

Port Plaza Park, Olympia WA

## **Cognitive Synergy** by Bill Frymire October 10th, 2021



**Artwork:** William Frymire - *Cognitive Synergy*

**Completion Date:** September 2021

**Dimensions:** 10 ft. high x 5.5 ft. wide ft. weight 700lbs

**Location/Funding:** Olympia WA,/ Rotary Club of Olympia

**Medium:** aluminum, stainless steel, acrylic

**Public Art Budget:** \$100,000

**Goals of Project:** Celebrate the 100th year anniversary of the Rotary Club of Olympia by showcasing some of their past activities and their commitment to "Service Above Self".

Cognitive Synergy was commissioned by the Rotary Club of Olympia in recognition of 100 years of service to their community and abroad.

Inspired by M.C Escher's *Hand with Reflecting Sphere*, this work visually represents "service above self".

The title "Cognitive Synergy" refers to the group of people within the Rotary who work together for the common goal of helping others, their diversity and unique backgrounds all contributing to a cause where the whole is more than the sum of the parts.

Specific design elements include material and finishes that are durable and weather resistant: aluminum, stainless steel fasteners, perforated surfaces to reduce wind resistance.

Etched into the coloured acrylic portholes, or designed into the aluminum gears are symbols reflecting the works of the Rotary Club of Olympia and the essence of Olympia itself. These details range from topographical maps, renderings of indigenous flora and fauna to more abstract symbolism. The transition from layered to smooth aluminum as well as a few motifs in the gears represents man's impact on the world and our progression from analogue to digital (a consistent theme of my work).

# Maintenance Manual

## ***Cognitive Synergy***

### **Artist, Engineer, Supplier & Parts Information**

#### **Artist**

William Frymire  
Email: [info@frymire-art.com](mailto:info@frymire-art.com)  
Tel: 250.682 6937  
2325 Bossert Avenue Kamloops, BC, V2B 4V6

#### **Structural Engineer**

Aaron Fuller P.E., President- Fuller Designs  
1101 Kresky Ave.  
Centralia, WA 98531  
Cell: 360-807-4420

#### **Foundation**

Michael Robinson  
4th Dimension Construction  
855 Trospen Rd SW, Ste 108-253  
Tumwater, WA  
360-819-8075  
[4dconstructionoffice18@gmail.com](mailto:4dconstructionoffice18@gmail.com)

#### **Foundation Subcontractor**

Barrett Burbidge  
  
Pacific Projects LLC  
1921 5th Avenue SE  
Olympia, WA 98501

#### **Concrete testing**

Krazan and Associates, Inc.  
825 Center Street, Suite A  
Tacoma, WA 98409  
P: (253) 939-2500

#### **Rotary Club of Olympia Representative**

Don Chalmers  
333 Woodrow Place  
Sedro-Woolley, WA 98284  
360.280.0511  
[rotarycentennialart@gmail.com](mailto:rotarycentennialart@gmail.com)

# Cognitive Synergy

## Material List

### Aluminum

ASA Alloys

5101 48 Ave SE, Salmon Arm, BC

V1E 1X2

Phone: (250) 434-0660

5052 -H32 Sheet Aluminum , 0.25" thick -hand and gear sphere

5052 -H32 Sheet Aluminum , 0.5" thick -hand base

### Acrylic

ePlastics

5535 Ruffin Road

San Diego, CA 92123

Phone: 858-560-1551

0.25" thick transparent colored plexiglass

2404 bronze paper masked acrylic sheet

3030 transparent green acrylic sheet PM

1020 transparent light purple acrylic sheet PM

2208 yellow acrylic sheet PM

2111 light green acrylic sheet PM

2069 light blue acrylic sheet PM

### Fasteners

Fastenal Canada

1365 Dalhousie Dr.

Kamloops, BC V2C 5P6

Phone: (250) 314-0018

1/4" Stainless Steel flat head machine screws 1/2" long -Philips for attaching aluminum hand layers together

1/4" Stainless Steel flat head machine screws 1/2" long -Philips for attaching aluminum gears to connectors

1/4" Stainless Steel flat head machine screws 1/2" long -security (Torx with dot) for attaching non-welded access gear

#6 Stainless Steel pan head machine screws 1/2" long -philips for attaching acrylic panels to gears

3/8"-20 18-8 Stainless Steel Machine screws (one per finger) 7/16" long into tapped holes to attach sphere to hand

3/8"-20 18-8 Stainless Steel Machine bolts 7/16" long into tapped holes on base of hand to bottom of hand

### Base Anchors

Anchor bolts: (x9) 1/2"x Stainless Steel threaded rod with flat washer, lock washer and acorn nut.

### Clearcoat

Tiger Drylac Bengal Clear Glossy

49/01234

Kamloops Powder Coating

2862 Bowers Pl, Kamloops, BC V1S 1W5

Phone: (250) 374-1423

# ***Cognitive Synergy***

## **Construction**

Cognitive Synergy stands 10 feet tall. The fingers span 5 feet while the orb has a circumference of 5.5 feet.

5052 aluminum was chosen for its durability, corrosion resistance, and recyclability. The remainder of the piece is made of cast acrylic which stands up admirably to temperature change and sun damage. The piece was first screwed together with stainless steel fasteners and then TIG welded for optimum stability. All aluminum parts were cut and drilled on a CNC router.

The hand portion is made from 173 layers of 1/4" aluminum that were stacked and then screwed down with 1/4" stainless steel screws every 10 inches. The layers were then TIG welded from the inside as it was being put together. Additional channels were created inside and out and MIG welded by a professional welder.

The gears for the sphere were bent in a special mould on a shop press and assembled with connectors and 1/4" stainless screws and then welded together from the inside.

One large gear at the bottom front is not welded but is fastened with security screws and could be removed if replacement of the acrylic panels is required.

The finished texture on the hand and sphere was achieved using a 120 grit flapper sander. The 1/2" aluminium bottom plate was coated with bituminous paint to prevent corrosion between the aluminium and the concrete.

The acrylic panels were cut and engraved on a CNC router machine and slumped for 15 min at 300 degrees to create the proper bend. The panels were then screwed into the aluminum from the inside with the addition of a 1/4" aluminum ring for more support. A dab of wax was put on each screw to prevent corrosion and ease of removal if necessary.

## **Upkeep and Cleaning**

The hard powder-coated clear-coat finish on the aluminum should remain maintenance free for many years. The stainless steel fasteners and aluminum should not rust. Use cold or luke warm water (NOT hot) and a mild soapy detergent to wash. Rinse with a hose. Do NOT use a power washer on high pressure. DO NOT use solvent-based or citrus-based cleaners.

It is recommended that the piece be cleaned at least once a year as it is in a harsh salty environment. Use a neutral or a weak alkaline detergent and a non-abrasive cloth or soft brush.

Below is information from the manufacturer:

# Cleaning Recommendations

## FOR POWDER COATED SURFACES

A thorough cleaning of surfaces is required

- to conserve the decorative appearance of the surface and
- for the exterior application to reduce corrosion strainstore fixtures and shelving

The following minimum requirements apply:

### Cleaning-compatible component design

Cleaning-compatible component design has a critical influence on the cleanability of components during their service life. The constructional design and geometry of a component largely determine its likely degree of soiling, as well as the future soiling behavior caused by e.g. upright surfaces, joints and dirt run-off routes that channel concentrated flows of soiling across visually exposed surfaces. Failings in the constructional design can often not be compensated by a powder-coated surface, not even in conjunction with the right cleaning techniques.

### Regular Cleaning

If the component is not cleaned during its service life, or is cleaned only irregularly or improperly, this accelerates the soiling process. Depending on the influencing conditions, this in turn may lead to irreparable surface defects (e.g. corrosion, chalking, etc.) and even to a complete loss of decorative appearance. The component may thus only be expected to retain its value and functionality if cleaned regularly and often over the course of its service life, as necessitated by the soiling (i.e. depending on the environmental conditions and the location).

### Cleaning of powder coated surfaces

- as the case may be, only clean water, with slight additives of neutral washing agents (pH 7), is to be used with the aid of soft, non-abrasive cloths, rags or industrial cotton. Strong rubbing is not to be undertaken.
- the removal of greasy, oily or sooty substances can take place with the use of white spirit free of aromatic compounds or isopropyl alcohol (IPA). Residues of adhesives, silicone cartouche or adhesive tapes, etc., can also be removed in this way.
- use no solvents or similar, containing ester, ketones, polyhydric alcohol, aromatics, ethylene glycol or halogenated hydrocarbon.
- joint sealants and other aids such as glazing aids, lubricant agents, drilling and cutting lubricants etc., which come into contact with coated surfaces must be pH-neutral and free of paint damaging substances. They must first be subjected to a suitability test.

- due to the danger of changes in a colour tone or effect, a test for suitability is to be undertaken for metallic coatings.
- use no scratching, abrasive agents.
- use no strong acids or alkaline detergents and introfiers.
- use no detergents of unknown compositions.
- detergents must not be used at temperatures higher than a maximum of 77°F (25°C).
- the surface temperature must not exceed 77°F (25°C) during cleaning.
- the maximum exposure period of these detergents must not exceed one hour: when necessary, the entire cleaning process can be repeated after at least 24 hours.
- rinsing with clean cold water is to take place immediately after every cleaning process.
- fine-textured effects: Use fiber-free cloths. Moderate mechanical support may be given to the cleaning operation using a soft, non-surface-damaging brush.
- it is a well-known fact that with their ingredients increasing the sun protection factor, cosmetic products, including sunscreens such as suntan lotions, oils and creams in particular, adversely affect powder coatings. Such ingredients diffuse into the coated finish and then lead to impairment of the powder coating finish. Even short-term exposure to their aggressive effect on the finish, sunscreen agents may result in more or less severe spotting on the powder coating finish. Therefore, regular cleaning of the paint layer immediately after exposure to cosmetic product is recommended to protect the paint finish.

### Certified facade cleaning

Proper maintenance and regular servicing of the coated surfaces are both prerequisites for the claims of any guarantee and require regular cleaning at least once each year. For severe environmental pollution, for example in regions with increased salt contamination and/or chemical exhausts, meaning in a direct area of influence or within the vicinity of an industrial or chemical enterprise, or in the immediate vicinity of a sea coast or within a defined chemical/ radioactive precipitation zone, the building must be cleaned more often. In this way possible damage can be made subject to timely recognition and remedied on time by suitable measures. If a coated component is soiled during transport, through storage or assembly, the cleaning of this component must take place immediately with clear, cold or lukewarm water. Neutral or a weak alkaline detergent can be used against severe soiling.

The prerequisite for proper care of the coated construction is that the construction is regularly cleaned according to the guidelines of the Registered Quality Association for the Cleaning of Metal Facade Elements, and is carried out by a member of the abovementioned association with detergents and cleaning aids in accordance with RAL-GZ 632-1996 and certified by the same association for the certified cleaning of facades with coated surfaces - before every initial cleaning and before every change to another detergent and cleaning-aid during ongoing cleaning intervals, these are to be additionally tested for their suitability on a test area facing south on an unexposed point of at least 2 m<sup>2</sup>. Further instructions for maintenance and cleaning are available from, among others, the:

- Aluminium-Zentrale Beratungs- und Informationsdienst in D-40003 Düsseldorf (Aluminium Center, Advisory and Information Service)
- Gütegemeinschaft für die Reinigung von Metallfassaden e.V. (GRM) in D-90402 Nürnberg (Registered Quality Association for the Cleaning of Metal Facade Elements)
- American Architectural Manufacturer's Association (AAMA) U.S.A., (AAMA 610-1979 Cleaning Procedures)

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Photos by William Frymire

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This one was taken with a  
phone so the resolution is low



Fabrication photos (taken with smartphone)

