The Factory and the Chicken House: Construction Experiments in 1950s Auckland.

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ABSTRACT: A posthumous 1992 curriculum vitae for the Architect and Engineer, Richard Hobin records that during the period 1951-1953 he designed and built eight houses and seven factories in the New Zealand city of Auckland. Hobin’s interests and those of his colleagues, collectively known as Structural Developments (Renate Prince, Henry James, John Scott and Frank Stockman), were part of a global, post-war interest in rational structure and construction efficiency. This paper compares the factory that Structural Developments designed and built for the plastics manufacturing company Clearlite (1951) with a building for the production of table birds by Group Architects (1954). The Chicken House, produced for the landscape designer Odo Strewe, used steel and concrete but in very different ways to the Clearlite factory. This paper will examine the remaining records held by archives and local authorities and then discuss the blurring of disciplinary boundaries, and the representational and construction techniques employed in the production of these two building experiments.

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INTRODUCTION

The factory has long been a site for architectural experimentation. From the first investigations and innovations with this building type in the cotton and woolen mills of the English midlands in the eighteenth century, through the early twentieth century modernist fascination with the machine to the current interest in the impact of digital technology on industrial production systems the factory has often been the laboratory. The house (and particularly the designer’s own house) has played a similarly innovatory role as a laboratory for architectural experimentation. This paper will examine two projects constructed in Auckland New Zealand in the early 1950s and compare similar strategies and formal differences. The ‘factory for Clearlite Ltd’ was designed and built by a collective of graduate architects called Structural Developments who sub-titled themselves ‘architects and builders’. The Chicken House was documented by Group Architects (Bill Wilson) and built by the landscape designer owner, Odo Strewe, and his landscape construction team. I use the term “documented” here, to ascribe authorship, because the formal and material palette of this project appears to be part of a collaborative discourse between the architect and his client. Both projects involved modes of work where traditional disciplinary (vocational) boundaries were blurred.

1. CLEARLITE LIMITED, 2A GUDGEON STREET, FREEMANS BAY, AUCKLAND 1951.

The Auckland City Council Archives hold five sheets of drawing for this project on microfiche. Four sheets (AKC339:8072) date from August 1951 and describe the original building. The fifth sheet (AKC339:12183) dates from February 1953 and describes the re-planning and construction of the administration area and the lunch room. The only other record found for this building is a magazine clipping from the NZ Manufacturer’s Journal 1953.(Shepherd:Hobin) The clipping contains an oblique angle photograph of the front of the building which accentuates the low-pitched, ranch-style roof. A projecting canopy clearly marks an off-centre entry and terminates in a graphically contemporaneous sign “CLEARLITE LTD”, presumably in perspex. A solid waist-height wall runs across the front of the façade and the space between the top of this wall and the gently sloping gable roof is regularly vertically subdivided and contains both fixed glazing and louvred panels. Despite the ravages of sellotape and photocopier the image retains a progressive dynamism. The parallel sided base wall generates a perspectival flow to the right hand side of the photograph which is intensified by the sloping gable and a collusive stormwater downpipe. The canopy disrupts this trajectory just enough to invite human entry and the clear glazing implies a viewing of the activities within.
The text supporting the photograph pursues the same progressive agenda. It begins by describing Clearlite’s modest beginnings in “small and inconvenient basement premises” and its transition to the new location “in its own modern factory”. After describing the material basis of the firm, (thermo-plastic sheet) and listing some of the techniques used in the manufacturing process (pressure and blow moulding, vacuum forming) it concludes that “Clearlite Ltd is destined to play an ever increasing part in the industrial life of New Zealand.” (Shepherd: Hobin)

In this period after World War Two, plastic materials came into their own; …accelerated by the shortages of natural materials and the overabundance of plastics in an industry geared up for the war effort, they were seen as the obvious materials for fitted kitchens, vanitory [sic] units and an unforeseen variety of new applications (Walker 1996:72)

There are two factors that coalesce here. Clearlite Limited manufactured the quintessentially modern product and a major shareholder and director of the company had a son who had almost completed an architecture degree. (AUAdA:247) Richard Hobin was interested in architecture as a constructed discipline and he was interested in a political dimension to architecture. This resulted in the formation of a group of like minded graduates and students initially Hobin, Frank Stockman and Henry James. They were later joined by John Scott and Renate Prince. They called themselves Structural Developments and they worked as architect builders. In the words of contemporaneous builder George Haydn “…they were ahead of their time. They tried to think in terms of rational building methods.” (AUAA:AA)

By August 1951 they had documented the factory for Clearlite Limited and it had been subsequently approved for construction by the Auckland City Council. The drawings for the original building consisted of four sheets of two different sizes. The major floor plan is part of what is presumed to be the first sheet in the set as this floor plan is located on the trapezoidal site plan by an offset dimension. The building does not engage with the idiosyncrasies of the site, that is it’s strangely angled east and west ends, but instead aligns itself with the parallel north and south boundaries. It avoids the particular elements of the site choosing instead to locate itself without difficulty. This plan is surrounded by the four elevations folded out from the plan, a technique usually reserved for engineering drawings or the representation of interiors. The sheet is longer in the horizontal dimension to accommodate a cross section which is oriented the same way as the west elevation but sits outside of it. You could argue that there is a logic, a certain rationality, to this layout but it privileges the act of drawing in that you can directly project lines from one view to the other rather than the reading of the drawing which would conventionally be the main purpose of the document. But if architects and builders are the same entity then they may be constructing this document in the manner that they consider to be most useful to them.

There is little dimensional information on this drawing, simply an overall of the building in both horizontal dimensions, an offset from one boundary corner and the widths of the toilets and the entry bay. In fact, this zone around the entry is the most densely populated area of the drawing, the only place where specific functions are recorded. The universal generalised unlabelled production space of the factory gives way in the bottom right hand corner (the south eastern corner) to the personal consumption and production needs of the worker. The need for privacy in ablutions results in the only separate compartment in the plan containing two WC stalls and labelled ‘men.’ A partially defined space labelled ‘lunch’ results in the shadow of the ablutions, separated from it only by ‘fibrolite lining plaster on 2 sides’.

A row of 6”x6” posts march down the centre of the building on the east west axis. They are spaced fourteen feet apart and they directly support what are called roof beams on the drawings, their configuration, name and size(18”x6”) suggesting they are being thought of as elements of a primary frame. Another drawing records that these roof beams butt into the side of the supporting posts. They avoid the conventional ridge beam or even ridge board.
It is interesting here to compare this roof structure experimentation with that of a contemporaneous Auckland group of innovators, Group Construction were carrying out. The roof structure for three of their houses on the North Shore Auckland all used a conventional rafter system but the rafters cantilevered over a beam at the two thirds point of their span and met at the ridge point with no support. Group Construction removed the structural necessity to support this point and therefore removed it from the discourse whereas the Structural Developments strategy concentrates loading at the ridge and brings the point of connection, of the two opposing beams and their supporting post, sharply into focus as a place of invention. This move also impacts on the planning as it forces the entrance off this central axis. Contrast this with the Group strategy in their North Shore houses where, with no structural support at the centre line or ridge, there is a much greater degree of freedom with the potential location of the entry. The 8"x2" roof joists are cut between these major roof beams and are connected to these beams by two ½" dowels presumably in timber. On top of this layer there is 1" pine sarking topped by a bituminous asbestos fabric. There are no specialised box gutters at the parapet ends of the roof fall. The fabric is simply turned up the parapet and over-flashed to provide for the rainwater collection and disposal. As in other projects like the Taylor House (Francis and Smith 2010) Structural Developments attempt to reduce the depth of the roof element and simplify its appearance. Sheet Three offers this detailed information in a field of micro-fiched drawing static where information comes and goes through the plane of the page and the details are at best obscure.

Sheet Two in the set is titled “reinforced concrete work” (again, all in lower case letters) and shows the profile of the elegantly shaped 16"x8" wall piers that subdivide the two long east-west walls into four bays and directly support the 18"x6" timber roof beams. There is no engineer’s signature on the drawings and the drawings are consistent in text and line weights with the rest of the set suggesting that it was Structural Developments themselves, and most likely Richard Hobin, who designed the reinforcing and made this drawing. This claim is strengthened by the fact that Hobin completed an Engineering degree shortly after his arrival in London in 1955, (AUAdA: 247)

The timber floor of the building sits on a conventional pile foundation but the drawing titled “concrete work” (Sheet Three of the set) that records this sub floor information is remarkable for the fact that it only includes dimensional information on the plan and elevation views. Again, this likely points to the fact that the designers were also the builders and required little other noted or dimensional information as they well understood the project and its structuring patterns. This sub floor is rigorously sub divided. The central row of 8"x8" pre-cast concrete piles on 2'0"x2'0"x8" concrete pad footings divides the sub floor in half along the east west axis. The remaining distances to the exterior walls on the north and south of this axis are divided into three equal spaces. The distance between the concrete piers is divided into three equal spaces. This pattern of subdivision is recorded by a grid traced faintly on the sheet resulting in rectangles by calculation of 4'8"x8'2/3". It is unclear what material implications this grid has. Like the main floor plan this drawing is surrounded by the four developed elevations of the building as if it were comprised only of the concrete frame and its accompanying brickwork infill. It is like some strange ruin where the dark grained quality of the micro-fiche scan gives it a post apocalyptic atmosphere.

An interesting additional drawing dates from February 1953. At this stage Structural Developments no longer existed and Hobin was working on his own account as an architect. These drawings look to have been created by the same hand that drew the earlier set suggesting that Hobin played a central role in both design documentation and construction. They indicate a new planning layout for the administration to the north of the asymmetrically placed lobby and the lunch room now takes over all the space south of the lobby. Administration is now contained within the building and ablutions have been ejected suggesting that the factory’s progressive image is substantiated by enough production to require management, justifying the optimism shown in the Manufacturer’s Association Journal article.

The Clearlite building has an uncanny resonance with an earlier iconic version of the factory genre, the Deutz machine factory by Gropius and Meyer at the 1914 Werkbund exhibition at Cologne. (Giedion 1954) In that building or more particularly in the workshop and garages of that building you see the same regular structural bay system, the projecting entry canopy set into the solid base wall and the clear glazing from this wall to the underside of the roof. While the Werkbund exhibition building is still symmetrical and retains significant Wrightian qualities, the Clearlite factory offsets its entry, thus removing any association with the classical. The Clearlite factory locates Hobin and his associates within a local version of the modernist project with their interest in rational structure and building economy.

2. THE CHICKEN HOUSE, 159 SCENIC DRIVE, TITIRANGI, AUCKLAND 1954

The Chicken House the regular structural frame of the Clearlite factory but in this case its origins seem to be in the field of landscape architecture. Odo Strewe, who lived in Auckland from 1948 to 1970, was a prominent landscape designer and arguable the leading pioneer of landscape modernism in New Zealand. In 1954 he moved his family to Scenic Drive, Titirangi to a building known as the Chicken House.

The Chicken House was part of a wider vision that Strewe had for the site. A typewritten, carbon copy of a letter addressed to the Waitamata County Council, the local authority having jurisdiction over that area, shows that Strewe intended to build a restaurant and that the pipe frame structure then under construction was to be used to raise chickens for consumption in this restaurant.(AUAA:Group) Unfortunately for Strewe, although he had an architect’s drawing for the Chicken House (AUAA:Group), he did not have a building permit and the WCC directed him to stop building. The architects in question were the practice known as Group Architects and to whom we referred earlier in the paper. The architect’s drawing was titled: “Experimental building in sprayed aerated concrete HEN HOUSE FOR
O. STREWE SCENIC DRIVE TITIRANGI and on one page, an extended A2, very efficiently represented the project. The floor plan was split down the middle showing roof framing to the left and foundations to the right. Directly above was a part elevation, part long section split on the same line as the plan. Above that three details of roof construction. To the extreme right of the plan was a cross section developed from the plan and then in the interior space of the plan were four more floor construction details.

![Image](https://example.com/image.jpg)

**Figure 2: Chicken House, Auckland, 1954 (AUAA: Group)**

This is a skinny frame compared to the mass of concrete and timber Structural Developments used in the Clearlite Factory. Ironically the substance of this skinny frame, 1 ¼”nominal bore (1.667 o.d.) 9# swg tubing, was produced in a factory. The floor plan is divided into 5 equal bays of 8’ 0¼” the whole being extended at each end by a 2’1” flat cantilever. There is a spare elegance to this frame as shown in the construction photographs of the time. The columns are screwed onto threaded pipe studs which have been set in the concrete foundations. The curved elements of the roof frame are welded together. This is not carpenters work but more like that of a boilermaker.

In another irony, this structure is more like a tent frame than a conventional building frame. This reading is further reinforced when the weatherproofing skin for the roof is applied. Two layers of expanded metal (trade name Colterro) are laid transversely to each other above the pipe frames. Another two layers are located below the pipe frames held up to those frames with 16# swg tie wires. This metal fabric is then sprayed with aerated concrete to form the barrel vaults of the roof. The detail drawings at the top of the page explain this general condition but the one titled DETAILS AT THE END OF THE VAULTS suggests a lack of understanding of the material, an application of the methods of timber framed technology to this new medium. The result is a thickening at the edge of the roof much like the application of the barge board to the edge of a timber framed roof. The result, in this case, is clumsy and obscures the efficient beauty and thinness of the concrete shell.

It is interesting to consider the source of this construction technique. It has been suggested in other writing that the forms may derive from the work of Le Corbusier. (Francis 2006) Certainly at the time of the project, the architect Bill Wilson was sketching barrel vaulted buildings for a proposed maori housing project (Francis 2010) but there was no technical enquiry involved, only brief material notes in these sketches. Strewe was an immigrant who left Germany in 1937 and while he was not to visit home again until 1956 after the completion of this project, he may well have known of the innovative work in this field of concrete shell construction that had been carried out by Finsterwalder and Dischinger and Bauersfeld during the late twenties and early thirties such as the Zeiss Planetarium in Jena. (Laffranchi 2010). Strewe was certainly aware of a political dimension to the work. In an article in the Auckland Star on Monday November 8,1954 the by-line reads “Worried about hurricanes, atom bombs, the heat, the housing shortage or the cost of building? Relax. The answer to them all may be wrapped up in a small 44 foot by 22 foot building being erected in the Waitakere Ranges. (Star 1954)
These are huge claims but Strewe had been in advertising in Germany, an industry well versed in hyperbole, and was keen to publicise what could have been an entrepreneurial possibility for him.

Another catalyst for this interest may have been Richard Hobin who was experimenting with some of the first concrete tilt slab techniques at the same time. Hobin is said to have been influenced in his concrete interest by a man named Morley Sutherland (Francis and Smith 2010) who later went on to write a book on ferro-cement boat building techniques. (Jackson and Sutherland 1969) This project may have been the nascent beginnings of a significant ferro-cement movement in New Zealand boat building during the 1970s.

The Auckland Star newspaper article twice describes the project as an experimental building and as we noted earlier the drawings are also titled “Experimental building.” The building was intended to be finished in four weeks. This, in itself, would have been an outstanding and bankable achievement at a time when the average construction time for comparable house was three months. Apart from the very fast construction time, what was experimental about it? The pipe frame was a medium that had not, to my knowledge, been used by anyone as a framing element in New Zealand domestic construction up to that point. An examination of Group Architects’ oeuvre certainly contains no evidence of its appearance elsewhere. But the material was regularly used by Strewe and his landscape team to construct pergolas and it is my argument that Strewe drove this part of the project. He was looking for an economic material for this new building which was to be the first of several that he planned for the site. His team were experienced at assembling the pipe frame. They had the welding and metal work skills and he had established personal and financial relationships with them. The roof cladding technique using the double layers of steel mesh covered by sprayed-on, aerated cement was very similar to the techniques already in use in Germany. That technique may have arrived through Strewe’s German knowledge but equally I would argue that the formal expression of the roof derives from Wilson’s interest in the barrel vault.

The walls however are a more complex Wilson/Strewe hybrid and use a panelised system front and rear although of very different materials. The end and rear walls comprise panels of Stramit, a compressed straw board whose four foot width fits perfectly with the 8’ 01/4” bay dimension. The panels are attached to the pipe frame on the outside by means of small metal tabs spot welded to the tube frame. The joints between panels are covered by a 6” strip of Colterro mesh before the wall is covered with approximately 12 mm of plaster variously described on the drawings as aerocem foamed concrete or sprayed foamed concrete. The surface of the rear and end walls is homogenised in the same manner as the roof. The front wall is very different and is the one that contains all the openings and reflects the functional layout of the building. The letter from Strewe to the County Council makes it clear that the two end rooms were to be for incubation and the centre three bays for growing on the birds for the restaurant. Like the rear wall cladding the joinery across the front is attached to the pipe frame columns by a metal tab system to which are fixed timber plates which carry the doors, windows and cladding. The subsequent Strewe house by Wilson (Group Architects), on the same property uses a system where the all the front wall elements are assembled as panels off-site and then slotted into a timber frame. However in the Chicken House, although the system looks the same on the drawn elevations, the lightness of the components would suggest that it was simply constructed on site.

The Chicken House was never used for chickens. Initially, it served as a dwelling for the Strewe family as they waited for their real house, further up the site, to be completed. Subsequently, it was occupied by friends and visitors and members of Strewe’s design and landscape construction workforce. It remains a dwelling to this day.

CONCLUSION

There were a number of connections between these projects. They arose out of an architectural milieu that existed in Auckland in the early 1950s that was driven by a desire to produce buildings that efficiently used and organised materials. Modern industrial production and management techniques and their application in architecture had been romanticised in examples such as the work of Giacomo Matte Trucco in his Fiat Factory, Lingotto, Turin, 1919 which
was published by Le Corbusier in *Vers une architecture*. But it was the work of Albert Kahn for Ford in the 1920s which would seem to more closely align with Structural Developments’ and Hobin’s agenda.

Structural Developments organised the site location of the Clearlite Factory in a manner that erased the particularities of the site. They organised the structure according to a pattern that always equally subdivided the space between the elements in the hierarchy above in such a way that this pattern was, wherever possible, evident from the interior of the building. As a result the subsequent structural performance of each element was seen to be smoothed or shared efficiently across the whole. Finally, they experimented with the production of the building and organised themselves to not only design the building but to also construct it. They do not appear to have advertised their output and the factory has long since been demolished and replaced.

The Chicken House was intended as a factory for the production of table birds. It is much better known and still exists albeit in a degraded state. The 1954 Auckland Star article publicised the project and Strewe was able to use the article to broaden the view of the project even suggesting:

…with the addition of lead foil interleaved in the concrete one has protection from atomic radiation too. (Star 1954)

While this claim might be technically extravagant, Strewe was using the fragile political state of the 1950s to gain public attention so he could advertise the much more reasonable and pragmatic properties of the system; its ability to insulate, to provide shelter from hurricanes and to “free the aesthete from conventional building patterns.” It was an experiment to produce a building that “may be [the] answer in cost and comfort” (Star 1954)

These buildings also arose out a social milieu. Richard Hobin had designed the first Strewe family home in Glen Eden in 1949 and he and the other members of Structural Developments were a fellow students of Bill Wilson and the members of the Group at the Auckland University School of Architecture during the late 40s. Post-war Auckland was a small city with a small but vibrant arts and cultural scene that tended to coalesce around charismatic, articulate figures like Bill Wilson, Odo Strewe and the writer Frank Sargeson. There was a strong thread of socialist belief. Both Strewe and Hobin were political figures who took public stands in relation to their views and later were well known for their opposition to the Vietnam War. It was in this atmosphere of politics, art, architecture and literature that they would have vigorously debated projects that explored rational building methods, economy and comfort.

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