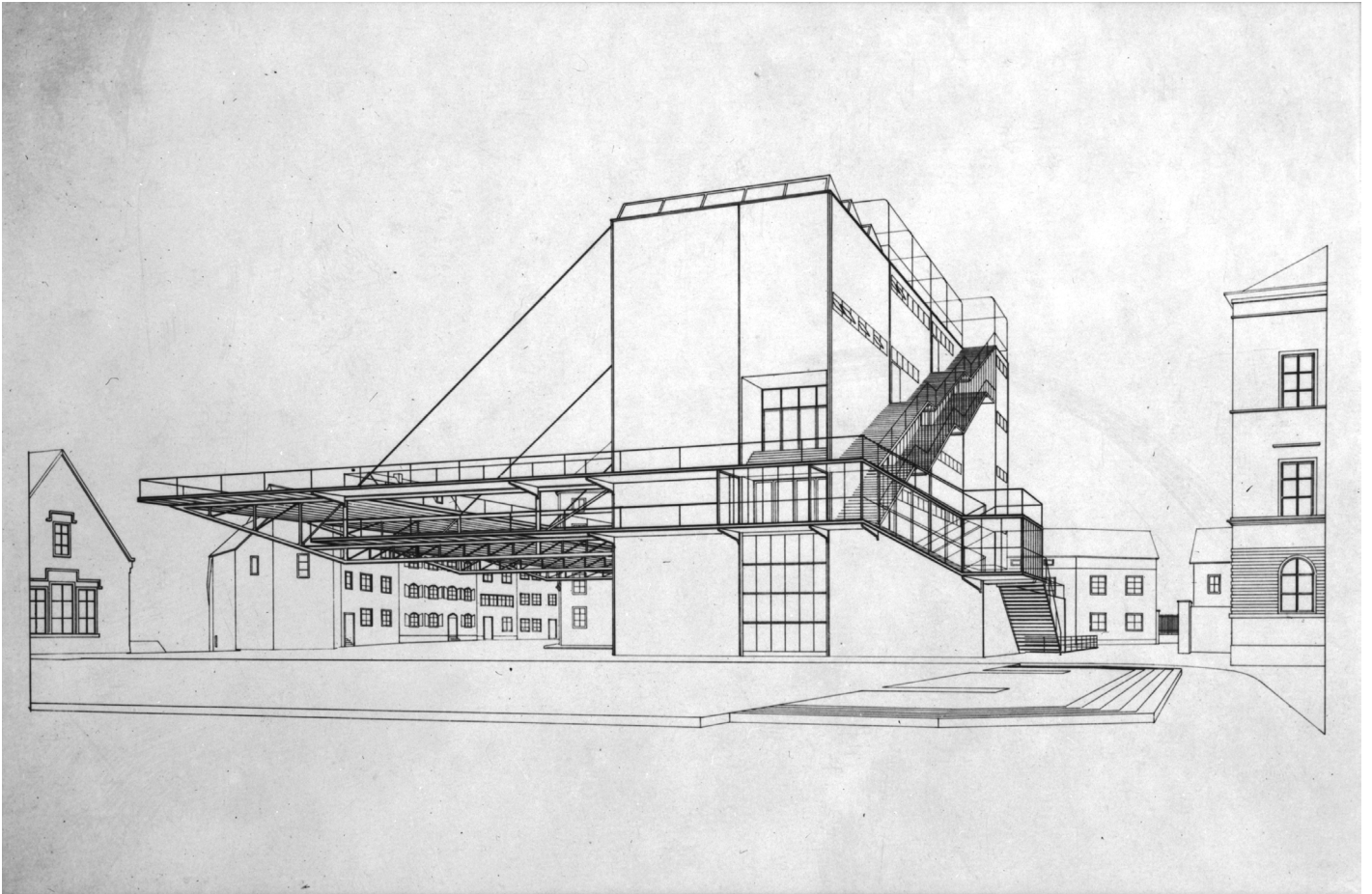
Dixon Jones, Darwin Study Centre, Darwin College, Cambridge, UK (1994). Courtesy Dixon Jones Architects, drawn by David Naessens.



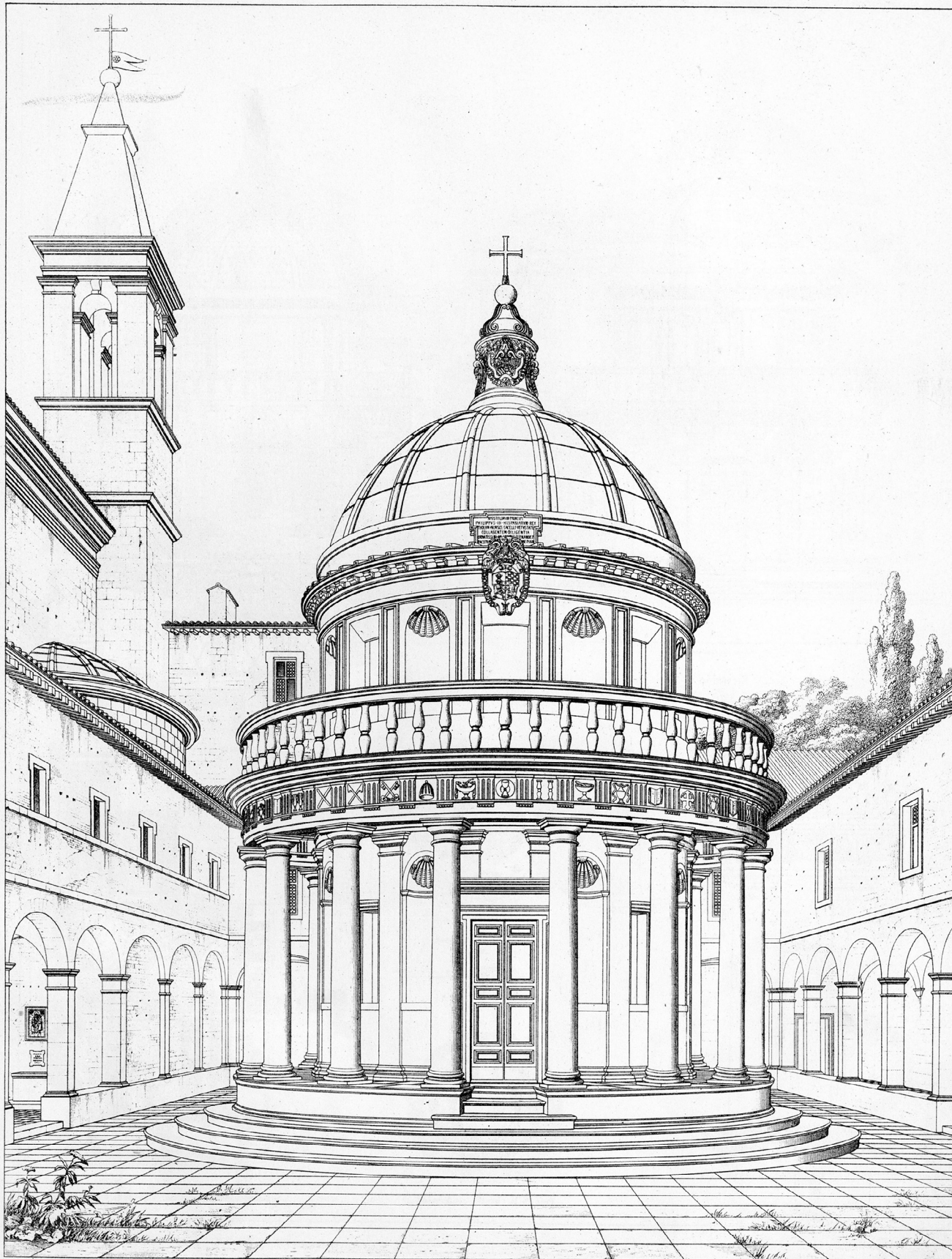
Theo van Doesberg and Cornelis van Eesteren, *Contra-Construction Project* (1923). The Museum of Modern Art, New York/Scala, Florence.



El Lissitzky, Proun GK (1922-23). The Museum of Modern Art, New York/Scala, Florence.



Hannes Meyer, drawing for Peterschule, Basel, Switzerland (1922). © Hannes Meyer-Archiv, Deutsches Architekturmuseum, Frankfurt am Main.



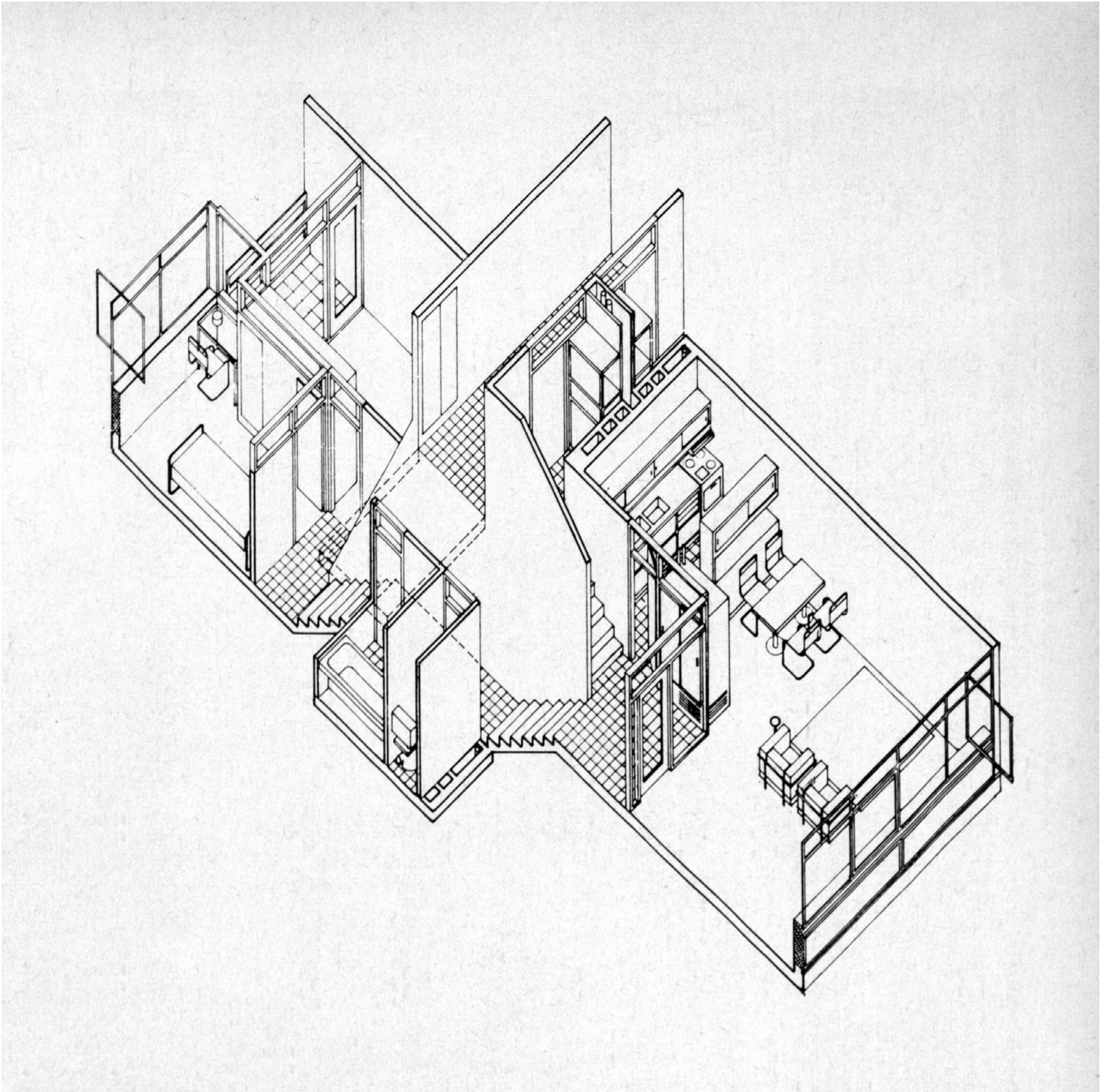
Voir les Planches 102, 103 et 105.

Bramante sculp.
P. Letarouilly del.

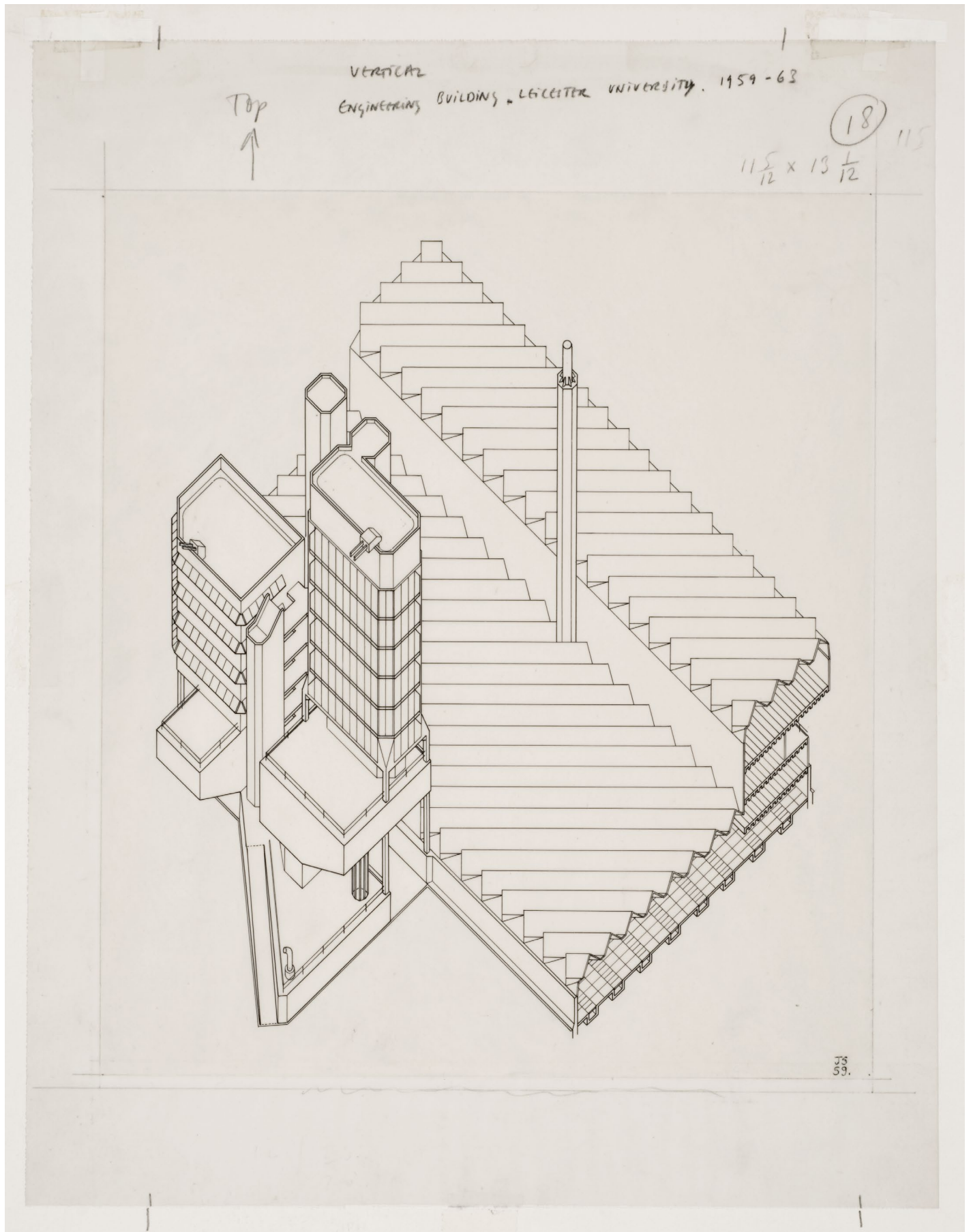
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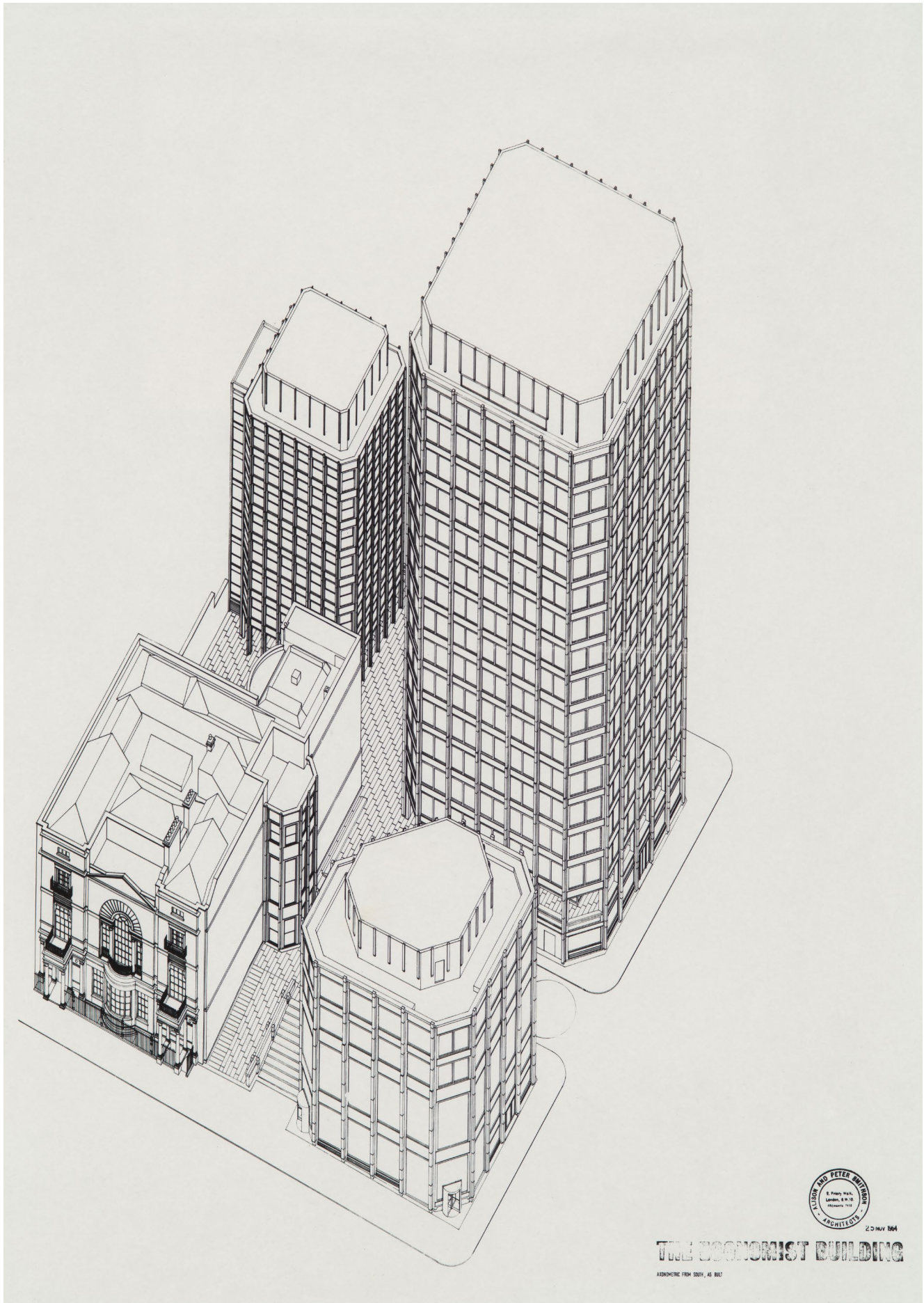
Paul Letarouilly, drawing of Bramante's Tempietto at San Pietro in Montorio, Rome, Italy. From *Les Edifices de Rome Moderne*, four volumes (1840–57), reprinted in A.E. Richardson, *The Student's Letarouilly: Illustrating the Renaissance in Rome* (London: Alec Tiranti, 1948).



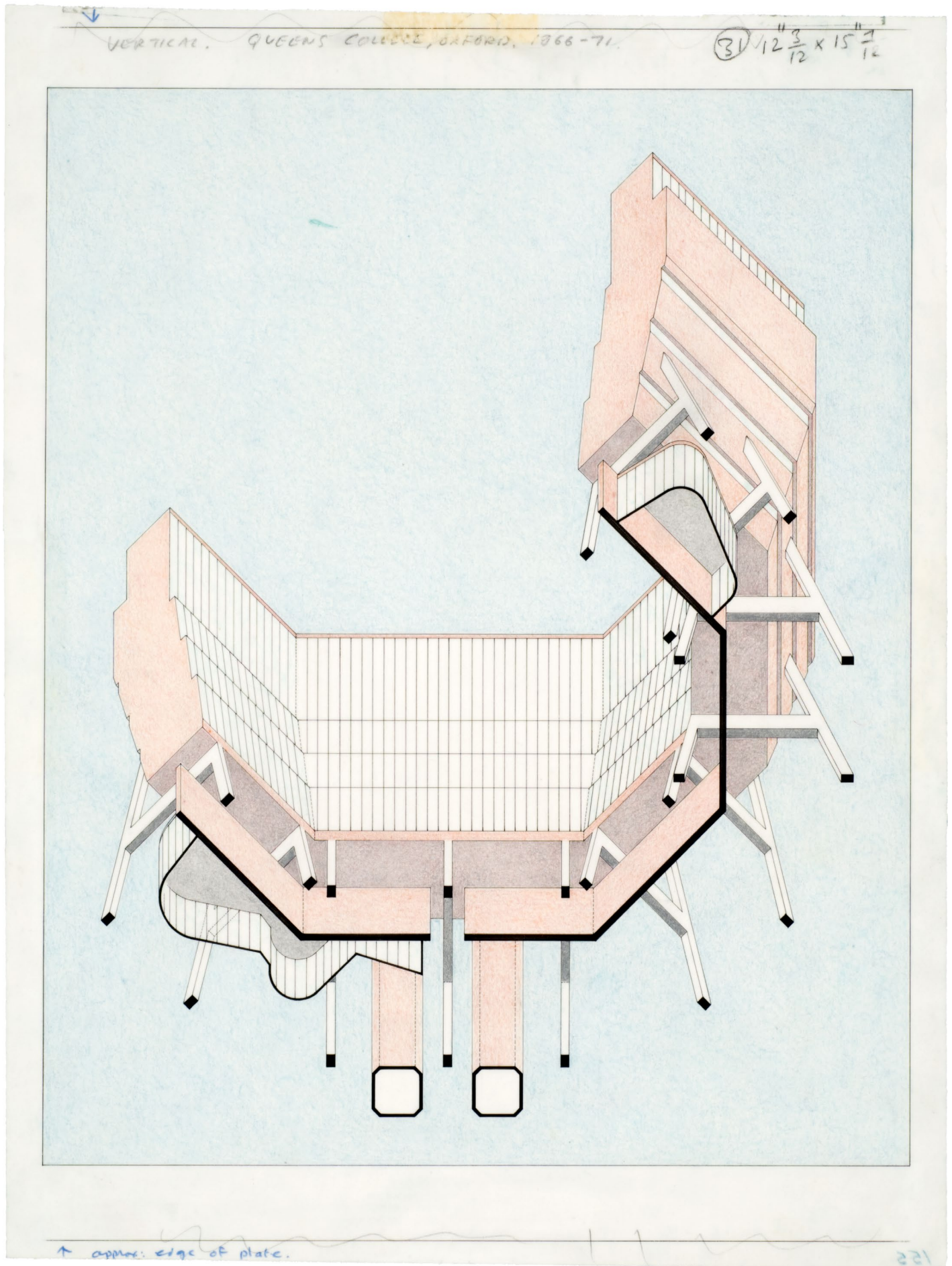
Kenneth Frampton, 'bird's-eye' axonometric of an interlocking flat design. Michael Carapetian, Kenneth Frampton and Douglas Stephens, *British Building 1960–1964* (London: A+C Black, 1965), p.83.



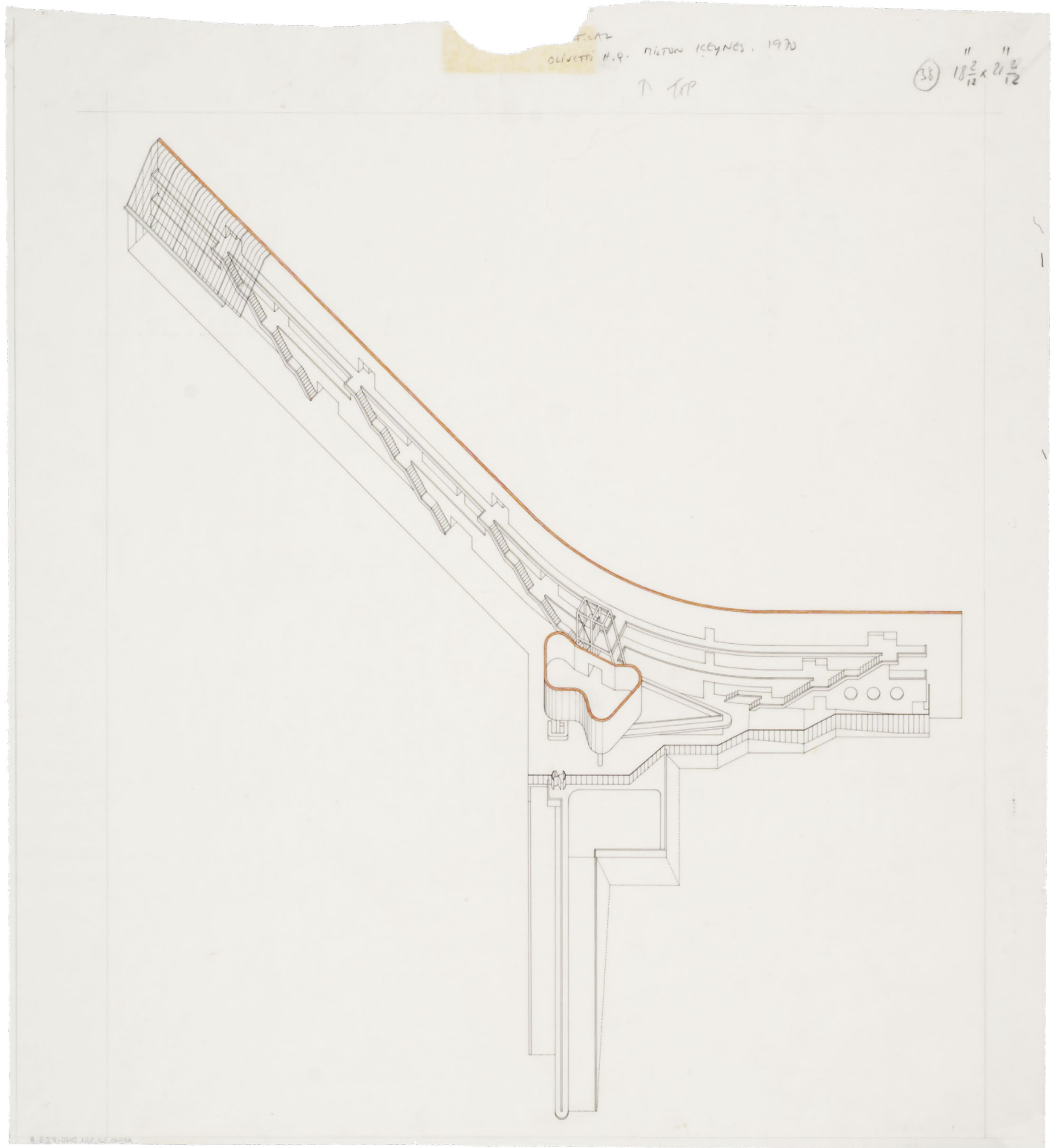
James Frazer Stirling, axonometric study for the Leicester University Engineering Building, UK (1959).
James Stirling/Michael Wilford fonds, Canadian Centre for Architecture © CCA.



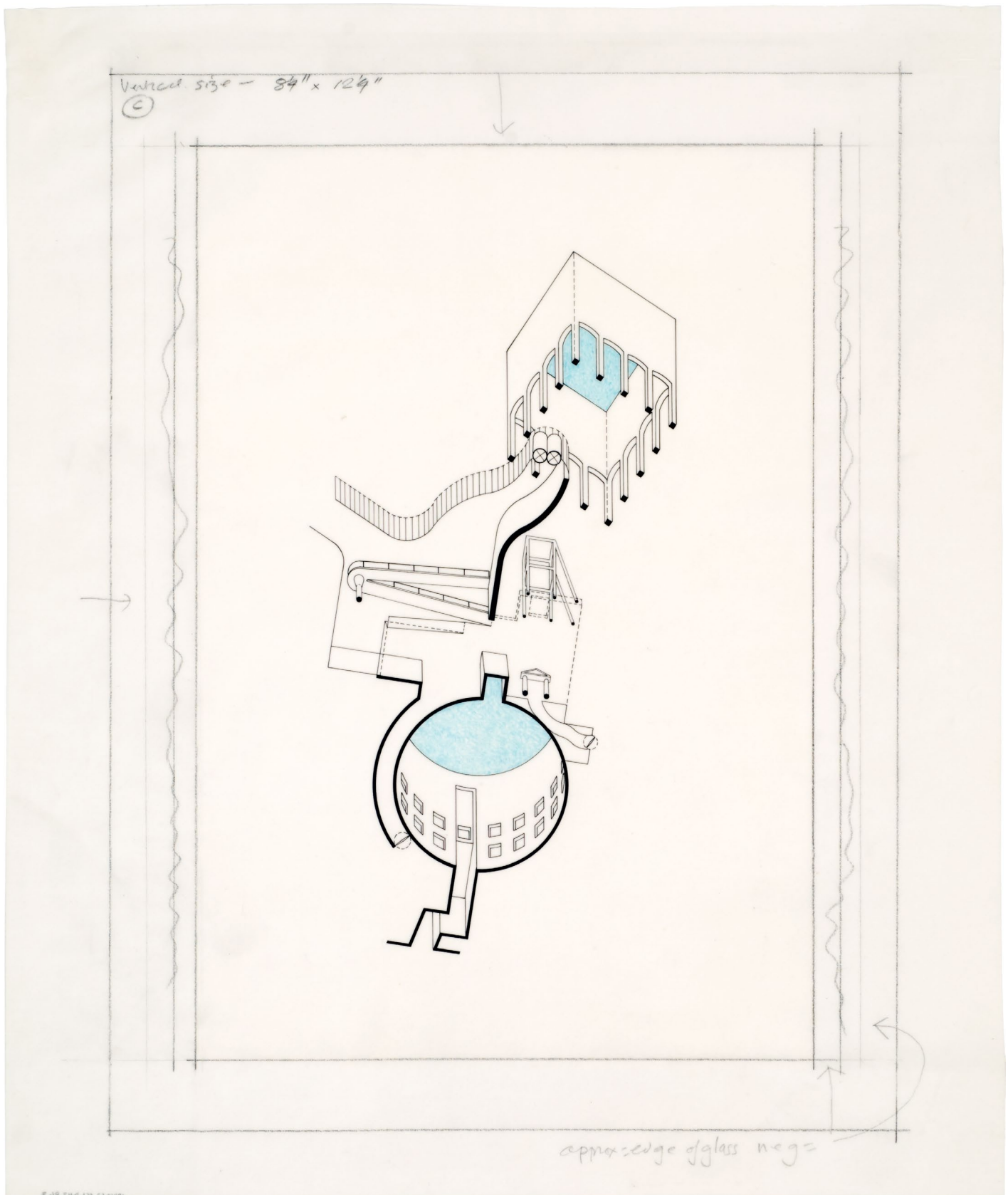
Alison and Peter Smithson, parallel projection of the Economist Building, London, UK (1960–1961). The Alison and Peter Smithson Archive. Courtesy of Frances Loeb Library, Harvard University Graduate School of Design.



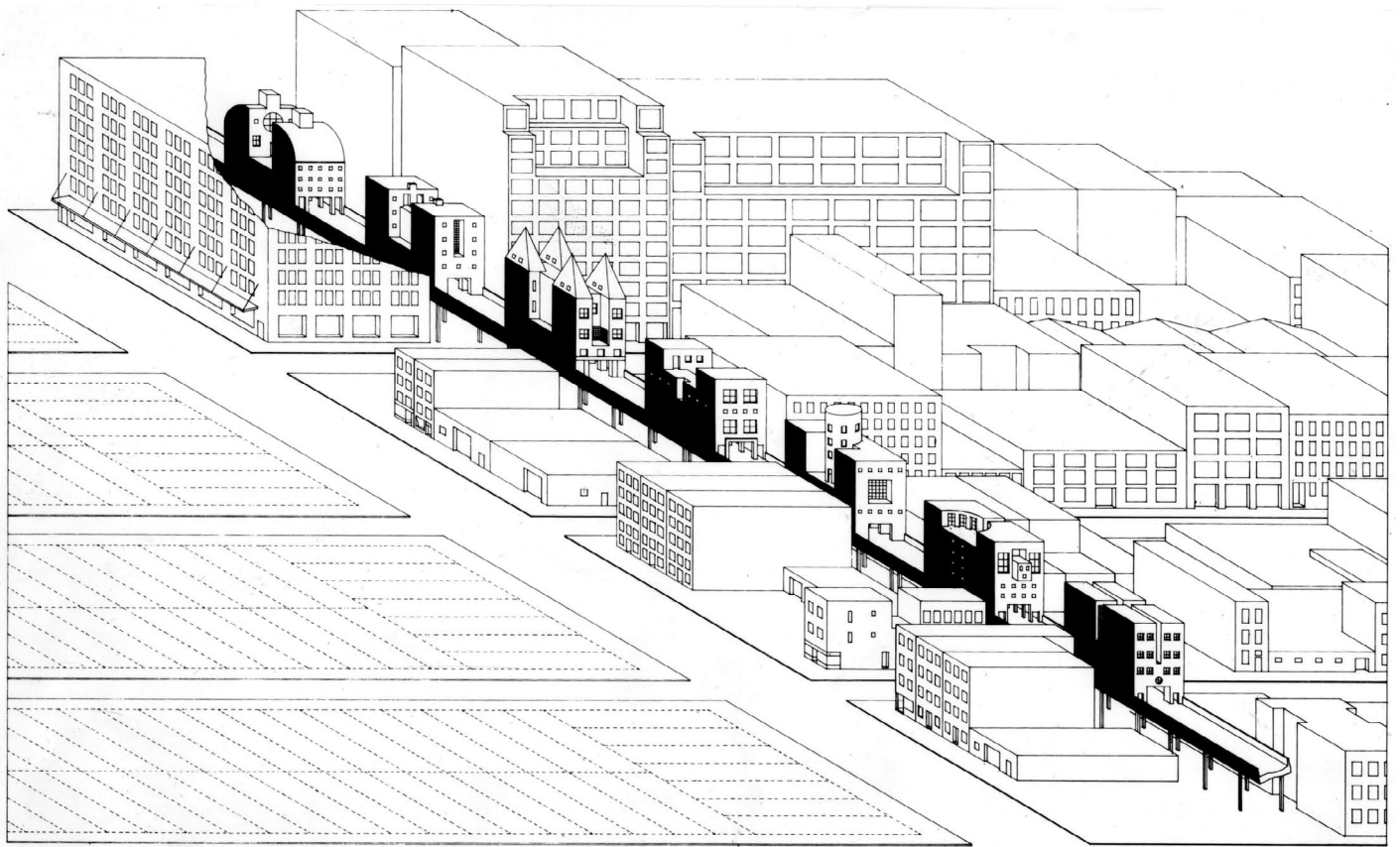
James Stirling (Firm), 'worm's-eye' axonometric of the Florey Building, Queen's College, University of Oxford, UK (1971). James Stirling/Michael Wilford fonds, Canadian Centre for Architecture © CCA.



James Stirling (Firm), axonometric study, competition entry for Olivetti's British headquarters at Milton Keynes, UK (1971). James Stirling/Michael Wilford fonds, Canadian Centre for Architecture © CCA.



James Stirling and Partner, axonometric study, competition entry for Nordrhein-Westfalen Museum, Düsseldorf, Germany (1975), isolating key volumes and architectural elements around a route. James Stirling/Michael Wilford fonds, Canadian Centre for Architecture © CCA.



Steven Holl, Manhattan Proposal, from *Bridge of Houses*, Pamphlet Architecture no.7 (New York: Princeton University Press, 1978). Courtesy Steven Holl Architects.