

Why don't we all live in plastic houses?

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ABSTRACT: In the 1950s plastics were hailed as a material for the modern home, whether in the form of Tupperware containers (early 1950s) or a vinyl Barbie doll (1959). However, modernism was traditionally built on the so-called "new" materials of glass, steel and concrete (all well known in one form or another to the Ancient Romans) with no mention of plastics. The 1950s saw plastics, their development boosted by World War II, enter the building industry, albeit often hidden in the form of glues and pipes. Attempts were made to produce the all-plastic house, such as the Smithsons' 1956 "House of the Future" for the Ideal Home Exhibition in London, which used plastic interiors within a more conventional shell, and Goody and Hamilton's 1957 Monsanto "House of the Future" made of fibre glass panels. This paper investigates these buildings and the attempts made to introduce plastics into 1950s homes in New Zealand, with an emphasis on advertising in *Home and Building*. It concludes by suggesting that plastics, with the exception of laminates, mostly remain hidden in the modern dwelling. It also suggests that New Zealand architects of the 1950s were reluctant to embrace the new materials, preferring an architecture based on natural, and preferably home sourced, materials.

Introduction

Earl Tupper who had experimented with polythene during WWII, moulded his first flexible bowl shaped container circa 1942 and had been granted his patent for its air tight seal in 1949.¹ In 1947 *House Beautiful* magazine illustrated Tupperware under the heading "Fine Art for 39 cents" thus suggesting that plastic was the material of high art and not something cheap and nasty.² Tupperware parties began in the USA in 1951 but only reached NZ in 1973,³ illustrative of the barriers or unwillingness of New Zealanders to bring plastic into their homes. At the end of the 1950s Barbie arrived in all her vinyl and

Japanese-engineered glory by making her debut in February 1959 at the Toy Fair in New York.⁴ Like Tupperware, her journey to New Zealand was slow. She was around in the 1960s in small quantities, partly through private imports,⁵ while, following TV advertising, the demand for Barbie dolls in the USA in the summer of 1959 was "frantic."⁶ Lines Brothers (Tri-ang) had been offered Barbie but turned her down, eventually bringing out their competitor Sindy in 1963. Because Lines Brothers were established in Auckland, early Sindy dolls are much more common in NZ than early Barbie dolls. Only in the 1980s did Barbie come in such quantities that she "marked yet another

transition from the world where New Zealand was a South Pacific British Shire to one where it was another cultural colony of the American century."⁷ If these plastic icons struggled (with exceptions) in the New Zealand market in the face of sensible wooden Buzzy Bees and metal Fun Ho models, what was to be the fate of plastics in its building industry?

A 1954 conference in Washington sponsored by the plastics industry included a contribution from a Dow Chemical Company representative that described a house of the future, where plastic would be foamed on site and delivered through a hose into rudimentary formwork to make the external walls.⁸ Once set the formwork would be

¹ Clarke *Tupperware: The promise of Plastic in 1950s America* p 35.

² Clarke *Tupperware: The promise of Plastic in 1950s America* pp 42-43.

³ Tupperware "FAQ" np.

⁴ Fennick *The Collectible Barbie Doll* p 12.

⁵ Veart *Hello Boys and Girls* p 247.

⁶ Gerber *Barbie and Ruth* p 110.

⁷ Veart *Hello Boys and Girls* p 249.

⁸ Anon "Plastic for Future Houses" p 324.

removed and the molecules in the plastic would be cross linked by being bombarded with radioactive cobalt in a process described as "quick" (if, perhaps, deadly). The idea was not so far from the truth given that urea and other insulating foams have been and are still sprayed into both brick cavity and timber frame walls.

Two years later plastics were again seen as the future of housing in a display at the Ideal Home Exhibition in London. Because 1956 marked the 60th anniversary of the *Daily Mail* newspaper, sponsor of the annual exhibition, Alison and Peter Smithson designed a house for the exhibition that was supposed to reflect living 25 years into the future in all its plastic glory.⁹ The exterior of the one-bedroom town house for a childless couple was a blank box around which visitors could circulate and through openings peer into the interior of the all-plastic house. The house was planned around an internal garden in a free kidney shape with clear plastic sliding walls, with free form bathroom elements and only the rectangular kitchen looking rather out of place in one corner because of its rigidity. The living area was fitted with a number of plastic chairs

⁹ Ryan *The Ideal Home Through the 20th Century* p 113.

and other elements, such as a coffee and dining table that could both be made to emerge from the floor by pressing a button.¹⁰ The public were to be left with a sense of the glamour of the world of plastic.¹¹ However, it was a sham, being a mock up in plywood and paint with the opening between living area and garden left unglazed with thin vertical chromium wires giving the illusion of glazing.¹² Thus in the early 1950s the plastic house appears like a dream that could not be realised. The first real all plastic house was the 1957 glass fibre Monsanto House of the Future at Disneyland, described below, and which was so successful that when it came to its demolition in 1967 to make way for a new exhibit in Disney's "Tomorrowland," the wrecking ball bounced off it and it eventually had to be painfully dismembered by men with hacksaws, reinforcing the inherent durability of plastics.

After World War II, the built environment, particularly the home environment, was the target of the chemical and plastics industries that had expanded in support of the war effort

¹⁰ Ryan *The Ideal Home Through the 20th Century* p 112.

¹¹ van den Heuvel "Without Rhetoric Prototypes for the Suburban House" p 79.

¹² Colomina "Unbreathed Air 1956" pp 32-33.

and were now looking for a new market.¹³ The history of plastics in the home is much older than this, having begun in the late nineteenth-century. Alexander Parkes was the inventor of Parkesine, the first real plastic that could be formed into useful products and it won him a medal in the 1862 International Exhibition.¹⁴ Parkesine is not dissimilar from the modern celluloid. Serious manufacture of celluloid plastic, based on cellulose, began with John W Hyatt in the USA with his 1870 works in New Jersey where plastic combs were made.¹⁵ In the UK LP Merriam set up a factory to make celluloid collars and cuffs which was so successful that by the 1900s the company was making celluloid dolls, as well as knife handles, combs and fancy goods.¹⁶ However, the inflammable nature of celluloid was always in the background and Bakelite became the first plastic that was also totally synthesised within the laboratory and that was safe enough to be used for electrical insulating.¹⁷ Just as supporting WWI through

¹³ Freinkel *Plastic: a toxic love story* pp 25-27.

¹⁴ Kaufman *The first century of plastics: celluloid and its sequel* p 21.

¹⁵ Freinkel *Plastic: a toxic love story* p 17.

¹⁶ Kaufman *The first century of plastics: celluloid and its sequel* p 44.

¹⁷ Fielding *History of Bakelite Limited* p 13.

the manufacture of Bakelite products gave the new industry the valuable experience that allowed it to expand introduction of consumer goods in the 1920s (pipe stems and umbrella handles being early products)¹⁸ so the impetus given to the development and production of plastics during WWII led to many new consumer products post war.

The 1950s thus mark the date of the plastic invasion, and for all the right reasons. Plastic, or rather the family of polymer chemicals, is cheap, and so fits with the socialist modernist aim of a more equitable society. It is also long lasting and flexible in what it can do, from spongy foam insoles to the clear acrylic of the gunner's turret. However, that very longevity is part of plastic's problem since unlike natural materials plastics do not bio-degrade very readily. This is bad for manufacture since if a product does not break or wear out it is hard to sell any more once everyone has one. It is also potentially bad for the environment since the elements that go to make up plastic, most of which come from the waste products of oil refining, are not available for reuse, unlike the elements that make up natural materials. Since houses are a relatively long

life product if measured against the lifetime of the average person, then why are we not all living in plastic houses? This paper traces the gradual rise of the use of plastic in the home in the 1950s, particularly by looking at how plastic was advertised and portrayed in the journal *Home and Building*.

The new era of plastics in New Zealand building

The New Zealand branch of the British company ICI (Imperial Chemical Industries) was advertising plastics in *Home and Building* in the latter part of 1949 by pointing out the multiplicity of uses for Perspex (acrylic) in a generic factory, ranging from roof lights and light fittings to office partitions and machine guards.¹⁹ The campaign then moved to a series of uses of plastics with "Plastics in Design ... No.1" looking at industrial safety and illustrating clear Perspex circular saw and boring machine guards.²⁰ Perhaps realising that selling plastic into the home market might be useful "Plastics in Design ... No.2" moved into buildings by featuring a Perspex moulded sink with integral double drainer, which came with the advantages of pastel

shades, permanent colour, heat and acid resistance, being hardwearing, and somehow being gentle on dishes.²¹ The same material was also used for wash basins. The 1952-53 Cranwell's Catalogue of building supplies for New Zealand featured a four page spread for Wood Plastics Ltd. of Hastings with two pages for "Plix in the home."²² This proclaimed the advantages of:

The ICI formula from which PLIX is processed [that] was used extensively in wartime ... when it withstood all tests of exposure to every extent of climate and temperature throughout six years without distortion, cracking, or deterioration.²³

Images of moulded sinks and wash hand basins were shown, noting that baths and lavatory seats in the same material and colour range were also available, thus ushering in the era of the true matching bathroom suite with its colour co-ordinated toilet seat (before plastics, toilet seats were made of wood, which would have to be painted to match a coloured enamelled bath and coloured china wash basin). However, it seems New Zealand architects were coy about discussing the use of these new acrylic items in their houses,

²¹ ICI (NZ) Ltd. "Plastics in Design ... No.2" p 4.

²² Cranwell "Plix products" Section 4/28.

²³ Cranwell "Plix products" Section 4/28.

¹⁸ Fielding *History of Bakelite Limited* p 16.

¹⁹ ICI (NZ) Ltd "Perspex" p 4.

²⁰ ICI (NZ) Ltd. "Plastics in Design ... No.1" p 48.

with a rare mention in 1953 in the description of a house by Natusch and Sons in Napier. This house had wood framing and cladding, aluminium roof, carpet and asphalt tile flooring and a Perspex sink unit by Wood Plastics of Hastings.²⁴ In contrast this same issue of the journal praises a Festival of Britain dining set of wood, metal and cotton fabric available in Auckland, with the only other mention of plastic in advertisements being a Resene paint advertisement where the paint is "...manufactured from Polyvinyl Acetate emulsified resin"²⁵ and one for Weldtex resin bonded plywood for exterior and casein bonded for interior use.²⁶

ICI (NZ) continued its series of advertisements in the early 1950s in *Home and Building* extolling the way that their plastic products were an improvement over the originals. For example, corrugated Perspex ("Plastics in Design...No. 3") was sold as perfect for natural lighting with a better U-value than glass (0.932 as opposed to 1.03) and with a 92% light transmission as opposed to 80% for ¼ inch wired glass, which hardly

²⁴ Anon "A House in Napier" p 58.

²⁵ Resene "Why you should specify "Resene" interior satin finishes" p 68.

²⁶ Weldtex "Weldtex Plywood" p 70.

seems a fair comparison.²⁷ Alkathene pipe was then featured as it "revolutionises plumbing."²⁸ However, the Standards Institute only began work on specifications for polythene water pipe in 1957.²⁹ This was followed in the next issue by "Fluorescent lights in Perspex"³⁰ and in the following by an advertisement for Holoplast, which was sold as "a modern plastic lining."³¹ Wells Coates had used double-skinned Holoplast filled with sand for the doors of the popular Telekinema at the 1951 Festival of Britain.³² In 1932 he had also had designed the iconic Ecko radio in Bakelite. However, ICI (NZ) only suggested the double-skin material could be used for counter and bar tops, pointing out it had been used for this in ocean liners, not that many readers of *Home and Building* would have a liner to fit out. After some repeats ICI (NZ) seem to have run out of new suggestions for plastics in buildings, almost as if they had run out of heart, though advertisements for Holoplast "... in natural brown, pastel colours

²⁷ ICI (NZ) Ltd "Plastics in Design ... No.3" p 40.

²⁸ ICI (NZ) Ltd "Plastics in Design ... No.4" p 44.

²⁹ Raine *Fifty Years Onwards* p 17.

³⁰ ICI (NZ) Ltd "Plastics in Building ... No.5" p 4.

³¹ ICI (NZ) Ltd "Plastics in Building ... No.6" p 46.

³² Wells Coates "Planning the Festival of Britain Telekinema" pp 108-119.

or with a veneered surface" appear later.³³

However, ICI (NZ) remains virtually a lone voice in *Home and Building* in the early 1950s. Reference to plastics is made in an article discussing making home products lighter along the lines of aircraft technology, thus saving material. This is illustrated by a plastic hairdryer housing which halved the weight compared to, presumably, a metal housing. The same article also shows an attractive condiment set in urea formaldehyde, along with discussion of the thermal advantages of plastic saucepan handles (presumably of heat resistant phenolics) over the hollow metal types.³⁴ It also mentions a "highly polished plastic table—heat and damp resistant—that gives the appearance of wood [and] reflects the increasing use of plastics in furnishing for the household." This rather dull plastic masquerading as wood is a long way from the colours and patterns of the laminates (layers of kraft paper and melamine resin treated under pressure) then being made by Laminex of Australia. Although started in 1934 in a Melbourne shed, the operation expanded and supported the war effort with various

³³ ICI (NZ) Ltd "Holoplast laminated structural plastic panels and lining sheets" p 42.

³⁴ Davis "Art in Industry and the Home" pp 40-41, 53.

insulating products.³⁵ Post WWII the same firm were making laminates for furniture and interior decoration in a new Cheltenham factory established in 1952³⁶ with these products being first sold through the trade. However, the introduction of more colours and two-tone finishes later saw them marketed direct to consumers.³⁷ By 1955 Laminex was being advertised in New Zealand as "the ultimate surfacing material."³⁸ Laminex is the only company to have resisted the might of Formica, who recognised that one way to gain an overseas market for its products was to license companies to make Formica. In 1948 the UK company De La Rue, which once made playing cards, set up a first factory on Tyneside in the UK and then in 1958 a factory in Sydney, which was followed by a factory in Papakura, Auckland in 1959.³⁹ From these dates it seems that plastics, apart from New Zealand icons like the Bakelite Kosyaire fan heater, which was advertised without reference to the fact it was plastic or

even styled like a space ship,⁴⁰ struggled to gain a foothold in the New Zealand household, at least in the first half of the 1950s.

In contrast, in the UK, the streamlined and colourful American kitchen with its plastic laminate surfaces was sold as being modern. Parts of the package, such as tubular steel and plastic chairs and a Formica-topped kitchen table were even cheaper than their more conventional wooden counterparts.⁴¹ Before WWII Formica was a glamour product, "American modernists became aware of phenolic laminate as an industrial material reflecting the machine spirit they wanted to convey in custom furniture for Manhattan sophisticates."⁴² It had been used to line railway carriages and even in the Queen Mary: "Service included the option of hot and cold salt or fresh water for baths and the rooms were panelled in formica [sic], then a new and fashionable material."⁴³ Post WWII Formica introduced "Realwood" in the late 1940s and Skidmore Owings and Merrill used it in their 1948 Terrace Plaza Hotel in

Cincinnati for the reception desk while the rooms used coloured laminates in fittings such as the red combination sink and vanity unit.⁴⁴ Architects in New Zealand seemed less willing to use this material. The first espresso coffee bar to open in Wellington (presumably *The Espresso Coffee Bar* at Stewart Dawson corner),⁴⁵ designed by Porter and Martin with interior by Hurdleys had a cotton wall lining, black and white lino floor, and a mahogany bench under which were stools upholstered "...in soft green plastic hide," also used on the face of the counter, but with not a laminate in sight.⁴⁶ In contrast the American kitchen of the 1950s was a colourful plastic experience:

The kitchen table had a light-coloured Formica top that coordinated with that of the rest of the kitchen...the chairs ... and their vinyl covering either matched the tabletop, or provided a vibrant contrast...nearly indestructible plastic dishes were available in a palette as vivid and artificial as that used on the table and chairs.⁴⁷

The USA diner of the 1950s was equally brightly coloured and plastic, though

³⁵ Kinsey *Laminex Pty Ltd* np.

³⁶ York *Formica Forever* p 96.

³⁷ Kinsey *Laminex Pty Ltd* np.

³⁸ Laminex Pty Ltd "Laminex—ultimate surfacing material" back cover.

³⁹ York *Formica Forever* pp 23-24.

⁴⁰ "Kosyaire" pp 63, 57.

⁴¹ Macdonald and Porter *Putting on the style* np.

⁴² York *Formica Forever* p 52.

⁴³ Steele *Queen Mary* p 130.

⁴⁴ York *Formica Forever* pp 53-54.

⁴⁵ Ramanos "The queen of Wellington cafés" np.

⁴⁶ Anon "Espresso Coffee Bar for Wellington" pp 54-55.

⁴⁷ Hine *Populuxe* p 64.

durability under constant use was stressed.⁴⁸ The first *Home and Building* advertisement for Formica appeared in 1957 noting, "Formica has so many uses because it is so beautiful."⁴⁹ In New Zealand there was still catching up to do with architects failing to rush to explore the new modern materials. A kitchen was more likely to be updated with wooden cupboards with turned wood handles and a linoleum bench top.⁵⁰

Paint is not exactly a building material so will be glossed over here, except to say that as the 1950s progressed more paints acknowledged their plastic content in advertisements, for example early on Vitretex was the only paint to claim it was a "thermo-plastic film which supersedes paint for all surfaces."⁵¹ However, by the September 1956 issue of *Home and Building* advertisements appear for Phenoglaze⁵² and Synteko,⁵³ and Balm Paints (NZ) Ltd. describe their product as "the flat

⁴⁸ York *Formica Forever* p 84.

⁴⁹ Formica "Formica has so many uses because it is so beautiful" p 4.

⁵⁰ Anon "Remodelling an old fashioned kitchen" pp 30-31.

⁵¹ Vitretex a "Plastic sealed protection is news!" p 9; Vitretex b "Plastic sealed protection is news!" p 60.

⁵² Phenoglaze "Phenoglaze" p 66.

⁵³ Synteko "The new plastic Swedish floor seal" p 71.

Alkyd Enamel,"⁵⁴ with a stress on the greater performance offered by these plastic based products. Balm Paints went further as a 1957 article about their new Tamaki factory, designed by Nicol and Grey, described the general office as "floored with cork tiles in light and medium tones, sanded and plastic waxed" while the cafeteria had grey and red vinyl floor tiles.⁵⁵

Particle board, now ubiquitous in New Zealand houses, and which is no more than chips or shreds of wood mixed with urea formaldehyde or other resin, forming about 6% of the board by weight, and then pressed into sheets, was developed in 1945 as a replacement for fibreboard (made by mixing wood fibres to a pulp which is then compressed into sheets and dried) which disintegrates when damp.⁵⁶ However, in the early 1950s Pinex (a fibreboard type product) was widely advertised in *Home and Building* as an insulating lining.⁵⁷ Plywood, which did contain synthetic resin glues, developed for the aircraft industry in WWII to reduce

⁵⁴ Balm Paints (NZ) Ltd "Balm Paints" p 46.

⁵⁵ Anon "B.A.L.M. New factory Auckland" pp 58-60.

⁵⁶ Hudson *Food Clothes and Shelter* p 115.

⁵⁷ NZ Forest Products Ltd. "A major factor in NZ's economy" p 8.

susceptibility to moisture and fungus,⁵⁸ was not marketed for these properties. In 1956 Fletchers were advertising "Shan-Tong a new low cost ply panelling." This was ply with a sculpted surface in imitation of oriental fabric,⁵⁹ although to their credit the architects did not rush to embrace this product either.

In the second half of the 1950s architects were openly making more use of plastic, especially in interiors and for furnishing. For example, an advertisement for "Vynide" by ICI (NZ) Ltd. described as the "modern plastic upholstery material" showed photographs of it in the cafeteria of the John Court Ltd. building, a clothing and manchester department store, in Queen Street (now Whitcoulls),⁶⁰ designed by FG Gregory, Architect.⁶¹ Vynide also featured in the interior of the Embassy Theatre, Auckland,⁶² and in the Ministry of Works Whenuapai International Airport, where it was used for seating in the waiting room.⁶³ A year later it

⁵⁸ Lusty "Plastics and their place in post-war building" p 372.

⁵⁹ Fletchers "Shan-Tong a new low cost ply panelling" p 12.

⁶⁰ Heart of Auckland City "History of Auckland" np.

⁶¹ ICI (NZ) Ltd "Vynide" p 68.

⁶² ICI (NZ) Ltd "Focus on modern upholstery" p 6.

⁶³ ICI (NZ) Ltd "Vynide" p 65.

had crept into the home in the form of a hard wearing breakfast room/dining kitchen with plastic upholstered seats and backs on metal chairs with tapered legs and vinyl floor tiles, although the emphasis of the article was still on the use of Forest Products, including their leatherboard dado.⁶⁴ Suggestions that Vynide could have been less than perfect to sit on are reflected in a new ICI product advertised in 1957: "Introducing "Vynaire" the vinyl upholstery fabric that breathes!"⁶⁵ Its use was illustrated for the chairs of the new Sapphire Room at the Auckland restaurant *Gourmet*, which had just been refurbished by RG Hobday.⁶⁶ With its sophisticated and upmarket clientele, *Gourmet* was one of the first places in New Zealand to have a tank of live crayfish for diners to select.⁶⁷ However, despite these tentative dabblings with plastic, within the next two months the first real all-plastic house was to be opened to the public in Disneyland, USA.⁶⁸

The Monsanto House of the Future

⁶⁴ Anon "A new angle on a family room" p 9.

⁶⁵ ICI(NZ) Ltd "Vynair" p 66.

⁶⁶ Anon "Remodelling part of older Auckland" pp 66-67, 69-71.

⁶⁷ Rowland "Restaurants and food outlets" np.

⁶⁸ Anon "The plastic house of the future" p 49.

In 1954 Monsanto Plastics Division had begun a research programme with MIT "... to market plastics as sound engineering materials and help the building industry utilize new designs and materials to achieve production line methods and facilities."⁶⁹ Three years later the 1300ft² (130m²) cruciform house, set 25 years in the future in 1982, opened in Disneyland's *Tomorrow World* and attracted 60,000 visitors each week, and some millions in the ten years it was opened.⁷⁰ The cruciform shape was a remnant of an earlier idea that the house would rotate to make optimum winter use of solar energy.⁷¹ The design was based on a curved hollow plastic section that formed ceiling, wall and floor, 8ft x 16 ft (2.4m x 4.8m), with 16 of these modules cantilevered from the core that contained the utilities area with foundation under, forming the cruciform shape.⁷² One wing contained the family room, a second the living room, a third the master bedroom, and the last a girl's and a boy's bedroom, separated by a folding plastic room

⁶⁹ Anon "Monsanto plastics: "House of the Future"" pp 478-485.

⁷⁰ Marcott "Make mine small, modular, and made of plastic" np.

⁷¹ Hess *Googie: fifties coffee shop architecture* p 50.

⁷² Anon "Monsanto plastics: "House of the Future"" pp 478-485.

divider (these were first advertised a year later in New Zealand *Home and Building* in five shades of wipe clean vinyl).⁷³ The core contained the kitchen and two fully moulded plastic bathrooms designed by Henry Dreyfuss, separated by a diagonal partition, so one was accessed from the master bedroom, and the other from the core outside the children's rooms. Everything inside was as plastic as possible, and therefore wipe down and hard wearing, even to the plastic "crockerly."⁷⁴ Floor to ceiling double glazing was, however, "Thermopane" and the toilets were not plastic "because of the present problems of sanitation,"⁷⁵ but elsewhere plastic was king. The skin was fibreglass (using a polyester resin) with urethane foam between skins for rigidity and insulation, all kitchen surfaces were plastic finished with the addition of it being the first kitchen "to make provision for foods preserved by atomic energy" though there were also a normal refrigerator and freezer, with all these food storage systems recessing into an overhead kitchen bulkhead.⁷⁶ The kitchen was first

⁷³ The C. & A. Odlin Timber and Hardware Co. Ltd. "It's the wonderful all new...Flexifold door" p 5.

⁷⁴ Anon "House of the Future, 1957" np.

⁷⁵ Anon "The plastic house of the future" p 52.

⁷⁶ Anon "Monsanto plastics: "House of the Future"" pp

framed in aluminium but then the units were moulded in plastic and cantilevered from the wall. The floor was linoleum with a plastic finish on foam rubber base.⁷⁷ The ceiling was of thin plastic sheets with fluorescent lighting behind. Upholstery and other textiles were acrylic fibre and nylon rigid urethane was foamed in place for "cushioning furniture and rugs."⁷⁸ This was a real attempt to make the form grow from the materials since the "objective of the architects, Richard Hamilton and Marvin Goody, was to find a structural form unique to plastic."⁷⁹ The commentator in the UK-based *Architect and Building News* was, perhaps, less enthusiastic, noting: "It is expected that in the future, because of plastics [sic] versatility, the shape of correctly designed structures can be a function of their use rather than the form of the materials from which they are constructed."⁸⁰

The only reference to the Monsanto House in *Home and Building* was an unacknowledged

478-485.

⁷⁷ Anon "The plastic house of the future" p 52.

⁷⁸ Anon "Monsanto plastics: "House of the Future"" pp 478-485.

⁷⁹ Anon "The plastic house of the future" p 50.

⁸⁰ Anon "Monsanto plastics: "House of the Future"" pp 478-485.

and somewhat blurred artist's impression of the "Atoms for Living" kitchen core. This was described as

a design for 5 to 15 years in the future [incorrect as it was 25 years on], introducing a new "first" in household refrigeration, constant-temperature storage for foods preserved by rays produced by atomic energy ... [the] Island is an ultrasonic dishwasher that serves also as a desk and communication centre. All appliances appear and disappear under push-button control. Plastic materials in new applications are used throughout.⁸¹

The fact this was offered in a small typeface suggests the author realised that this was real "pie-in-the-sky" for the average New Zealander, especially given that census records show in 1956 only 54% of New Zealand households had refrigerators, and the cost of a fridge was equal to seven weeks' median wage.⁸² In fact every two months throughout 1957 Pre-stressed Concrete (NZ) Ltd advertised their own version of a future house, which was a two storey flat roofed "Domino-style" dwelling of concrete columns and panels with extensive floor to ceiling glazing and ramped access to the upper

⁸¹ Engle "Getting the best from your refrigerator" p 59.

⁸² Statistics New Zealand "Home appliances have come a long way in price and technology" np.

levels.⁸³ Like the Monsanto House this was another model that failed to ruffle the calm waters of timber framing and cladding and adherence to natural materials in the New Zealand domestic market. However, there were also political reasons behind the slow uptake of plastic products in the 1950s' building industry.

Plastics, New Zealand and the 1950s

The Plastics Institute of New Zealand was formed in 1944 with 18 known manufacturers of plastics.⁸⁴ By the early 1950s problems with post-war shortages of materials appear to have been overcome although there was concern about imported buttons with the 1950 formation of a button sub-committee,⁸⁵ suggesting that the building industry was not their focus. The Plastics Institute held their first moulding design competition in 1952: "An electrical iron handle won the Industrial Award, a hand mirror the Fancy Goods, an egg tray the Household, and lawn bowls the Sports Section."⁸⁶ Summing up the first decade of the Institute made the difference between

⁸³ Pre-stressed Concrete (NZ) Ltd "The future is with pre-stressing" p 12.

⁸⁴ Raine *Fifty Years Onwards* pp 9-10.

⁸⁵ Raine *Fifty Years Onwards* p 12.

⁸⁶ Raine *Fifty Years Onwards* p 13.

the New Zealand and USA markets for plastics clear.

So ends the first ten years of the New Zealand Institute of Plastics. The lusty baby "PINZ" ... had developed more slowly than was envisaged by founder enthusiasts ... Maybe this can be attributed to the hardships and shortages of the immediate past World War II period. It is doubtful if any particular Government can be blamed as there was a transition from Labour to National rule (5 years each). More probably it was the economic situation of that time. New Zealand was virtually supplying the total agricultural food needs of the United Kingdom in its recovery from near bankruptcy and the rigours of six years of war. New Zealand primary produce was instrumental in assisting that recovery and it is notable that the last ration books in England were not made redundant until as late as 1953.

The USA, on the other hand, was economically fabulously rich from the industrial spoils of war. Therefore, New Zealand, through payment for primary products, had plenty of sterling currency but very little dollar funds. Unfortunately, the raw material supply was better, both in supply and quality, from the US dollar area than the UK.⁸⁷

By 1955 most wartime restrictions had been lifted and the vinyl record pressing branch of

⁸⁷ Raine *Fifty Years Onwards* p 14.

the New Zealand plastics industry was doing well.⁸⁸ However, the architects were still coy about describing, or maybe even trying, plastic products in their buildings. In 1956 the comment was made about architect-owner C Prior Hoadley's house with a concrete slab, timber framed and sheathed and aluminium roofed that "Natural materials have been used freely in order to keep maintenance costs to a minimum."⁸⁹ So although plastics were marketed, particularly by ICI in their *Home and Building* advertisements, as improving the performance of building elements their use was still limited. It takes a connection with the USA to bring out the plastics. A 1956 motel in Tauranga by King and Christie was described as one of the first in New Zealand to represent model American motel practice. Each room had a dinette with a laminated table top, the kitchen area had a laminated plastic bench top and the floor was cork with a plastic finish.⁹⁰ Hopefully this made the guests as happy as the 1957 New Zealand housewife with her green laminate table and bench tops: "She's happy! she has a laminex [sic] home."⁹¹

⁸⁸ Raine *Fifty Years Onwards* p 15.

⁸⁹ Anon "A sensitive design, deftly sited" pp 28-31.

⁹⁰ Anon "motel at Tauranga" pp 49, 72.

⁹¹ Laminex "She's happy! ... she has a laminex home" p 81.

Conclusion

The plastics industry was keen to infiltrate the local building market with their new wonder materials but the domestic architects resisted, only allowing for laminates in the kitchen and the occasional acrylic bath and wash had basin in their houses of timber, finished with joinery of native woods and painted plasterboard. The all plastic Monsanto House passed virtually unacknowledged in New Zealand, but then Disneyland was a long way away. Nevertheless, the tenets of modernism were still being expounded, with Garrett noting the principles of modern design, including embracing advances in technology, as:

Firstly: that principles should govern effects;

Secondly: that structure should be directly expressed;

Thirdly: that technological advances should be welcomed; and

Lastly: that a wide public should be served⁹²

In his later analysis of the New Zealand housing tradition and style he noted,

They [New Zealand architects] have been influenced by the mature tradition of timber buildings in Scandinavia, California and Japan ... The resultant expression springs from the same roots as all suburban architecture; this

⁹² Garrett "Influences on house design" p 15.

aims to create an oasis of simplicity, sanity and harmony in a complex, chaotic and often brutal world.⁹³

Yes, the houses had bigger windows and more open plans as a nod towards modernism but they were also essentially conservative in their materials and technologies. Only in commercial work did architects acknowledge the use of plastics. Wool House by Bernard Johns and Frank Whitwell [a building Toomath claims he designed in collaboration with Johns and Whitwell]⁹⁴ made use of laminates for the walls of the toilets and some of the window cills, and more prominently, many ceilings were of translucent plastic tiles with lighting behind that gave "... glare-free even levels of lighting, eye comfort, facilitates precision work, reduces fatigue and gives lift to displays of fabrics and merchandise."⁹⁵ The manufacturers claimed 95% of Wool House ceilings were either plastic illuminated panels or acoustic tiles, both manufactured in New Zealand.⁹⁶ Here Bernard Johns, the architect of the wooden framed and clad house New

Zealanders most wanted to live in post war,⁹⁷ is one of the few architects in New Zealand to come to grips with the new plastics in architectural innovation.

Postscript: Toys

In the 1950s plastic toys became much cheaper because of the new techniques such as injection blow moulding.⁹⁸ This decade, was also the era of the litho-printed metal dolls' house filled with plastic furniture made by firms such as Marx. For once New Zealand was up there with the USA and UK as Protex Toys made in the 1940s and 1950s by Plastic Moulders (NZ) Ltd Auckland produced sets of coloured plastic furniture for dolls' houses.⁹⁹ The furniture came in a variety of usually bright colours, not of all which were either realistic or co-ordinated. Plastic also allowed patterns to be imprinted, so that candlewick plastic bedspreads sit on plastic bed frames and fridge doors can be moulded to look like their grown-up metal equivalents. Apart from the usual dining and lounge suites, labour saving devices also appeared in bright colours, such as Renwal's red and blue

sewing machine that lowered into its cabinet when not in use. However, in New Zealand there was a rival company that produced dolls' houses and furniture that were, like New Zealand domestic architecture in the 1950s, single storey and made of wood. Jomax of Auckland made a range of modernist furniture from solid wood, painted or varnished with occasional transfers for detail and staples as imitation handles. Like New Zealand's domestic architecture, it was solid, worthy, and ever so slightly dull.

⁹³ Garret "Home Building—Our tradition" pp 43-45.

⁹⁴ Architectural Centre "S William Toomath" np.

⁹⁵ Anon "Wool House" pp 54-58.

⁹⁶ Plastic Surfaces (1946) Ltd. "'Plasticeil' ceilings of luminous and acoustic sections as Wool House" p 61.

⁹⁷ Stewart "The man in the street chooses a home" pp 24-32.

⁹⁸ Jaffe *The History of Toys* p 139.

⁹⁹ Veart *Hello Boys and Girls* p 140.

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