***P2. Location:** Unrestricted
***a. County** Riverside ***b. USGS 7.5' Quad** San Jacinto Peak **Date** 2019
**c.** Address 52895 Big Rock Road City Idyllwild (vicinity) Zip 92549
**d.** UTM: (Give more than one for large and/or linear resources) Z11, E 524 242, N 3735 015
**e.** Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)
APNs: 5592114000 and 5592114100; Elevation: 6,328 Feet; Less than one acre
Latitude: 33.754938; Longitude: -116.738247

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries):

Nestled in the San Jacinto mountains near Idyllwild, California, the Futuro is a structural reinforced fiberglass polyester plastic portable home, meant to be easily moved to a desired site, usually by helicopter. Noted for its ellipsoid shaped shell which characterizes its space-age Futuristic architectural style, the residence measures 26'-4" (8m) in diameter, 13'-2" (4m) high with a total floor area of 520 square feet (48.5 square meters), and weighs approximately 11,900 lbs (5,500kg). Following extensive exterior and interior restoration, the resource is in excellent condition retaining its integrity of design, workmanship, materials, setting, feeling, and association to its 1969 period of significance. In recognition of owner Milford Wayne Donaldson's restoration effort and resulting preservation of this fragile resource, essential to saving the building and raising the profile of the entire family of similar buildings, the property is identified as the Donaldson Futuro.

**P3b. Resource Attributes:** HP2 ***P4. Resources Present:** one building

**P5. Photos:** Exterior, camera facing northeast (Paul Kozal, March 26, 2018); photos pages 40-50

***P6. Date Constructed/Age and Source:**

**P3a**. Description (continued)

The United States production model that was built by Futuro Enterprises—a.k.a. Futuro Corporation, headed by Leonard Fruchter in Philadelphia, Pennsylvania, under a USA license agreement with Polykem Ltd.—became an instant hit in the United States (**Figure 1**).[1] The total square footage, weight, and physical characteristics, however, were quite different from the Polykem Ltd. model (**Figure 2**).

In 1969, the Futuro was purchased and delivered from Philadelphia, Pennsylvania to San Diego, California in four complete shell pieces and bolted together on site by then owner and agent, Stan Grau. Relocation of the Futuro from San Diego to Idyllwild, California occurred in 2004. Barely visible from the public right-of-way on Big Rock Road within the San Jacinto Mountains, this Futuristic space-age residence is set discreetly on a large rock outcropping with concrete pier foundation surrounded by Native Ponderosa Pines, California Black Oaks, White Firs, and Manzanita bushes (**Photo 5**).

The ellipsoid shaped Futuro is made entirely of synthetic fiberglass reinforced polyester plastic and has been repainted its original Harvest Gold exterior color as part of the resource's restoration (**Photos 1, 2, 3)**. The Futuro measures 26-4" (8m) in diameter, 13'-2" (4m) high with a total floor area of 520 square feet (48.5 square meters) and weighs approximately 11,900 lbs. (5,500 kg) (**Figure 2**). The original 1/8" thick-walled rusted steel leg supports and steel bolts have been replaced in-kind with 1/4" thick-walled stainless-steel supports and stainless-steel bolts following a structural analysis for wind and snow. Fenestration includes sixteen custom-made replicated acrylic bubble windows along the Futuro's façade and two additional smaller ones beneath the dining room windows at the southeast façade (**Photo 2**).

Because all of the original windows were previously replaced, a reproduced set was achieved utilizing an original window from an Australia Futuro as a model.[2] While the portable Futuros manufactured in the USA included a total of eighteen, the Finnish model provided twenty total windows with the four smaller ones under the dining room windows. Similarly, the Finnish model's door was centered under two windows, while this Futuro's entry door and airstair hinges downward and is located on the south side directly beneath only one of the upper windows (**Photo 4; Figures 1, 2**). An acrylic bubble skylight has replaced the original flue opening on top.

Major interior features contribute to the Futuro's architectural significance. The Futuro's interior originally centered around a metal fireplace that sat on a circular storage console. Due to potential fire threats, the fireplace feature was not retained inside the building.[3] The original circular storage console remains and the original roof opening for the flue system was renovated to include an acrylic bubble skylight and light fixture (**Photo 10**). The partition walls radiate from the center console and the specially curved original interior wood doors, designed to align with the interior wall curvature including latch sets and doorknobs, have been retained. The pale yellow plastic laminate finish for the adjacent built-in wall cabinets had previously been badly sanded and painted white. An application of period paint from a 1966-1968 pallet has been applied over the white.[4] The Futuro's loss of the majority of its

[1] Marko Home and Mika Taanila, *Futuro: Tomorrow's House from Yesterday* Tulevaisuuden Talo Menneisyydestä. (Helsinki, Finland: Desura Oy Ltd., 2002), 28.
[2] Paul McNeil, Alternative Artist, Surfer, email to Donaldson, November 3, 2003. McNeil, a Futuro owner in Australia, sent an original window from his Futuro so the new windows could be duplicated to the exact size, approximately two feet by four feet, oval shaped with a 50mm (2") rise in the middle.
[3] The fireplace components including the ceiling spotlights are wrapped and stored on site.
[4] Period appropriate paint was chosen from a palette Donaldson used while studying architecture in 1966-1968 at Uppsala,

asbestos popcorn ceiling, which was caused by previous openings at the top, has since been replicated using non-asbestos popcorn ceiling with embedded gold flakes.

The original design comprised features as found in a traditional trailer with wood counters and built-ins covered with a plastic laminated top, similar to Formica; a small bathroom and shower unit; and typical small appliances for the kitchen. The Futuro retains its original faucet, range, and under counter refrigerator. Original furniture, such as the built-in seating and coffee tables that when pushed together form additional sleeping areas (**Photo 11**), as well as the dining table, are all intact (**Photo 12**). Also original is the kitchen pantry with doors that have specially made Futuro-shaped black acrylic ellipsoid pull handles (**Photos 7, 13**). Inside one of the pantry doors are the original hooks used to hang the Navy cadets' room keys when the Futuro was at the US Naval Training Station.[5]

Likewise, the bedroom maintains its original built-in counters and drawers, bed platform with storage underneath, and closet with mirrored sliding doors (**Photo 15**). Some of the missing round chrome drawer pulls have been replaced with exact duplicates.[6] The bathroom retains its original faucet and sink counter and cabinet with mirrors. Also extant are the original shelf and cantilevered toilet (**Photos 8, 9**).

These interior furnishing and fixtures differed, however, from the Finnish model, which was all molded plastic including seats, kitchen, and bathroom area.

**Restoration and Relocation**

The process was one of research, discovery, and finally successful restoration and code compliance. It was a long journey, full of surprises and challenges, and explains why many of the Futuros throughout the world are in dire shape. The concepts that the Futuro was easy to be moved at any time, that no or little maintenance was required because it was plastic, and the early salesmanship of meeting the regular codes all proved to be a challenge. The lack of expertise on restoring plastic materials and the amount of experimentation with each step also became expensive as well as a challenge. In the long run, the adventure was a myriad of discoveries, solving the challenges with clever solutions. The lessons learned have been carefully cataloged and should be of use to people in the future who may want to rescue, relocate, or restore a Futuro.

Stan Grau purchased the Futuro from the Futuro Enterprises in Philadelphia and had it delivered to the Grauhaus Corporation in San Diego in November 1969.[7] Mr. Grau was to act as a salesman for Futuro Enterprises. He discovered that he could improve on the prototype by providing operable rectilinear windows and combining two or three Futuros for a larger home, as well as mid-rise condominiums (**Figures 20 and 21**).[8] These designs never materialized.

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Sweden.

[5] Stan Grau, personal interview, August 20, 2002. Several original Navy cadets' room keys were found beneath the floor during the restoration process.

[6] Matching replacements were found at Liz's Antique Hardware on La Brea Avenue, Los Angeles.

[7] Grau, Stan, personal conversation, August 20, 2002.

[8] Stan Grau to Nicole Purvis, Preservation Planner at Architect Milford Wayne Donaldson FAIA, email August 28, 2003: "In comparison, I am quite embarrassed with having sent you my pathetic bundle of scraps. After 30 years you'd think I'd have a bookcase laden with classy memoria [*sic*], but 3 years ago I got married, whittled my possessions (mostly junk) to near nothing and moved to Hawaii. 'Twas a wonderful stroke of luck, having Wayne stumble across the round house and becoming obsessed with it… like me. I'll send you what I have."

Grau moved the Futuro around San Diego several times, at one time on loan to the US Navy at the Naval Training Center siting it across the street from the USS *Recruit*, a land-based faux destroyer, 3/4 size, used for training purposes.[9] He also moved it outside of the Escondido Shopping Mall for use as an US Air Force recruiting office in Southern California in April 1973.[10] Grau felt he needed more exposure for the Futuro so he moved it so it could be seen from Highway 163 at Mission Valley Shopping Center, a large retail shopping center area. The Futuro finally landed in a parking lot behind the Design Center, 3601 5th Avenue, San Diego (**Figure 4**). It sat there for years, locked and used for storage, brush painted with a green latex paint, deteriorating at a slow rate (**Figure 7**). New owners of the Design Center attempted unsuccessfully to demolish the Futuro. Milford Wayne Donaldson, a well-recognized practicing preservation architect, purchased the Futuro in October 2002. Two years of exterior restoration took place before the Futuro was moved to Idyllwild, California in November 2004. Once the Futuro was in Idyllwild, Donaldson restored the interior and obtained a building permit for occupancy in February 2009.

Donaldson's restoration philosophy and intent for the Futuro was to follow the Guidelines for Restoring Buildings as noted in the *Secretary of the Interior's Standards for the Treatment of Historic Properties* regardless of the Futuro's historic standing at the time. Further, Donaldson's previous work in 1970-1971, as the structural engineer and construction manager for the Poly-Pods, a modular glass-fiber reinforced plastic housing system designed by architect Elbert Speidel in Confluence, Pennsylvania, proved to be beneficial for the extensive work to be completed.

The exterior restoration took from December 2002 to December 2003. Starting from the exterior finish, the green latex paint was carefully removed revealing the original Harvest Gold gel coat (**Figure 8**). A color analysis performed by Conservator and Paint Analyst, Susan Buck, PhD, confirmed that the gel coat on the Futuro was originally a high performance vinyl-ester resin used in boats with excellent handling characteristics, superior ultra-violet light resistance, flexibility, and reduced emission. Further, damage to the top of the Futuro essentially effected the fiberglass and urethane foam interior and had to be repaired (**Figures 9, 10**). The rusted steel leg supports were replaced in-kind, and the lost original bubble acrylic windows were replicated at Planet Plastics in Corona, utilizing an original window on loan from an Australian Futuro (**Figure 16**).

Upon completion of the exterior restoration, a remote site was selected in the small community of Pine Cove, about five miles north of Idyllwild. The site Donaldson chose reflected the remote ambiance of a vacation retreat mountain that housed Finnish architect Matti Suuronen's first Futuro in Finland. The process of moving the Futuro from San Diego to Idyllwild was discussed in detail with other Futuro owners worldwide and it was determined to move the resource in one piece. Secondly, it was debated whether to transport by air versus by land (**Figure 11**). Consultation with Erickson Air Crane of Central Point, Oregon regarding the possibility of the Futuro being airlifted via helicopter was not as straightforward as architect Suuronen made it out to be. Suuronen's marketing strategy was flawed as the Futuro was not as portable as he advertised. Complications included the Futuro was too heavy to be lifted by a standard size helicopter; myriads of permits were required prior to airlift, including approval by the Federal Aviation Administration (FAA) for moving the Futuro by helicopter; and the Idyllwild's site 6,500 feet elevation. With these in mind, it was concluded the best route would be by land.[11]

[9] Stan Grau, personal conversation, August 20, 2002.
[10] The Air Force Recruiter, "Futuristic Recruiting Office?" April 15, 1973, 7.
[11] Erickson Air Crane, Central Point, Oregon, personal interview, May 14, 2002. Maximum lifting capacity: 25,000 pounds,

The Futuro was finally moved on December 8, 2004, shrink-wrapped in one piece, via a 130-mile journey up Interstate 15, complete with a highway patrol escort (**Figures 12, 13**). Upon arrival at the designated site, a crane was used to hoist the Futuro above the surrounding trees. As it was lowered, it came five feet short of the concrete foundation, due to low visibility caused by the dense fog. It took three people to help slowly swing and lower the building to its foundation (**Figure 14**).

Once the Futuro was moved, Donaldson completed interior restoration of all of the original extant furniture, fixtures, and equipment (**Figure 15**). As for the exterior, the use of the *Standards* guided work completed on the interior. The unrestored interior, although in poor condition and painted, had retained a high degree of integrity throughout the years. All of the features including the original Formica plastic laminate counter tops and tables, coffee tables, seating, cabinets, sinks, range, and undercounter refrigerator were retained and restored. Missing features, such as cabinet door pulls, were replaced in-kind. Due to the potential heavy fires in the area, the original fireplace could not be utilized. It was removed and carefully stored on site. In addition to the interior restoration, the replicated bubble acrylic windows were installed. To comply with Fire Code egress, Donaldson designed a window zipper gasket pull-ring at the bedroom window. Finally, in 2009, a building occupancy permit was officially granted, a unique achievement in California, not realized by any other Futuro in the state.

From 2004 to 2016, through the work of a multidisciplinary team of preservation specialists—including architects; structural, building technology, and plastic material engineers; architectural conservators; realtors; general contractors; and multiple subcontractors—worked tirelessly to rescue, stabilize, relocate, and restore the Futuro. In 2020, the statewide preservation advocacy group, the California Preservation Foundation (CPF), in recognition of the Futuro's extensive exterior and interior restoration, granted the distinguished Preservation Design Award for Restoration to the Futuro. According to CPF, the Futuro's innovative restoration exemplified best practice in architectural conservation of plastic material and code compliance encompassed under the *Standards for Restoration*.[12]

**INTEGRITY**

Overall, the Futuro maintains a high degree of historic integrity. The building retains the elements that create the form, plan, space, structure, and style of the resource from its period of significance. The Modern Futuristic Space-Age *design, materials, and workmanship* remain largely intact, and are exemplified through its ellipsoid shape, synthetic fiberglass exterior finish, door and airstair hinged opening, and in-kind replacement bubble acrylic windows. Although the Futuro was relocated, the mountainous *setting* provides a glimpse into what the original designer intended thereby conveying what the Futuro may have looked like during its period of significance and contributing to the resource's sense of *feeling and association*.

accessed May 14, 2002, www.erick-aircrane.com.

[12] California Preservation Foundation, "Futuro," accessed September 6, 2020, https://californiapreservation.org/awards/futuro/.

***P7. Owner and Address:**
Milford Wayne Donaldson, Trustee
The Donaldson Family 2002 Trust
7754 Greenridge Way
Fair Oaks, CA 95628

***P8. Recorded by:** (Name, affiliation, and address)
Milford Wayne Donaldson, FAIA
Architect Milford Wayne Donaldson, FAIA, Inc.
7754 Greenridge Way
Fair Oaks, CA 95628

Eileen Magno
Heritage Architecture & Planning
832 Fifth Avenue
San Diego, CA 92101

***P9. Date Recorded:** September 2020

***P10. Survey Type:** (Describe) California Historical Landmark

***P11. Report Citation**: (Cite survey report and other sources, or enter "none.")
None

***Attachments:**

B1. Historic Name: Futuro
B2. Common Name: Donaldson Futuro
B3. Original Use: single family residence
B4. Present Use: single family residence
***B5. Architectural Style:** Modern Movement: Futuristic
***B6. Construction History:** (Construction date, alterations, and date of alterations)

Nov. 1969 Purchased by Stan Grau from future Enterprises in Philadelphia, PA and transported to San Diego, CA in four separate pieces. Once in San Diego, Grau assembled the Futuro on site at the Grauhaus Corporation.

1974-2002 Alterations by interim owners.

- Exterior brushed with green latex gel coat.
- All original windows replaced with non-operable vertical glass purple-tinted windows.

2002-2004 Exterior restoration at the San Diego Boat Yard.

- Fiberglass exterior finish repaired and restored.
- Paint cross-section microscopy color analysis conducted to determine original exterior paint color; repainted to original Harvest Gold.
- In-kind steel leg supports and bolts replaced.

2004-2012 Interior and window restoration.

- Rust removed and radial I-beam steel supports repainted.
- Damaged and dryrot plywood flooring replaced.
- Original damaged linoleum kitchen floor restored in-situ. Covered with reproduced linoleum that closely matches the original in color and texture.
- Damaged original shag carpet replaced with new shag carpet.
- All extant furnishing and fixtures restored.
- Flue roof opening with bubble acrylic skylight and light fixture renovated.
- Original windows, which were missing, replicated based on 1969 Australian Futuro's original window. Replicated acrylic bubble windows installed throughout.
- Window zipper gasket pull-ring at bedroom window designed and installed to meet Fire Code egress.

Feb. 2009 Occupancy Permit approved.

***B7. Moved?**

**B10.** Significance (continued)

The Donaldson Futuro is significant under California Historical Landmark Criterion 1 as the first Futuro to arrive in California, the only Futuro in the state until 2015, and the only Futuro in California to have obtained a building permit for residential occupancy. The property is significant under California Historical Landmark Criterion 3 as the first serially produced plastic house and the first all-structural glass-reinforced polyester house in California, becoming a notable icon in California space-age architecture. The property represents America's collective confidence as a leader in space flight, technology advancement, and economic prosperity. Landmark designation also recognizes the extensive restoration of a fragile and rare property type essential to saving the building and raising the profile of the entire family of similar buildings nationwide. The period of significance is 1969, the year the Futuro was fabricated and shipped to California from Futuro Enterprises in Philadelphia, Pennsylvania.

The Futuro is an important part of architectural and cultural history as the first serially produced plastic house and all-structural glass-reinforced polyester house in California. What the Futuro represents is an optimistic vision of a future that never came to pass, when families would live in lightweight, inexpensive, durable, and easy-to-clean plastic houses they could move whenever the family moved. "People were dreaming in the postwar years of low-cost prefabricated housing, of mobile housing, of housing built using the latest technologies and materials. Durable plastic furniture, dishware, and hardware would make life easier for busy housewives who were suddenly getting jobs in business and industry. Fans believed the Futuro would make these dreams come true."[1]

The Futuro, fabricated in 1969 of structural plastic, reflects the optimism during the exciting era of space exploration when people believed technology could solve all problems for the human race. People were dreaming in the postwar years of low-cost prefabricated housing, of mobile housing, of housing built using the latest technologies and materials. Durable plastic furniture, dishware, and hardware would make life easier for busy housewives who were suddenly getting jobs in business and industry. "*Plastic* by definition means 'flexible' or 'malleable,' which perhaps sets it apart from some other materials. I think that's why designers use this material—because it has possibilities that other materials don't have."[2]

Worldwide designers were using plastic materials in their projects. From Casoni and Casoni's 1968 holiday house Rondo in Switzerland, to Matti Suuronen's 1968 Futuro house in Finland and the USA production of the 1969 Futuro house in Philadelphia, to Maneval's and Ifert + Meyer's 1970 Six Bubble House in France, to Scheichenbauer's 1971 System Ponza in Italy,[3] and finally to Elbert Speidel's 1972 Poly-Pods housing system in Pennsylvania, these projects epitomize space age style: a period of optimistic, futuristic aesthetics when earthbound designers of plastics let their creative spirits soar into orbit.

> The house (Futuro) represents very well its contemporary way of thinking and living with a strong confidence in the future—"futuro." In the same era in 1969 people saw on the blurry TV-

[1] Dave Weinstein, "Falling for a Futuro," *CA Modern* (San Francisco, CA: Eichler Network, Winter 2007), 29.
[2] Roger, Griffith, Conservator at the Museum of Modern Art, New York, "The Material of Many Possibilities," *Conservation Perspectives, the GCI Newsletter, Conservation of Plastics,* The Getty Conservation Institute, Spring 2014, accessed December 2016, https://www.getty.edu/conservation/publications_resources/newsletters/pdf/v29n1.pdf, 23.
[3] Voigt, 28, 38, 46, 48.

> screen as Neil Armstrong stepped onto the moon on July 20, 1969 as the first human being. Mika Taanila remarked "It fitted in perfectly. It was a sign of the times. The same week it was launched, man landed on the moon."[4]

A Russian cosmonaut had already been flying in the earth's orbit in 1961.

In California in 1960, architect John Lautner designed Chemosphere, a house at the edge of the Hollywood Hills. "Lautner rejected the roundness of saucer aesthetics in favor of raw-boned borders, more like a trailer home on stilts."[5] "Space seemed to offer an enormous potential for becoming a new playground for the human nation."[6] The Futuro became a popular icon, and in the 1970s, the photographer and advertising guru Charles Whip had one erected on the roof of his house in Dusseldorf. He received guests like Andy Warhol and Christo, who later wrapped the Futuro during one of his art actions.[7] The movie *The Graduate,* as Mr. McGuire took young Benjamin aside to discuss his future, proclaimed "I want to say one word to you. Just one word. Plastics."[8]

"In their *Manifesto of Futurist Architecture* (1914), the founders of futurism, the architect Antonio Sant'Elia and the poet Filippo Marinetti, declared that the buildings of the future would be dynamic and mobile, and throughout the 1960s, these concepts were developed further. But whereas many designs existed only on paper, the Futuro is an intriguing physical example of space-age utopian architecture."[9] The 1970 September edition of *Playboy* magazine also had an article called the Portable Playhouse, noting, "It's a flying-saucer-shaped hideaway designed for whirlybird delivery and instant livability in any climate. The Futuro is virtually maintenance-free; its sealed-up saucer shape … all but eliminate dust and humidity…"[10] The *Playboy* Magazine Summary of the Best of 1969-1970 notes: "The most popular feature we've [*sic*] ever ran was, surprisingly, about a $14,000 home, September 1970s Portable Playhouse. Letters are still coming in; at last count, they totaled 7,763."[11]

Marko Home and Mika Taanila's film *Futuro, A New Stance for Tomorrow* (1998), concentrating on the years 1968-1973, had toured by 2002 to over fifty international film festivals. Historian Elke Gensel called the Futuro "Space-Age Architektur."[12] Historian Arnt Cobbers noted: "It was a simple ski house… that ultimately resulted into [*sic*] an icon of the belief in progress predominant in the age of space travel during the late 1960s; it attracted world-wide attention."[13]

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[4] Oli Stratford, "Farewell to the Futuro: An Interview with Marko Home and Mika Taanila," *Disegno Daily,* Espoo, Finland, September 10, 2012, accessed June 9, 2019, https://www.disegnodaily.com/article/farewell-to-the-futuro-an-interview-with-marko-home-and-mika-taanila, 1.
[5] Home, 102.
[6] Arnt Cobbers and Oliver Jahn, *Prefab Houses* (Koln, Germany: Taschen GmbH, 2010), 161.
[7] Anna-Maija Kuitunen, "Futuro No. 001–Documentation and Evaluation of Preservation Needs" (Bachelor's Thesis, Metropolia Conservation, Historical Interiors, May 28, 2010), 3.
[8] *The Graduate,* directed by Mike Nichols, release date 1967, movie, 1:45:57, accessed September 30, 2015, short outtake with Mr. McGuire and the word "plastics" https://www.youtube.com/watch?v=eaCHH5D74Fs.
[9] Home, 80.
[10] *Playboy*, 179.
[11] *Playboy*, Editorial Summary.
[12] Elke Gensel and Pamela Voigt, *Kunststoffbauten: Teil 1–Die Pionier.* (Wewimar, Germany: Verlag der Bauhaus-Universität Weimar, 2005), 141.
[13] Cobbers, 158.

Finnish architect Matti Suuronen was born in 1933 in Lammi, Finland. He graduated from the Finish Institute of Technology in 1961 with a Diploma in Architecture. Having worked at several architectural offices while studying between 1955 and 1961 he established his own architectural bureau upon graduation.[14] Suuronen was commissioned by a former schoolmate to design a ski cabin that would be "quick to heat and easy to construct in rough terrain."[15] Suuronen played with various ideas based around domes before finally settling on a perfect elliptical form. Suuronen designed the final shape of the Futuro to evolve into an ellipsoid shell for structural strength. "An elliptic paraboloid shape is an example of an anti-elastic shell (like an egg) that is the excellent structural form for obtaining optimum structural efficiency."[16]

"While the plastic Futuro was designed and serially produced, it was meant to be portable while the comparable Monsanto house was land-tied. In addition, the plastic structure of the Monsanto house was limited to the exterior skin only. The extended segments were designed to resemble an airplane wing cantilevered off a fuselage, where the symmetrical forces from each wing are carried indeterminately and continuously through the central core." [17] "The Monsanto House of Tomorrow was a cellular cantilevered system with a fiberglass shell for exterior skin."[18] The Monsanto House was demolished in 1967.[19] As the first serially produced portable plastic house, the Futuro was the only and first all-structural glass-reinforced polyester house in California, beginning in 1969.

"Suuronen emphatically denies that the Futuro was inspired by futuristic utopian visions, insisting that the design is based purely on mathematics, and that the space-age look of the Futuro is a pure coincidence."[20] The Futuro design is a structural reinforced fiberglass polyester plastic portable home, meant to be easily moved, either by component pieces or by a helicopter to a desired site. The contract for production was given to Helsinki-based company Polykem Ltd., and the first prototype was built in early 1968 although only when the third one was manufactured was the name Futuro born. Suuronen was familiar with using fiberglass structures as he previously designed a large plastic dome, twenty-six feet in diameter, for the roof of a grain silo in Seinäjoki, Finland.[21]

Researched and developed by Polykem, the firm developed a production system to be potentially suited to serialized industrial production as a portable prefabricated single-family house (**Figure 5**). The Finnish prototype measured 26'-4" (8 m) in diameter, 13'-2" (4m) in height, 269 square feet (25 square meters) in floor area and weighed approximately 8,800 pounds (4,000 kg). The Finnish model was built in sixteen sections, so it could be easily transported and bolted together on site, taking two days to assemble or disassemble without the use of motorized equipment (**Figure 18**). The model also nested in an exposed metal ring once all the sections were bolted together.[22] Once completed the prefabricated plastic interior features, furniture, cabinets, heating system, equipment and furnishings

[14] Paul Sorene, "The Futuro House: Spaceship Living on Earth (1965)" *Vrbo Flashbak*, June 20, 2018, accessed May 14, 2019, https://flashbak.com/the-futuro-house-spaceship-living-on-earth-1965-402676/.
[15] Home, 12.
[16] B.S. Benjamin, *Structural Design with Plastics, Polymer Science and Engineering Series* (New York: Van Nostrand Reinhold Co., 1969), 112.
[17] Stephen Phillips, "Plastics: Monsanto Home of the Future" in Beatriz Colomina (ed.) *Cold War Hothouses Inventing Postwar Culture, from Cockpit to Playboy* (New York: Princeton Architectural Press, 2004), 20-21.
[18] Benjamin, 50.
[19] Phillips, 26.
[20] Home, 94.
[21] Home, 17.
[22] Home, 16.

were added for ready move-in (**Figure 3**). The portable Futuro, manufactured to be structurally sound once the sections were together could also be moved as a single unit by helicopter (**Figure 11**).[23] The first #000 prototype ended up in the collection of the Centraal Museum, Utrecht, the Netherlands in 1997.[24]

In the late 1960s, mobile homes accounted for twenty percent of all new housing sold in the United States.[25] "The portable home symbolished the neo-nomadic lifestyle idealized by Western youth. It became fashionable to live in an industrially produced capsule like an astronaut. Plastic furniture, objects and clothing mass-produced, fast food, and modern entertainment industry of Sci-Fi fantasies completed the package adding the finishing touches to the space-age life style."[26]

In 1970, California's Ant Farm's Truckin' Univ.—a mobile plastic inflatable structure delivered and erected by four large trucks "to move with the change of environmental sensory overload and inadequacy of current educational systems" that could move across the countryside to link up with other global villages—illustrated the desire to be constantly moving and interacting, long before the internet.[27] British architect Cedric Price remarked, "Houses should be transportable in order to give the occupants freedom to choose surroundings rapidly. It should include means integral to the structure itself and include a plug-in system."[28] Futuros were sold with comments such as, "We like to think that you can just plug the place in like an appliance."[29]

Milford Wayne Donaldson's 1972 Master of Science in Architecture thesis, *Biostructures*, noted,

> One of the most profound influences on providing shelter for people of the western society and notably, the United States, has been mobility. However, the rush for this demand on housing has resulted in a deterioration of the environment…. Biostructures create a special environment responsive to the needs of the inhabitants, both physiological and psychological, in a biological manner. At the same time, the interdependence on the environment and the inhabitants for survival creates an atmosphere of mutual co-existence between organism and structure. These environments are dynamic, sensitive, and reactive to atmospheric and biospheric forces.[30]

A prototype was constructed at the University of Strathclyde, Glasgow, Scotland. The Osaka World Fair in 1970 featured capsule apartments, UFO shaped pavillions, bubble houses and pnuematic halls.[31]

Another similar project involving moveable structures was architect Elbert Speidel's Poly-Pods in Confluence, Pennsylvania. In the summer months of 1970 and 1971, Donaldson was the structural

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[23] Home, 30.
[24] Ranti Tjan, Director of Exhibits, Centraal Museum, Utrecht, Netherlands, personal interview, June 2, 2003.
[25] Charles Jencks, *Architecture 2000 Predictions and Methods* (London, UK: Studio Vista, 1971), 59.
[26] Home, 60.
[27] Jim Burns, *Anthropods, New Design Futures* (New York: Praeger Publishers, 1972), 131, 132.
[28] Burns, 58.
[29] Home, 108.
[30] Milford Wayne Donaldson, "Biostructures" (Thesis Submitted in Partial Fulfilment of the Requirements for the Degree of Master of Science in Architecture, Department of Architecture & Building Science, University of Strathclyde, Glasgow, Scotland, UK, June 6, 1972), 109-110.
[31] Mr. Donaldson participated in the planning of the 1972 Summer Olympics in Munich, Germany at architect Frei Otto's Lightweight Institute at the Stuttgart University in the spring of 1971 and had an opportunity to meet many of the planners from Osaka helping with the Olympics.

engineer and construction manager for Poly-Pods, a modular glass-fiber reinforced plastic housing system. "The Poly-Pod system is designed to be mass-produced and transported to any place in the world. The total dwelling unit can be like a living thing, adding elements and subtracting them as the demand dictates."[32] "The Poly-Pod is a low maintenance structure which will last indefinitely. Imagine a house that may be erected on any terrain, in a day, with practically no site preparation (**Figure 19**). A roof that never leaks and insulation so effective that heating and air conditioning costs are unbelievably low. The Poly-Pod system is the ultimate in flexibility."[33]

By 1970, the Futuro and its plastic brethren were no longer in production due to the Organization of the Petroleum Exporting Countries (OPEC) induced oil crisis. During that era's Arab oil embargo, when motorists lined up for gas, petroleum prices rocketed. Relying on fossil fuels and inexpensive crude oil, the attraction of low-cost plastic in the product industry all but vanished. Plastic was no longer cheap, nor competitive with wood or metal as an architectural material. "Embargo or no, the Futuro came with some built-in problems. It was small, oddly shaped, and expensive. Critics called it 'the Mercedes-Benz' of prefabricated houses."[34]

While most people blame the failure of plastic homes on the oil crisis, according to Donaldson in a 2007 interview with Stephanie Pain, Associate Editor of the Science Museum in London.

> There are lots of reasons why the Futuro failed. The oil crisis was a problem but the Futuro house had never been cheap. It was more a house for the affluent who wanted a stylish holiday home. Nor did plastic turn out to be as trouble-free as touted. The idea that if it's plastic it will last forever and all you have to do is wash it was a misconception. The plastics of the 1960s and early 1970s were poor compared with today's and didn't contain UV inhibitors. Spider cracks appeared in the outer coat. Movement could cause worse cracks, and once water got into cracks the plastic could sag and deform. There was certainly a shift away from traditional housing and people had become much more mobile. But that didn't mean they wanted to take their homes with them everywhere they went. People weren't really ready for this sort of life. The GRP (glass-reinforced plastic) walls of the interior are rather ugly to modern eyes. Because of the way it's sprayed into the mould the finish is wrinkly and lumpy. It's not a pretty thing to live in but it gives it a good structure. The shape gives it the strength to withstand high winds in the mountains. When its windy the house sometimes oscillates—although that can be kind of nice and rocks you to sleep. In the sixties and seventies, people weren't ready to embrace the joy of plastic. So, is now a better time? Today, plastics are shunned because of the damage they do to the environment. People gag at the idea of plastics. Yet, it might be possible to make a house out of plastics. New plastics are far better and would last much longer. Plastic houses are very efficient and don't use much energy: you could fit solar cells and not need to be attached to the grid. And making plastic from oil is much better than burning gasoline.[35]

As documented in the Description, Donaldson's unique conservation approach brought together his engineering experience with a portable plastic housing system and his architectural experience with the

[32] Elbert Speidel, "Poly-Pods" Informational Brochure, n.d., c. 1972, 2.
[33] MHI, Inc., "The Poly-Pod System, A Revolution in Housing," Sales Brochure, Zelienople, PA, n.d., c. 1973, 1.
[34] Dave Weinstein, "Falling for a Futuro." *CA Modern.* (San Francisco, CA: Eichler Network, Winter 2007), 12. Cover Story and Interview with Wayne Donaldson.
[35] Stephanie Pain, Associate Editor, "Plasticity: 100 Years of Making Plastics," *New Scientist*, June 1, 2007, 3-4. In conjunction with an exhibit at the Science Museum, London, UK, May 2007-January 2009.

Secretary of the Interior's Standards for the Treatment of Historic Properties. The restoration effort, and resulting preservation of this fragile resource, was essential to saving the building and raising the profile of the entire family of similar buildings. The resource continues to attract worldwide notice from across the spectrum, from academic to artistic, including a CNN special report,[36] music videos, digital artwork, and photography. As documented in the References, Donaldson is in demand internationally for lectures, papers, and presentations on the restoration.

The Futuro embodies the distinct features and is an iconic representation of Modern Movement Futuristic space-age style architecture with its elliptic paraboloid shape, bubbled acrylic windows, and downward hinged door with stairsteps. "Its design encapsulated the distinctive themes of the 1960s utopian architecture: mobility, increased leisure time and the new plastic material. Even by international standards, it is the art icon among the most striking samples of utopian Space-Age [*sic*] design."[37]

The Futuristic space-age style is characterized by the "birth of atomic science [that] brought promises of advanced societies powered by nuclear energy, while the beginnings of the space race made people realize that humans might soon venture to the Moon or Mars. And because a futuristic era seemed just beyond the horizon, the shift to an ultramodern architectural style was almost inevitable."[38] Modern Futuristic style exemplified this fascination by the use of unconventional shapes, eye-catching colors, and modern materials, including glass, chrome, and lots of plastic.[39]

The Futuro was conceived by Matti Suuronen in 1968, a year prior to Apollo 11's historic landing on the moon, and advertised as a "portable" ski chalet with a quick heating system.[40] It was later hyped as the home of the future that catered to optimists interested in gadgets and explorations in building materials and also publicized as an adaptable housing solution for all climates and topography.

In America, this portable Futuro was the first serially produced plastic house. It was the first to arrive and be assembled in California in 1969 and the only Futuro in the state for forty-six years. Since 2015, two other Futuros have made California their home. One arrived in Los Angeles in 2015, and the Area 51 Futuro House in Joshua Tree arrived in 2019.

The Los Angeles Futuro, originally located on 715 Clark Road, Bailey, Colorado, was purchased by Mark Haddawy.[41] Haddawy had the Futuro moved in sections and assembled in the backyard of his home. The exterior was restored, and the interior remained an unfinished shell.[42] It does not have a permit for occupancy and is treated as a playhouse. The Area 51 Futuro was moved from Rockland, Wisconsin circa December 2019 for use as an Airbnb. Owner Ronald Jackson purchased the Futuro and moved it in sections to Joshua Tree. This Futuro does not have water, sewer, bathroom, or kitchen and is an open shell with no windows. Amenities are located in a portable facility parked near the

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[36] Anna Bahney, "One Man's Saucer is Another Man's Vacation Home," CNN.COM WIRE SERVICE, *The Mercury News.* (San Jose, California) November 29, 2019, accessed March 16, 2020, https://www.mercurynews.com/2019/11/29/one-mans-saucer-is-another-mans-vacation-cabin/.
[37] Home, 94.
[38] Erika K. Carlson, "Googie Architecture: Space Age Themes Shaped 'Modern' Style," May 31, 2019, accessed September 4, 2020, https://astronomy.com/news/2019/05/googie-architecture-space-age-themes-shaped-modern-style.
[39] Home, 94.
[40] Home, 94.
[41] Donaldson visited the Futuro when it was for sale on eBay in 2003, while still located in Colorado. Wendy Taylor, Choice Property Brokers, Pine, Colorado, email to Wayne Donaldson, February 13, 2003.
[42] "Futuro House."

Futuro.[43] Neither of these Futuros has undergone the extensive restoration, to the exterior and interior, to the level that the Donaldson Futuro has undergone.

Approximately sixty-one Futuros are extant worldwide with at least seventeen confirmed in the US, in various physical conditions including many that are not salvageable.[44] Matt Damon, a New York City art collector, hired Donaldson in 2008 as a consultant to help in the restoration of a Futuro used originally for *Star Trek* and then for The Planet of the Apes Wildwood attraction at Moery's Pier Boardwalk in New Jersey in 1975. [45] The Futuro, in extremely poor condition, was relocated to a boat harbor at Greenwich, New Jersey, for restoration by a boat finisher and his son. Donaldson spent a week August 8-15, 2008 in consultation on-site and then time over the following year. Another contractor, Joe Pepin, took over the project on July 23, 2009 and shut down on December 8, 2009. After a year's attempt to restore the Futuro and lacking the construction skills and escalating costs with no end in sight, the project was finally abandoned.

By the 1970s, the architectural culture in America had changed. The oil crisis hit, and materials, such as plastic, was no longer favorable.

> The interest in the future, the gee-whiz factor about plastics and nuclear power and space flight, travel to the moon, all of these that had been new and exciting in the 1950s had become more mundane—we landed on the moon in 1969 and then it was over. And also at that time new ideas came in—specifically the ecology movement which began to say that we do have limits on how we use our resources. And an interest in more lower scale, residential, traditional, architecture came into fashion.[46]

**Moved Properties Consideration**

The Futuro maintains the essential historic features that convey its architectural significance as well as its functionality as a portable vacation home that could be easily moved and deposited on any location. Its locale within the San Jacinto Mountains is reminiscent of the mountainous setting and general environment comparable to Finnish architect Matti Suuronen's original design intent.

The Futuro was always designed to be portable and was frequently transported during its historic use. Similar to travel trailers and mobile homes, which accounted for twenty percent of all new housing sold in the US during this period of the late 1960s, mobile homes were prefabricated and marketed primarily as an inexpensive form of housing designed to be set up and left in a location for periods of times. Mobile homes were also essential in order to meet the immediate needs of the post-war housing shortages in many areas during this era. The transportable Futuro served as a higher end mobile vacation home, and its design also tapped into America's fascination with space travel.

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[43] Max Rodriguez, "Flying Saucer AirBNB Lands in Joshua Tree," *NBC Palm Springs,* October 29, 2019, accessed December 20, 2019, https://nbcpalmsprings.com/2019/10/29/flying-saucer-airbnb-lands-in-joshua-tree/, 1.
[44] Simon Robson, "Futuro House, Current and Past Location Information, the Complete List," accessed April 17, 2020, www.thefuturohouse.com.
[45] Becky Quintal, "Futuro in New Jersey." *Archdaily,* The Unknown Cameraman. C. 2013. Video, 3:59, by author of the "The Planet of the Apes Wildwood" attraction originally at Moery's Pier Boardwalk in New Jersey, accessed March 17, 2020, https://www.archdaily.com/404166/video-a-look-inside-the-futuro-house-a-spaceship-vacation-home.
[46] Erika K. Carlson, "Googie Architecture: Space Age Themes Shaped 'Modern' Style." May 31, 2019, accessed September 4, 2020, https://astronomy.com/news/2019/05/googie-architecture-space-age-themes-shaped-modern-style.

Designed by Finnish architect Suuronen and constructed in 1969, the Futuro was always advertised as a portable vacation home. It was initially marketed as a portable ski chalet with a quick heating system. A year later, *Playboy* entitled its article about the Futuro "Portable Playhouse." The article describes the Futuro as whimsical, effortlessly mobile, and easy to maintain. "It's a flying-saucer-shaped hideaway designed for whirlybird delivery and instant livability in any climate. The Futuro is virtually maintenance-free; its sealed-up saucer shape… all but eliminate dust and humidity…"[47] It would appear that its portability was found useful for the Futuro's original owner, Stan Grau, who relocated the Futuro several times throughout San Diego County.

In 2004, the Futuro was relocated to a remote site in Pine Cove, a small community about five miles north of Idyllwild in the San Jacinto Mountains at 6,500 feet elevation. The site was selected because Donaldson felt it was the most appropriate as a reflection of architect Matti Suuronen's original siting of the first Futuro in the vacation retreat mountains, near Lake Puulavesi outside of Hirvensalmi, Finland in 1968.[48] The approximately three-quarter acre flag lot on a large rock outcropping is approximately fifty feet above the road. There is no formal landscaping and there are no concrete stairs to reach the Futuro from the parking area below. The site has been maintained in its natural setting as though the Futuro had "just landed." The concrete large pad footings have been treated with a faux rock finish to blend in with the existing granite rocks.[49] Native Ponderosa Pines, California Black Oaks, White Firs, Manzanita bushes, lichen, and small ground cover bushes are found throughout the property. Neighbors' houses are barely visible while on site. Spectacular views to the south, southeast, and east illustrate the rugged terrain of the San Jacinto Mountain Range that rises eventually to the east at a maximum height of 10,834 feet. Much of the range is embraced by the Santa Rosa and San Jacinto Mountains National Monument created in 2000. The San Jacinto Mountains are covered with snow during the winter months and can easily be seen from Coachella Valley and the deserts near Palm Springs and Rancho Mirage and from the greater San Jacinto Valley with the communities of San Bernardino, Riverside and Hemet.

B11. Additional Resource Attributes: (List attributes and codes) N/A

***B12. References:**

**Books, Articles, Electronic Sources**

The Air Force Recruiter. "Futuristic Recruiting Office?" April 15, 1973.

Atlas Obscura. "Outer Banks Futuro House, Frisco, North Carolina: The Only Known Futuro House in North Carolina Sits Along a Stretch of Desolate Highway on the Outer Banks." Accessed September 6, 2020, https://www.atlasobscura.com/places/outer-banks-futuro-house.

_____. "Royse City Futuro House Royse City, Texas: This Crumbling UFO is One of Only a Few Remaining 'Moveable Ski Chalets' of its Kind." Accessed September 6, 2020,

[47] *Playboy*, 179.
[48] Home, 20.
[49] Charles Clayton, masonry contractor, Idyllwild, January 10, 2004. Clayton performed all the concrete and rock work on the site.

https://www.atlasobscura.com/places/royse-city-futuro-house.

Bahney, Anna. "One Man's Saucer is Another Man's Vacation Home." CNN.COM WIRE SERVICE. The Mercury News, San Jose, CA. November 29, 2019. Accessed March 16, 2020. https://www.mercurynews.com/2019/11/29/one-mans-saucer-is-another-mans-vacation-cabin/.

Benjamin, B.S. *Structural Design with Plastics, Polymer Science and Engineering Series*. New York: Van Nostrand Reinhold Co., 1969.

Bergdoll, Barry and Peter Christensen. *Home Delivery, Fabricating the Modern Dwelling.* New York: The Museum of Modern Art New York, 2008.

Buck, Susan, PhD., Conservator and Paint Analyst. "Futuro House, Paint Cross-Section Microscopy" Historic Paint and Architectural Services, a Division of West Communications Inc., Newton, MA. July 14, 2003.

Burns, Jim. *Anthropods, New Design Futures.* New York: Praeger Publishers, February 1, 1972.

Bylund, Lloyd, Plan Checker, Department of Building and Safety, Riverside County, CA. "Plan Check Corrections, Residential Building Permit No: BRS040340." December 5, 2003 and December 16, 2003.

California Preservation Foundation. "Futuro." Accessed September 6, 2020. https://californiapreservation.org/awards/futuro/

Carlson, Erika K. "Googie Architecture: Space Age Themes Shaped 'Modern' Style." May 31, 2019, accessed September 4, 2020, https://astronomy.com/news/2019/05/googie-architecture-space-age-themes-shaped-modern-style

Cobbers, Arnt and Oliver Jahn. *Prefab Houses*. Koln, Germany: Taschen GmbH, 2010.

Curran, Douglas. *In Advance of the Landing, Folk Concepts of Outer Space*. New York: Abbeville Press, 1985.

DeSoucy, Terry, Fire Systems Inspector, Fire Protection Planning, Riverside County Fire Department in Cooperation with California Department of Forestry and Fire Protection, Palm Desert, CA. "Inspection Record." November 17, 2006.

Donaldson, Milford Wayne. "Biostructures." Thesis Submitted in Partial Fulfilment of the Requirements for the Degree of Master of Science in Architecture, Department of Architecture & Building Science, University of Strathclyde, Glasgow, Scotland, UK, June 6, 1972.

_____. "Futuro, Rescue, Relocation, and Restoration Challenges." Paper and 30"x40" Poster, "Architectural Plastics & Polymer Composites in the 21st Century: Design & Preservation of Contemporary & Historic Architecture" Conference, Massachusetts Institute of Technology, Cambridge, MA, March 28-29, 2020. Susan E. Schur, Hon. AIA, FAPT, Conference Organizer/Chair. (Conference postponed due to Covid-19 pandemic.)

_____. "Futuro, Rescue, Relocation, and Restoration Challenges." Draft Paper, Docomomo International (International Committee for Documentation and Conservation of Buildings, Sites and Neighborhoods of the Modern Movement), June 12, 2019.

_____. "Plan Check Corrections." Letter, Captain Steven Diaz, CDF Riverside Unit, Riverside County Fire, CA. February 23, 2004.

_____. "Plastic Mobility: The Challenges of Preserving Modern Materials and Assemblies." Lecture, The San Diego History Center, San Diego, CA. October 10-11, 2020.

_____. "Plastic Mobility: The Challenges of Preserving Modern Materials." Lecture and Paper, Historic Preservation Education Foundation, Preserving the Recent Past 3 Conference, Los Angeles, CA. March 13-16, 2019.

_____. "Plastic Mobility: The Challenges of Preserving Modern Materials and Assemblies." Presentation and Tour of the Futuro, California Preservation Conference Attendees, Palm Springs and Idyllwild, CA. May 9-10, 2019.

_____. "Preservation of 20th Century Modern Resources." Lecture at *Interrobang!?* San Diego, CA. May 9, 2006.

_____. "Restoration of the Futuro." Lecture to Students, Construction Management CM 423-01 Polymers, College of Architecture & Environmental Design, California Polytechnic State University, San Luis Obispo, CA. April 19, 2015.

_____. "The Challenges of Preserving Modern Materials and Assemblies." Lecture, AIA Historic Resources Committee, National Trust for Historic Preservation Conference, Savannah, GA. November 13, 2014.

_____. "The Challenges of Preserving Modern Materials and Assemblies." Presentation, California Preservation Foundation Webinar, San Diego, CA. September 15, 2017.

Ebay. "Angelfire." Listed November 13, 2001 for $25,000 USD. Accessed November 13, 2001. http://www.angelfire.com/home/futurohouse/sandiego1.html.

Foster, Margaret. "Out of This Wayne's World." *Preservation*, National Trust for Historic Preservation. March/April 2003. Article on the purchase of the Futuro and the moving of it to Naval Training Station, San Diego.

"The Futuro House: Space Age UFO Architecture Comes of Age." *Web Urbanist*. Accessed June 9, 2019. https://weburbanist.com/2010/01/10/the-futuro-house-space-age-architecture-comes-home/.

Gensel, Elke and Pamela Voigt. *Kunststoffbauten: Teil 1–Die Pioniere.* Wewimar, Germany: Verlag der Bauhaus-Universität Weimar, 2005. Personal interview with Milford Wayne Donaldson, September 11, 2008.

Gerdes, Dennis. "Futuro House in Idyllwild, CA." Photo images of Donaldson Futuro by Geoff Hacker at Forgotten Fiberglass., Undiscovered Classics, Tampa, FL. Accessed March 16, 2020. http://www.futurohouse.net/Idyllwild_Futuro.htm.

Griffith, Roger, Conservator at the Museum of Modern Art, New York. "The Material of Many Possibilities." *Conservation Perspectives, the GCI Newsletter, Conservation of Plastics*. The Getty Conservation Institute, Spring 2014. Accessed December 2016. https://www.getty.edu/conservation/publications_resources/newsletters/pdf/v29n1.pdf.

Hess, Alan. *Googie: Fifties Coffee Shop Architecture.* San Francisco: Chronical Books, 1986.

Holland, Chris. Advanco Fire Protection, Ontario, CA., April 26, 2004.

Holt, J. C., Land Surveyor. "Lot Line Adjustment No. 1515, Riverside County, September 8, 1982." March 19, 2003.

Home, Marko and Mika Taanila. *Futuro: Tomorrow's House from Yesterday. Tulevaisuuden Talo Menneisyydestä.* Helsinki, Finland: Desura Oy Ltd., 2002.

Home Fire Sales Inc. The D System. February 23, 2004.

Infantino, Carmine, Publisher. *Plastic Man, DC Comics Special Presents*. New York: National Periodical Publications, Nov-Dec 1971.

Jencks, Charles. *Architecture 2000 Predictions and Methods.* London, U.K.: Studio Vista, 1971.

Kuitunen, Anna-Maija. "Futuro No. 001- Documentation and Evaluation of Preservation Needs." Bachelor's Thesis, Metropolia Conservation, Historical Interiors, May 28, 2010.

Lavedrine, Bertrand, Fournier Alban and Martin Graham, Editors. *Preservation of Plastic Artefacts in Museum Collections.* Paris, France: Comite Des Travaux Historiques et Scientifiques, 2012.

Lind, Dan. "Futuro Septic and Sewer Design." Inland Foundation Engineering Inc., San Jacinto, CA, June 15, 2004.

Lyman, Bob. "Permit No.: BRS040340 Application for Land Use Review, Itemized Accounting," Land Development Departments, County of Riverside, August 7, 2007.

Madden, Odile and Tom Learner. "An Evolving Material, a Maturing Profession." *Conservation Perspectives, the GCI Newsletter, Conservation of Plastics*. The Getty Conservation Institute, Spring 2014. Accessed December 2016. https://www.getty.edu/conservation/publications_resources/newsletters/pdf/v29n1.pdf.

McDonald, Jeff and Ann Jarmusch. "Space Age Home Finds Itself in a New Home, Architect Plans Restoration of 'Green Flying Saucer' From the 60s." *San Diego Union-Tribune*. Accessed November 20, 2002. www.SignOnSanDiego.com.

McGuirk, Justin. "Futuro-The Ideal Home that Wasn't." *The Guardian*. May 10, 2012. Accessed June 9, 2019. https://www.theguardian.com/artanddesign/2012/may/10/futuro-ideal-home-wasnt.

Melaragno, Michele. *An Introduction to Shell Structures, the Art and Science of Vaulting*. Van Nostrand Reinhold, NY: Springer, 1991

MHI, Inc. "The Poly-Pod System, A Revolution in Housing." Sales Brochure. Zelienople, PA. No date, ca. 1973.

Miller, Jim, Inspector, Department of Building and Safety, Riverside County, CA. "Residential Building Permit No: BRS040340." January 23, 2003, December 5, 2003, February 4, 2009.

Moya, Craig J. "Title 24 Report for Futuro Home, 52895 Big Rock Road, Pine Cove, CA 92549." Engineered Systems, San Diego, CA. February 2, 2004.

Pain, Stephanie, Associate Editor. "Plasticity: 100 Years of Making Plastics," *New Scientist*. June 1, 2007. In conjunction with an exhibit at the Science Museum, London, UK. May 2007-January 2009.

Pflüger, Alf. *Elementary Statics of Shells.* New York: McGraw-Hill Book Company, 1961.

Phillips, Stephen. "Plastics: Monsanto Home of the Future." In Colomina, Beatriz (ed.). *Cold War Hothouses Inventing Postwar Culture, from Cockpit to Playboy.* New York, N.Y.: Princeton Architectural Press, 2004.

Pinterest. "Futuro Used For Planet of the Apes Wildwood Attraction at Moery's Pier Boardwalk, NJ. 1975." Accessed May 8, 2014. https://www.pinterest.ca/pin/433964114072112169.

Planet Plastics Co. Chino, CA. Manufacturers of the Acrylic Windows. Donaldson Futuro. January 5, 2006.

"Portable Playhouse—Modern Living." *Playboy.* Vol. 17, No. 9. September 1970.

Randall, Eric. "Futuro 3601 5th Avenue, San Diego 92130," Photo Images While at the Design Center, date unknown. Accessed March 16, 2020. http://www.futurohouse.net/Idyllwild_Futuro.htm.

Riverside County Fire Department in Cooperation with California Department of Forestry and Fire Protection. "Inspection Record." August 18, 2006.

Riverside County Fire Department. "Conditions for the Mountainous, High Fire Hazard Areas of Riverside County." April 22, 2002.

_____. "Mountain Communities Hazard Abatement Program Guidelines for Vacant Properties." Re-inspection Notice, June 19, 2006.

Robson, Simon. "Futuro House, Current and Past Location Information, the Complete List." Accessed April 17, 2020. www.thefuturohouse.com.

Rodriguez, Max. “Flying Saucer AirBNB Lands in Joshua Tree.” *NBC Palm Springs*. October 29, 2019. Accessed December 20, 2019. https://nbcpalmsprings.com/2019/10/29/flying-saucer-airbnb-lands-in-joshua-tree.

Sawasaki, Stuart, Project Architect. “Futuro Home Relocation Drawing.” Architect Milford Wayne Donaldson FAIA, 530 Sixth Avenue, San Diego, CA., 16 pages, March 24, 2004.

Skeist, Irving. *Plastics in Building*. New York: Reinhold Publishing Corp, 1966.

Sorene, Paul. “The Futuro House: Spaceship Living on Earth (1965).” *Vrbo Flashbak*, June 20, 2018. Accessed May 14, 2019. https://flashbak.com/the-futuro-house-spaceship-living-on-earth-1965-402676/

Speidel, Elbert. “Poly-Pods.” Informational Brochure, n.d., c. 1972. Architect for the Poly-Pods in Confluence, PA and Beaver Falls, PA, 1970-1971.

Star Enterprises. “Futuro, Facts on the Futuro II Fiber-Glass House.” P.O. Box 912, Janesville, Wisconsin, 54545. This was a sales brochure outlining in detail the features of the Futuro. Stamped: “Hedberg Public Library, Janesville Library Room Pamphlets,” with stamped date: “DEC 28 2005.”

State of California Transportation Department and County of Riverside. “Encroachment Permit Nbr: R08-09-0024.” September 4, 2008.

Stover, Eric, Registered Professional Structural Engineer. “Structural Calculations for Futuro House Relocation, Idyllwild, CA County of Riverside.” LZA Technology, Division of Thornton-Tomassetti Group, June 30, 2004.

Stratford, Oli. “Farewell to the Futuro: An Interview with Marko Home and Mika Taanila.” *Disegno Daily*. Espoo, Finland. September 10, 2012. Accessed June 9, 2019. https://www.disegnodaily.com/article/farewell-to-the-futuro-an-interview-with-marko-home-and-mika-taanila

Taylor, Wendy, Choice Property Brokers, Pine, CO. Email to Wayne Donaldson. February 13, 2003.

Voigt, Dr. Pamela, Architektin. “Preliminary Sectional Sketches. BAKU - Bauen mit Kunststoffen Zi. 4.07 Brandvorwerkstraße 52-54, 04275 Leipzig.” January 29, 2020.

Voigt, Dr. Pamela, Bauhaus-University Weimar, Germany. Letter to Milford Wayne Donaldson, August 21, 2008.

Voigt, Pamela. “Die Pionierphase Des Bauens Mit Glasfaserverstärkten Kunststoffen (GFK) 1942 Bis 1980.” Dissertation for Ph.D, Bauhaus Universität, Weimar, Germany. May 28, 1976.

Waentig, Friederike. *Plastic in Art.* Hesse, Germany: Michael Imhof Verlag. Petersberg, May 1, 2009.

Weinstein, Dave. “Falling for a Futuro.” *CA Modern.* San Francisco, CA: Eichler Network, Winter 2007. Cover Story and Interview with Wayne Donaldson.

Wood, Larry. "Futuro Covering and Repair Process including Materials Specifications." San Diego Boat Movers, San Diego, CA. December 2003.

**Films, Videos, Professional Photographs, Artwork**

Blachford, Tom. "Midnight Modern,"Melborurne, Australia. November 7, 2017. Accessed February 8, 2017. http://www.midnightmodern.com/ Personal interview, November 7, 2017.

CNN Business. "The Flying Saucer-Shaped Futuro Home was Doomed to Fail." Interview with Milford Wayne Donaldson and Laurie Donaldson. *CNN Special Report,* July 25, 2019. Accessed March 15, 2020. http://www.cnn.com/video/data/2.0/video/business/2019/11/29/futuro-nasa-space-age-1960s-flying-saucer-house-orig.cnn-business.html.

Delhomme, Jean-Philippe. "Social Studies." www.latimesmagazine.com 2012. Cartoon showing alien ships descending to the Futuro. Caption: "No one expected the house to attract flying saucers, but we weren't especially surprised."

The Entrance Band. *No Needs*. Filmed by Paz Lenchantin and Amanda Charchian. December 14, 2013. Music video, 4:27. https://www.youtube.com/watch?v=E3Io53i5nhE&feature=youtu.be. Filmed at the Donaldson Futuro, Idyllwild, CA and aired on youtube.com on December 14, 2013 with 4,053 views. Permission not granted to film.

*Futuro - A New Stance for Tomorrow* (Futuro - Tulevaisuuden olotila). 1998. Taanila, Mika & Home, Marko. Taanila, Mika. Finland: Kinotar Oy. Video, 29 min.

Galloway, Carlie. Exterior Night of the North Façade. May 29, 2016. Personal interview.

*The Graduate.* Directed by Mike Nichols. Released date 1967. Movie, 1:45:57. Accessed September 30, 2015. https://www.youtube.com/watch?v=eaCHH5D74Fs. Short outtake with Mr. McGuire and the word "plastics."

Kozal, Paul. *Studio 391*. Gualala, CA. March 26, 2018. Accessed August 12, 2018. www.paulkozal.com Personal interview, March 26-27, 2018.

Marshall, David. Heritage Architecture & Planning, San Diego, CA. November 11, 2017. Personal interview.

Mora Mora. *Karleen.* Presented by Sister Jane & BBJB, filmed at the Donaldson Futuro, Idyllwild, CA. Music Video, 4:01. https://www.youtube.com/watch?v=8jxWhZY_XNA&feature=youtu.be Aired on youtube.com on January 7, 2014 with 10,404 views. Permission granted to film.

Narelle, Brian. Writer, Artist, Actor. "The Great Eichler-Futuro Migration Theory – When We Land, Stay Close Together So You Look Like A Neighborhood." *CA Modern.* Winter, 2007. Accessed August 14, 2018. https://www.narellecartoons.com/eichler-cartoons. Produced sketch of the Donaldson Futuro for magazine.

Quintal, Becky. "Futuro in New Jersey." *Archdaily.* The Unknown Cameraman. ca 2013. Video, 3:59. https://www.archdaily.com/404166/video-a-look-inside-the-futuro-house-a-spaceship-vacation-home. Video by author of the "The Planet of the Apes Wildwood" attraction originally at Moery's Pier Boardwalk in New Jersey. Accessed March 17, 2020.

Young, Sasha. Video shoot at the Futuro with Donaldson, December 8, 2013. http://sasha-young.squarespace.com. Based in Venice, CA. Personal interview.

**Consultation/Correspondence**

Clarkin, Victoria. Owner of a Futuro, 1304 Panferino Drive, Pensacola Beach, Florida. Donaldson was there for two days of research. March 13-14, 2004.

Clayton, Charles. Masonry Contractor, Idyllwild, CA. January 10, 2004. Clayton performed all of the concrete and rock work on the site.

Devers, Tamara. Researcher for HGTV, Dallas, TX. "The 10 Most Outrageous Homes." Exchange of emails March 26-28, 2013.

Dillman, Dora. Project Manager Futuro Relocation, Idyllwild, CA. Several emails over the course of construction.

Duron, Mike. Power Bound Electric, Idyllwild, CA. October 19, 2004. Several emails over the course of construction.

Erickson Air Crane, Central Point, Oregon. Personal interview. May 14, 2002. Maximum lifting capacity: 25,000 pounds. Accessed May 14, 2002. www.erick-aircrane.com

Grau, Stan. Original Owner and Salesman for Futuro, Waianae, HI. Copies of The Stan Grau Collection of drawings and designs for the Grauhaus now in the possession of Milford Wayne Donaldson. Personal interview with Stan Grau August 20, 2003.

Hollber, Jerry. General Manager, Pine Cove Water District." Letter to Wayne Donaldson, July 30, 2003.

Home, Marko. Author of the book *Futuro -Tomorrow's House from Yesterday.* Curator of *Futuro 2012*, Espoo, Finland. Emails: March 11-13, 2003.

King, Jim. Jim King Construction, Imperial Beach, CA. King was the Construction Manager for the project, including the move. Several emails over the course of construction.

McGuire, Dennis. Previous owner of the vacant lot at Pine Cove, Idyllwild, CA. Several emails over the course of construction.

McMillan, Corky. McMillan Construction, San Diego, developer for the Naval Training Station (Liberty Station). Personal conversation. December 2, 2002.

McNeil, Paul. Alternative Artist, Surfer. Email November 3, 2003.

Meier, Allison. "Futuro Houses: A Failed 1960s Attempt at UFO Living." December 8, 2014, accessed September 6, 2020, https://www.atlasobscura.com/articles/futuro-houses-a-failed-1960s-attempt-at-ufo-living.

Miller, Jim. Inspector. Department of Building and Safety, Riverside County, CA. Personal correspondence, January 23, 2003.

Neil, Meg. "A Map of the Last Remaining Flying Saucer Homes," All the 1960s Futuro Houses left in the world. September 13, 2016. Accessed March 15, 2020. https://www.atlasobscura.com/articles/a-map-of-the-last-remaining-flying-saucer-homes

Pisani, Rich. Owner of a Futuro in Terrapin, Illinois. www.futuro-house.net. Email correspondence February 24, 2005.

Richard, Lisa. Southern California Edison, Romoland, CA. December 15, 2004.

Sanchez, Mario. Austin, Texas. Noted a Futuro sitting in an open field on State Highway 276 in Rockwell County immediately adjacent to Dallas County. Email November 23, 2003.

Sanderval, Joe. Marco Crane and Rigging Company, Santa Fe Springs, CA. December 8, 2004.

Sauer, Mark. Mark Sauer Construction, Corona, CA. December 2, 2004.

Speidel, Elbert. Professor, California Polytechnic State University. San Luis Obispo, CA.

B13. Remarks: N/A

***B14. Evaluators:** Milford Wayne Donaldson; Eileen Magno

***Date of Evaluation:** September 2020

**Location Map**

Latitude: 33.754938 Longitude: -116.738247

**Sketch Map/Photo Key**

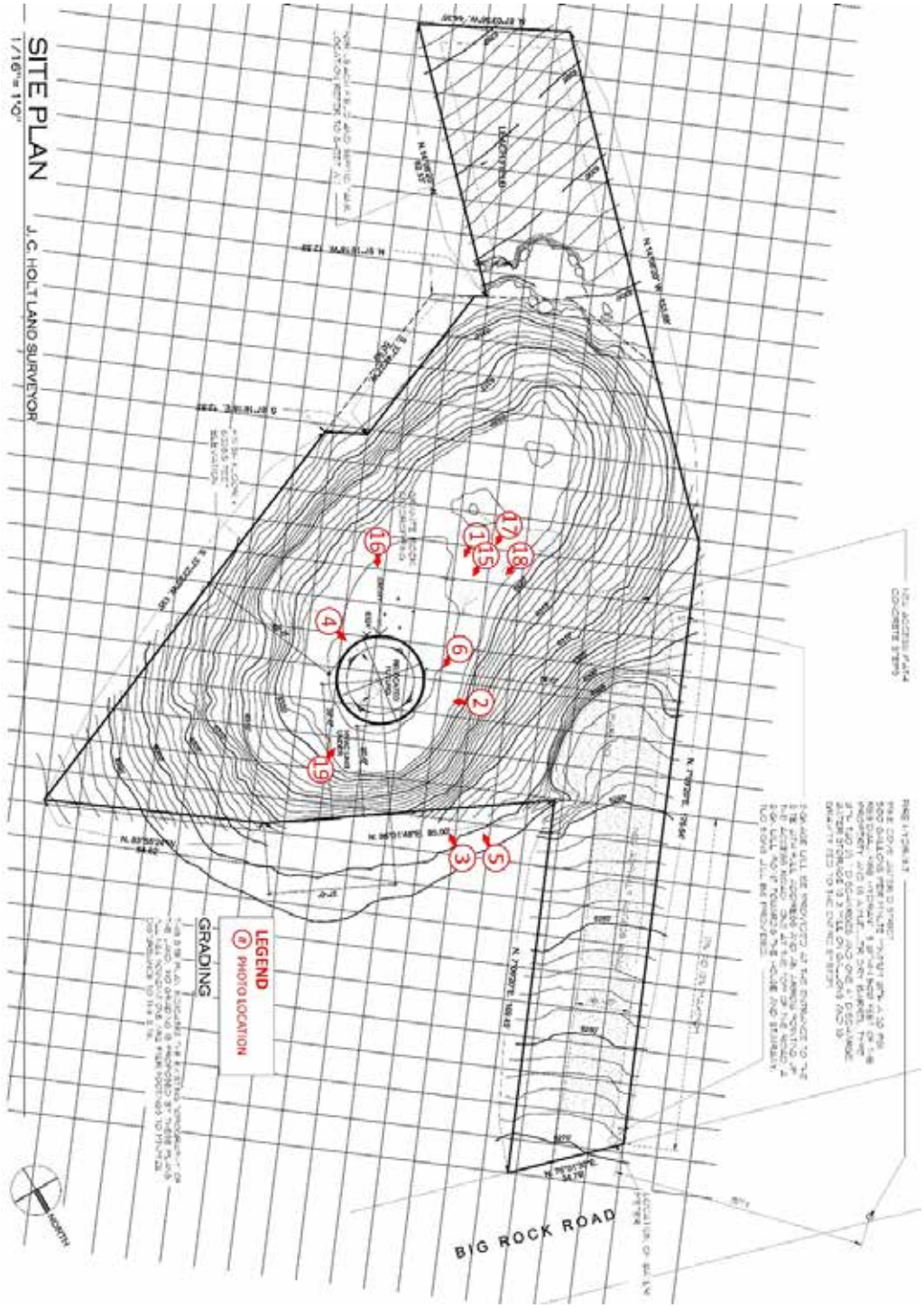

**Photo Log**

Name of Property: Futuro
City or Vicinity: Idyllwild
County: Riverside
State: California
Photographer: Laurie Donaldson, Milford Wayne Donaldson, Paul Kozal
Date Photographed: March 26, 2018; December 28, 2018; December 28, 2019

Description of Photograph(s) and number, include description of view indicating direction of camera:

1 of 19 Exterior, camera facing northeast (Kozal, March 26, 2018)

2 of 19 Exterior, two lower windows at dining area, camera facing southeast (Kozal, March 26, 2018)

3 of 19 Exterior, Futuro on top of faux rock concrete footing, camera facing south (MW Donaldson; December 28, 2018)

4 of 19 Hinged downward opening door and integral stairs similar to a Cessna Citation aircraft, camera facing northwest (Kozal, March 26, 2018)

5 of 19 Exterior, public view from Big Rock Road, camera facing south (MW Donaldson; December 28, 2018)

6 of 19 Exterior, camera facing northeast (L Donaldson, December 28, 2019)

7 of 19 Interior, original kitchen and central console, camera facing south (Kozal, March 26, 2018)

8 of 19 Bathroom showing original counter, cabinet with mirrors, and sink, camera facing southwest (MW Donaldson; December 28, 2019)

9 of 19 Bathroom showing original shelf and cantilevered toilet, camera facing west (MW Donaldson; December 28, 2019)

10 of 19 Restored opening for central fireplace, adapted for acrylic skylight and light fixture, camera facing south (MW Donaldson; December 28, 2019)

11 of 19 Original bench seat and coffee tables that double as beds, camera facing northwest (MW Donaldson; December 28, 2019)

12 of 19 Dining area showing original dining table and coffee table, camera facing northwest (L Donaldson, December 28, 2019)

13 of 19 Kitchen showing original sliding plastic storage cabinets, range top, and Formica countertop, camera facing southwest (MW Donaldson; December 28, 2019)

14 of 19 Living Room showing original range and oven, camera facing northeast (Kozal, March 26, 2018)

15 of 19 Bedroom showing under bed storage, camera facing southeast (Kozal, March 26, 2018)

16 of 19 Futuro in the snow, camera facing north (Kozal, March 26, 2018)

17 of 19 Special effects at night, camera facing northeast (Kozal, March 26, 2018)

18 of 19 Nighttime mood at sunset, camera facing northeast (Kozal, March 26, 2018)

19 of 19 Exterior, camera facing southwest (MW Donaldson; December 28, 2018)

**Figure 1** Floor Plans. Left: Finnish Futuro, Source: Marko Home, *Futuro*; Right: USA Futuro, Source: *CA Modern*, Winter 2007.

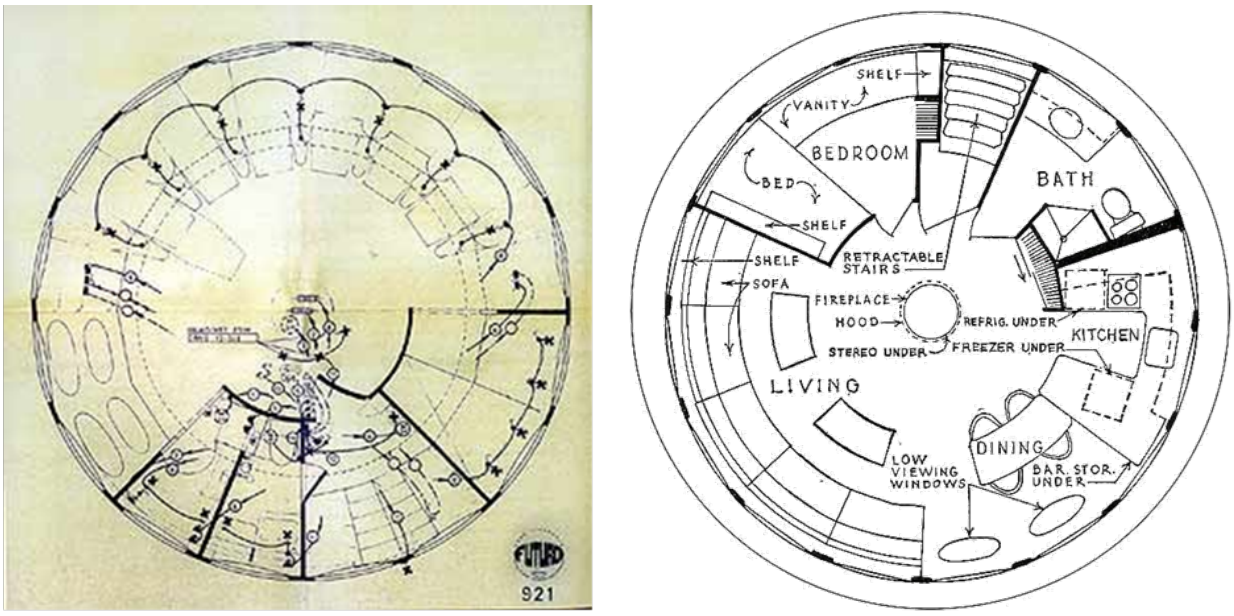


**Figure 2** Preliminary sectional sketches. Source: Dr. Pamela Voight, *Architektin, Leipzig*, January 29, 2020.

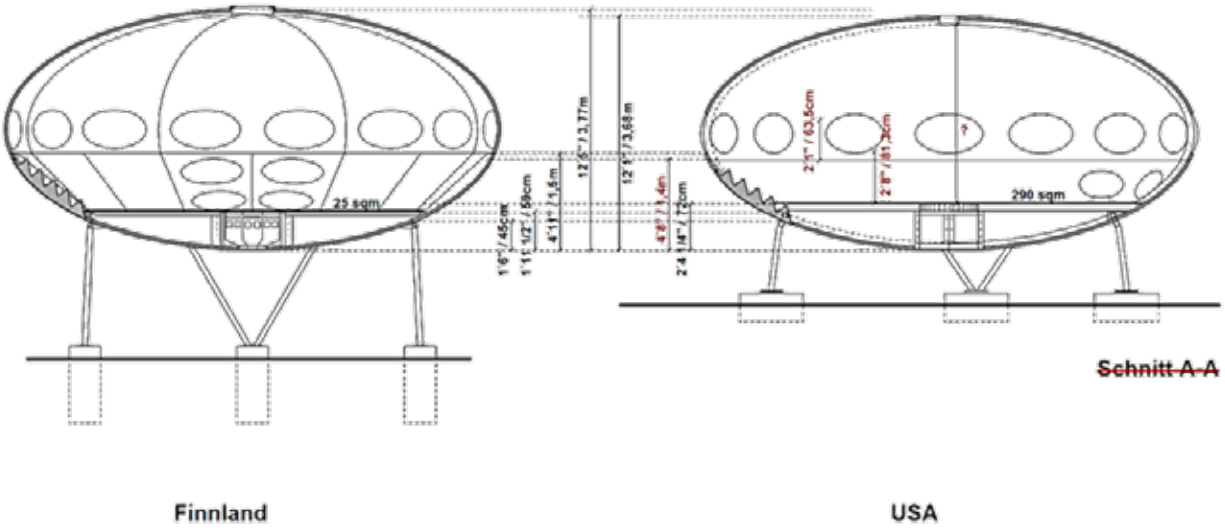

**Figure 3** Finnish model prototype, kitchen interior. Source: Home, *Futuro*.

**Figure 4** Moving the Futuro in San Diego, c. 1969, photographer unknown. Source: Stan Grau Collection.

**Figure 5** Finnish model prototype exhibited at the Frankfurt Fair, 1970. Source: Home, *Futuro*.

**Figure 6** As listed for sale on eBay Nov. 13, 2001 for $25,000 USD. Source: Josh Levine.

**Figure 7** At the parking area behind the Design Center, San Diego, September 2002. Source: Milford Wayne Donaldson, FAIA.

**Figure 8** At the San Diego Boat Yard undergoing restoration, November 2002. Source: Milford Wayne Donaldson, FAIA.

**Figure 9** Portion of roof badly damaged due to weathering, removed and replaced with new fiberglass, December 2002. Source: Milford Wayne Donaldson, FAIA.

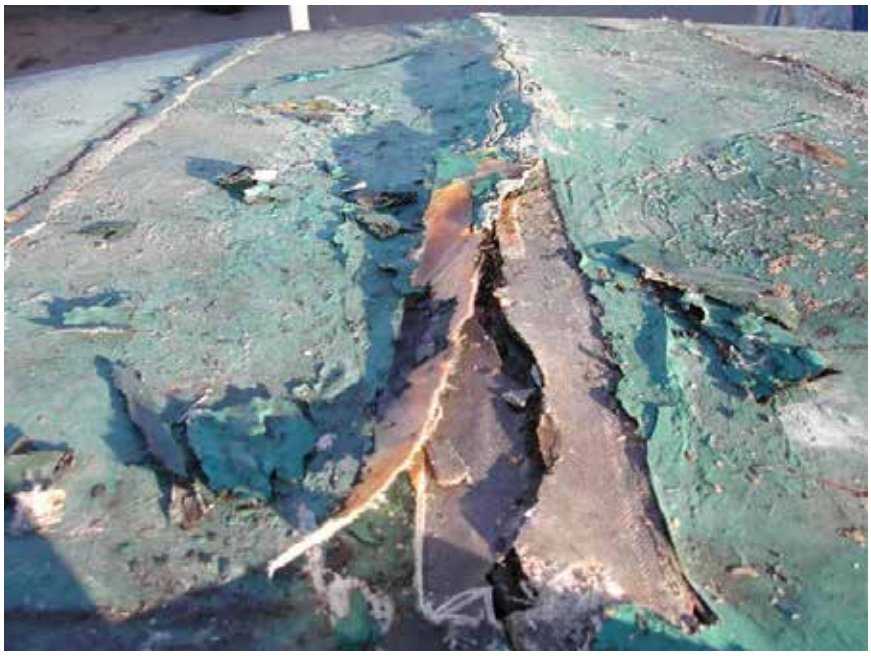

**Figure 10** Near top of door opening where upper and lower halves of shell are joined; vertical joint is connected with steel bolts, December 2002. Source: Milford Wayne Donaldson, FAIA.

**Figure 11** A Futuro airlifted in Sweden, October 22, 1969. Source: Home, *Futuro*.

**Figure 12** Donaldson Futuro en route to Pine Cove from San Diego, closing three lanes of Interstate 15 with California Highway Patrol escort, December 8, 2004; photograph by Joy Guevara. Source: Milford Wayne Donaldson, FAIA.

**Figure 13** Moving the Futuro up California State Highway 243 to Pine Cove, passing through Mountain Center, accompanied by CHP, December 8, 2004. Source: Donaldson.


**Figure 14** Craning the Futuro into place in Pine Cove, December 8, 2004. Source: Donaldson.

**Figure 15** During interior restoration, original electric stove and range, bench seat sitting area, August 15, 2006. Source: Donaldson.

**Figure 16** Installing the mock-up acrylic window in a mock-up fiberglass frame made by Mr. Donaldson at Planet Plastics, Corona, CA, May 22, 2003. Source: Donaldson.

**Figure 17** Bailey, CO Futuro with replacement operable window, n.d. Source: Donaldson.

**Figure 18** Finnish model under construction, n.d. Source: Justin McGuirk.

**Figure 19** Poly-Pod System Model, c. 1970. Source: E.O. Speidel, Designer and Model Maker.

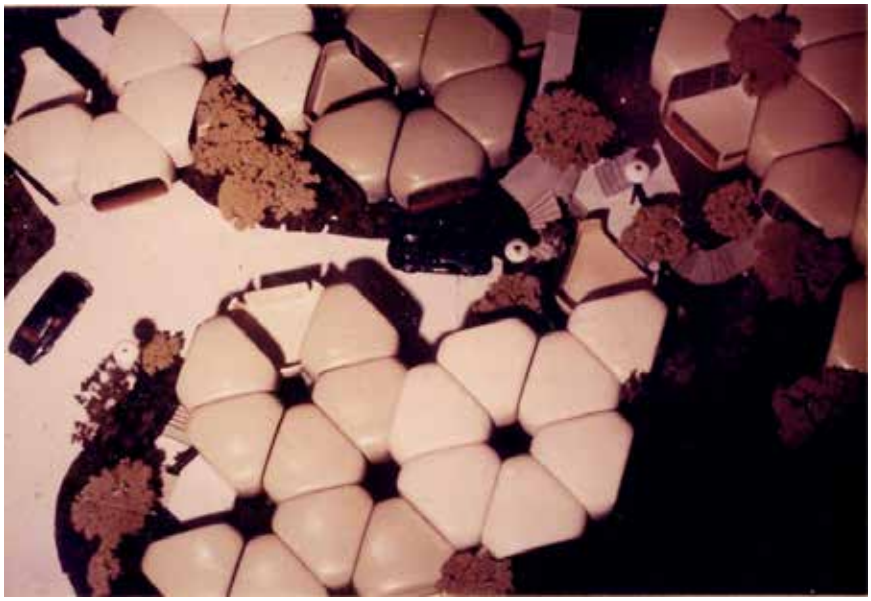

**Figure 20** Proposed uses for the Grauhaus Futuro, n.d. Source: Stan Grau Collection.

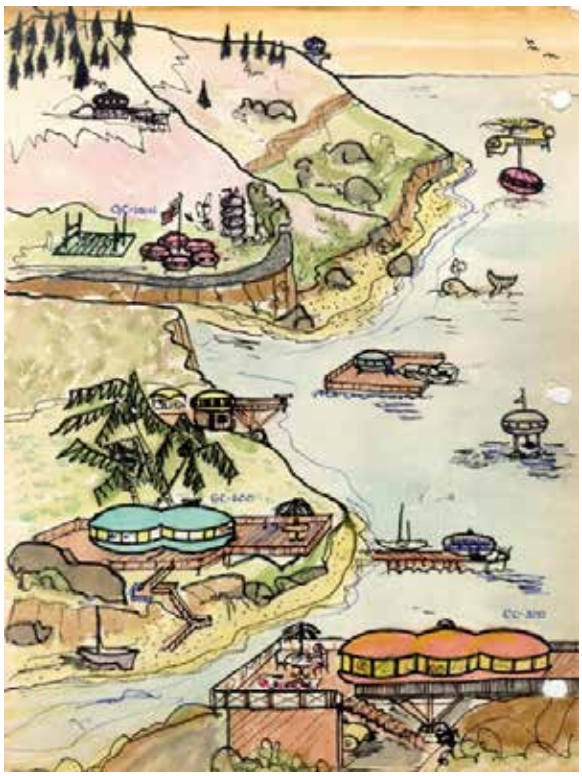

**Figure 21** "Your Own Adventure in the Grauhaus" brochure, n.d. This model, with square windows, was never built. Source: Stan Grau Collection.


**Figure 22** Photographed by drone, August 11, 2017. Source: David Marshall, photographer.

**Figure 23** North façade at night, May 29, 2016. Source: Carlie Galloway, photographer.

**Photo 1** Exterior, camera facing northeast

**Photo 2** Exterior, two lower windows at dining area, camera facing southeast

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