

It all started with a fish



Before Bilbao, before Weismann, before Seattle, there was the fish, many fish really, in Barcelona, Minneapolis, Seattle, Kobe, and Venice each a study of scales, skin, structure...and here, silicone



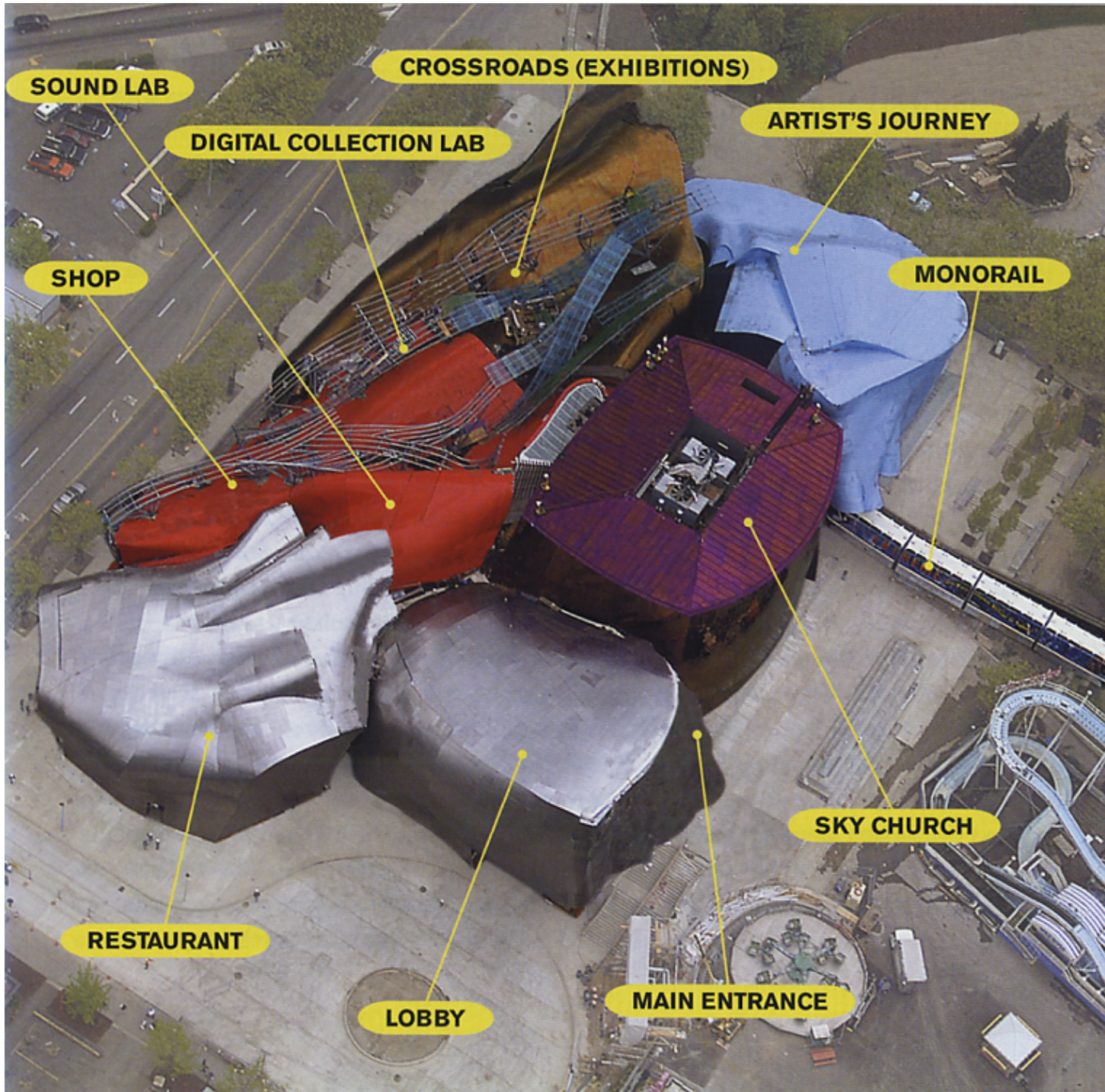


Separation of skin and structure initiated by Eiffel and Bartoldi for the Statue of Liberty, rendered in wood, steel, glass and silicone sealant by Gehry.



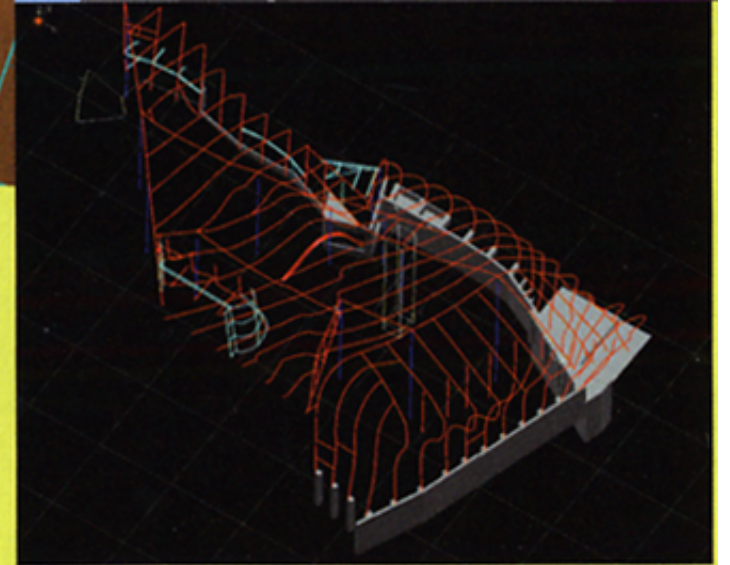
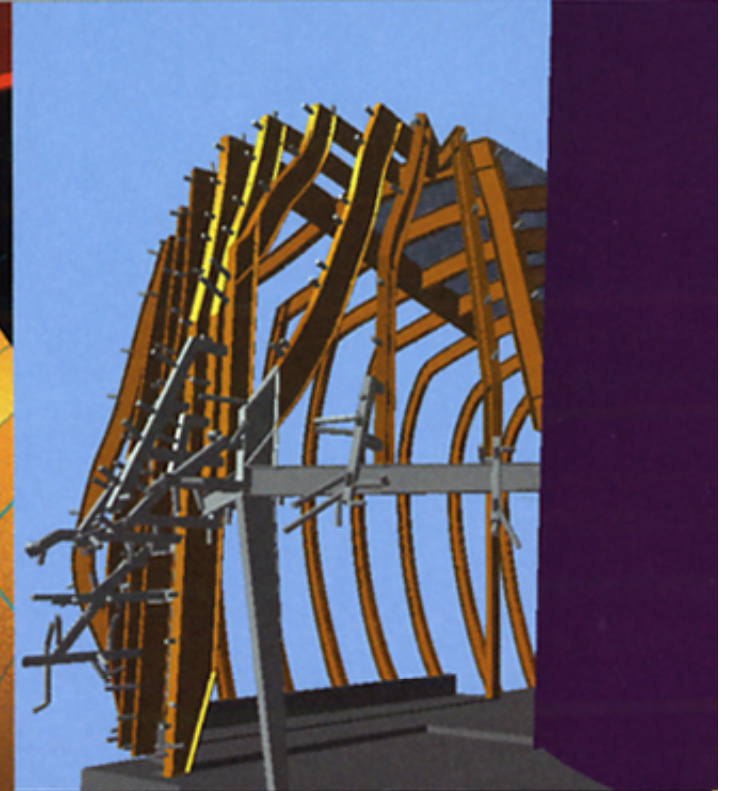
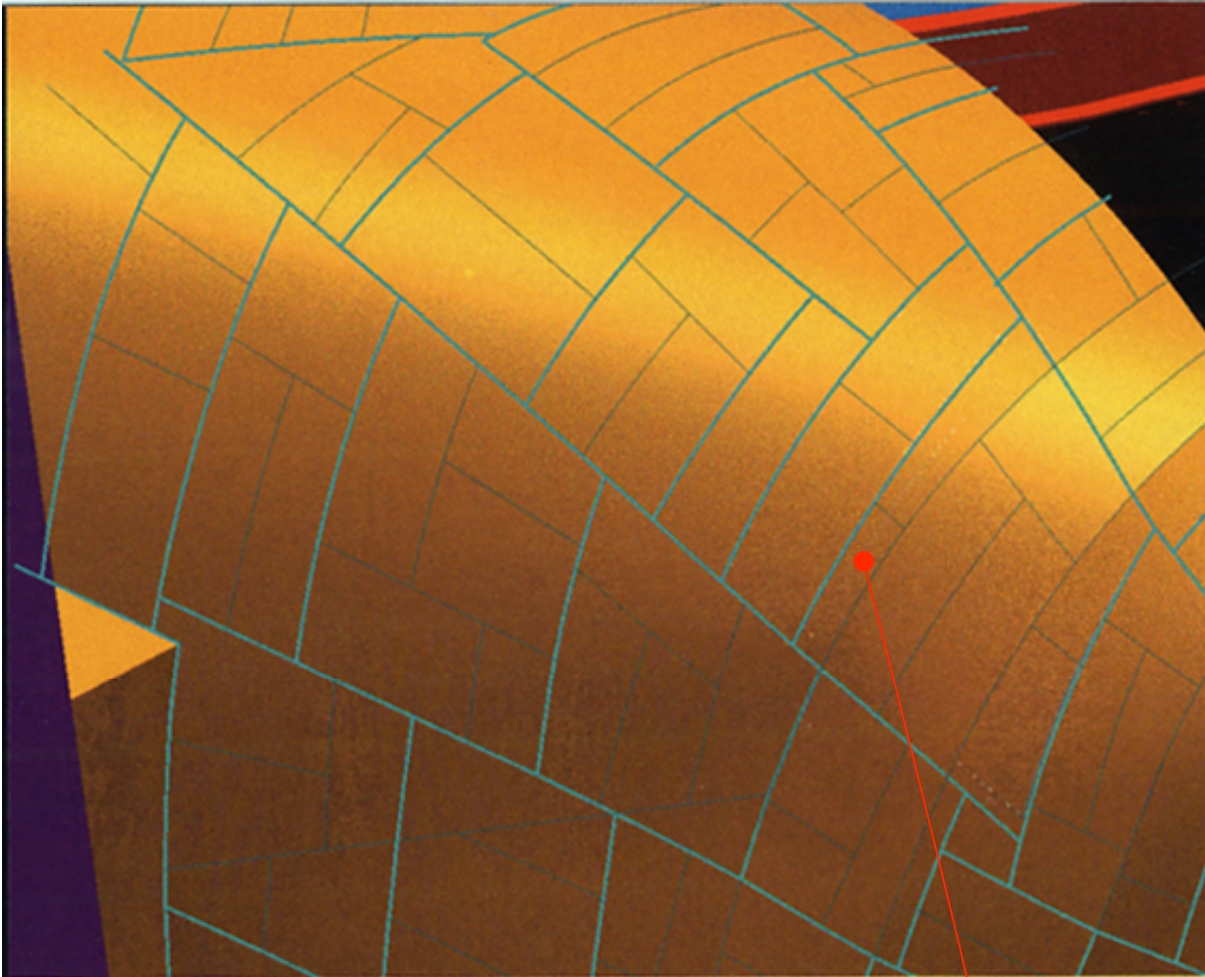






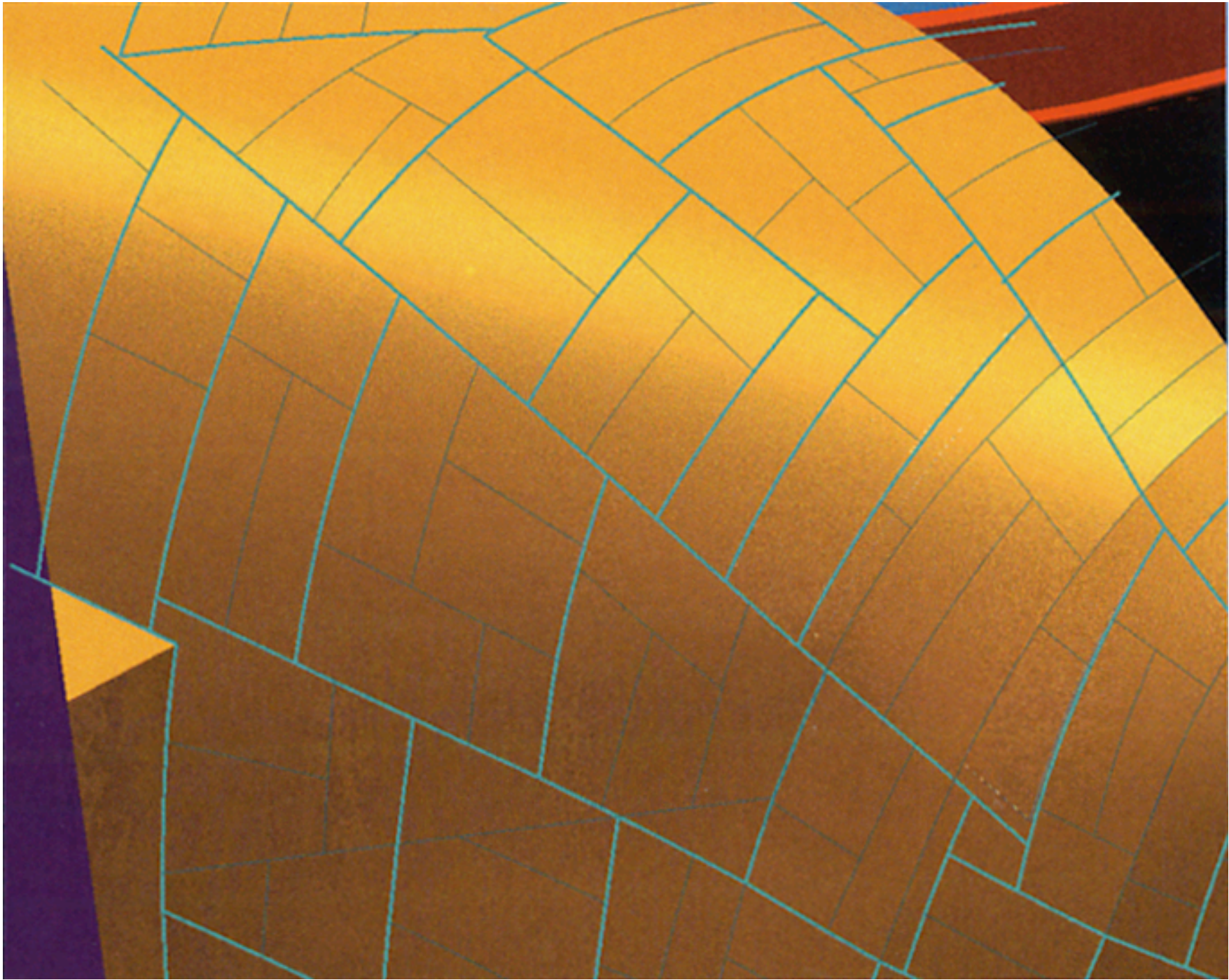
Seattle Music Experience: Microsoft founder Paul Allens homage to J. Hendrix...and now a Sci-Fi museum too

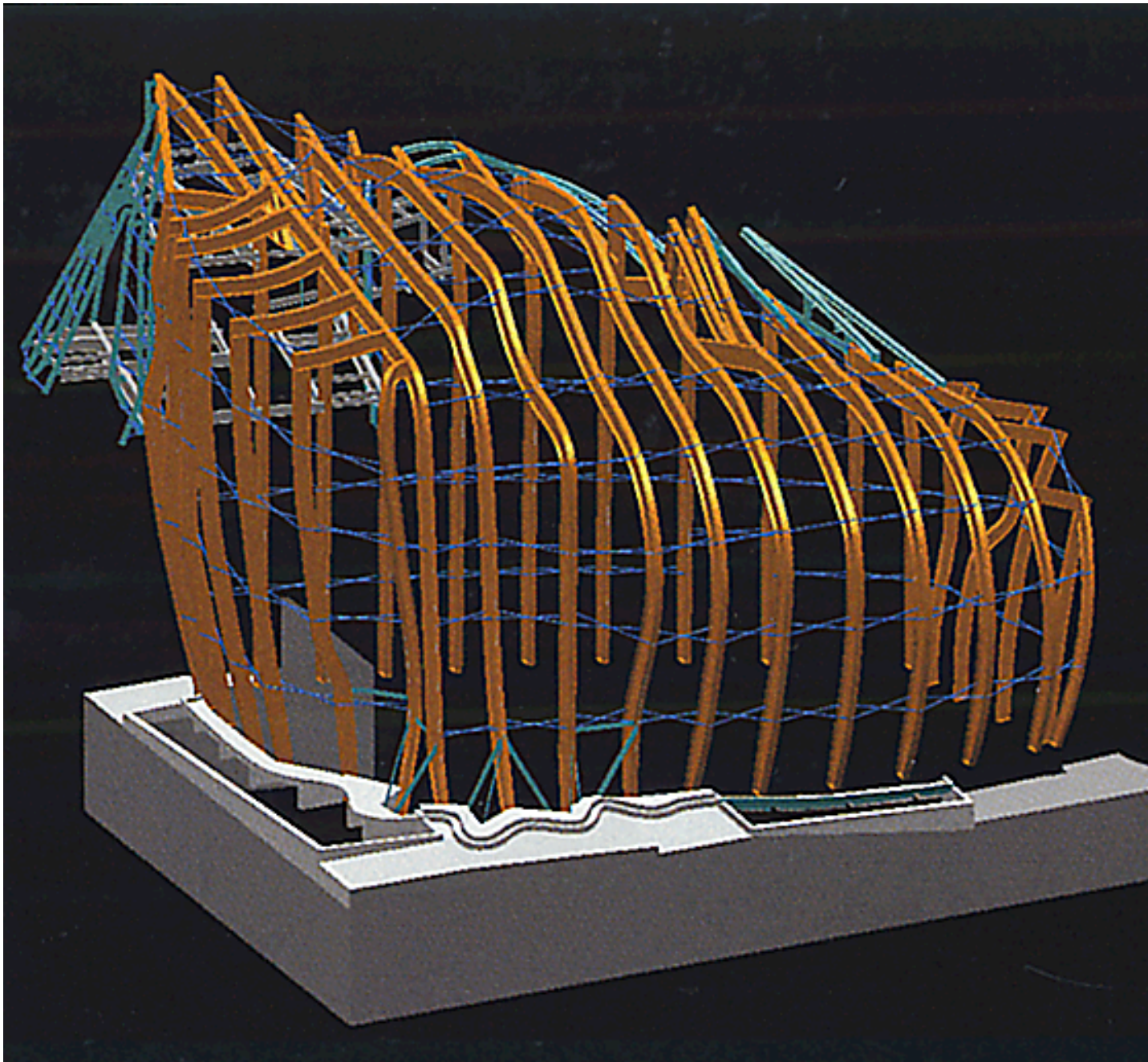
F. Gehry, 2000



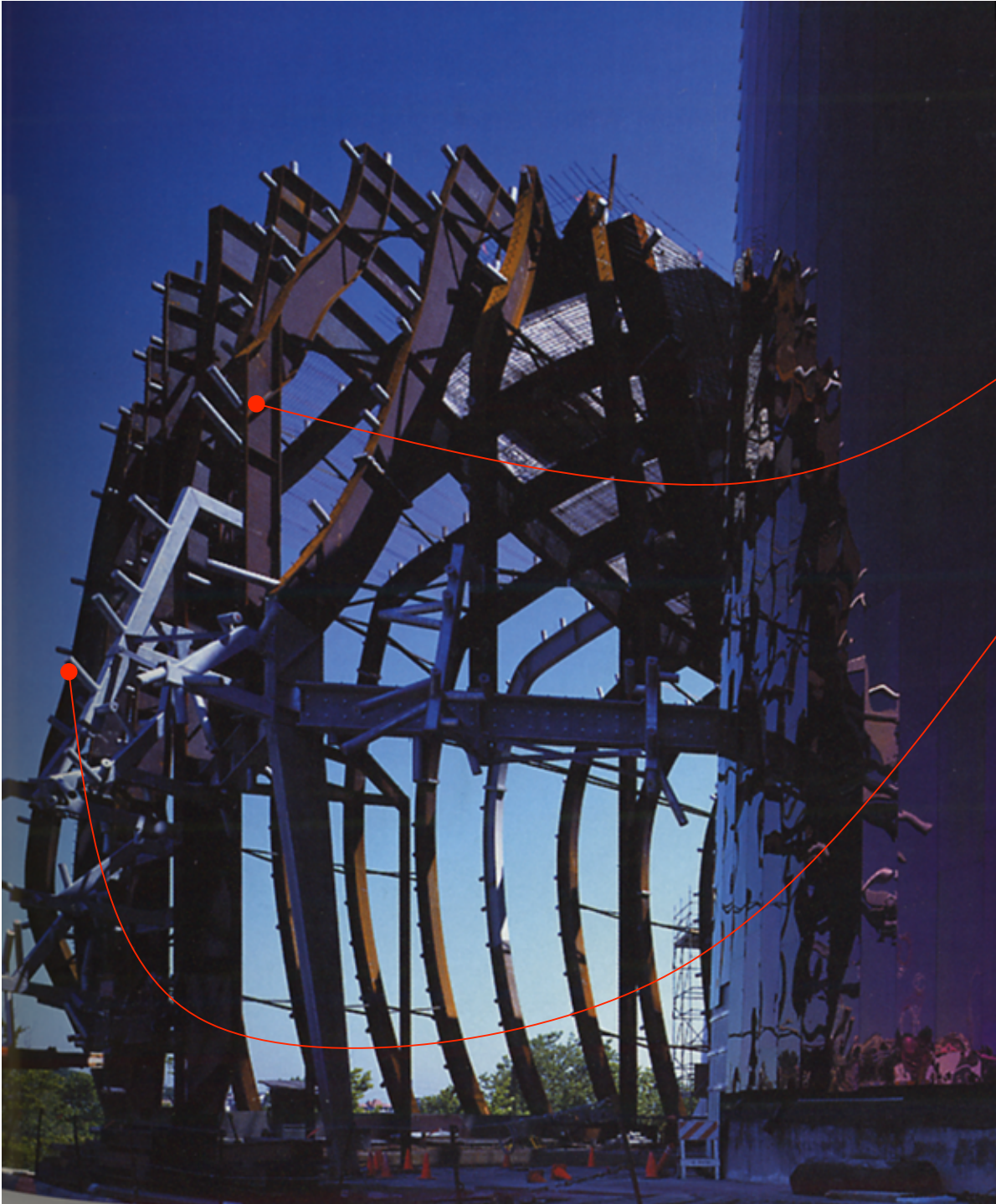
Like at Bilbao, Catia Cad makes it possible

Skin panel assembled out of 7 metal shingles
wherever possible, 3,000 panels overall





Catia makes “noodle”
WF steel columns, to
get close (1 to 35 feet)
to the form
then mediating
structure fills between
noodles and skin.



The steel industry bends, splices, rolls, and sometimes welds up the “noodles columns” out of steel plate, or wide flange members.

Gusset plates are welded into the web where the steel changes direction in order to add stiffness to the noodle

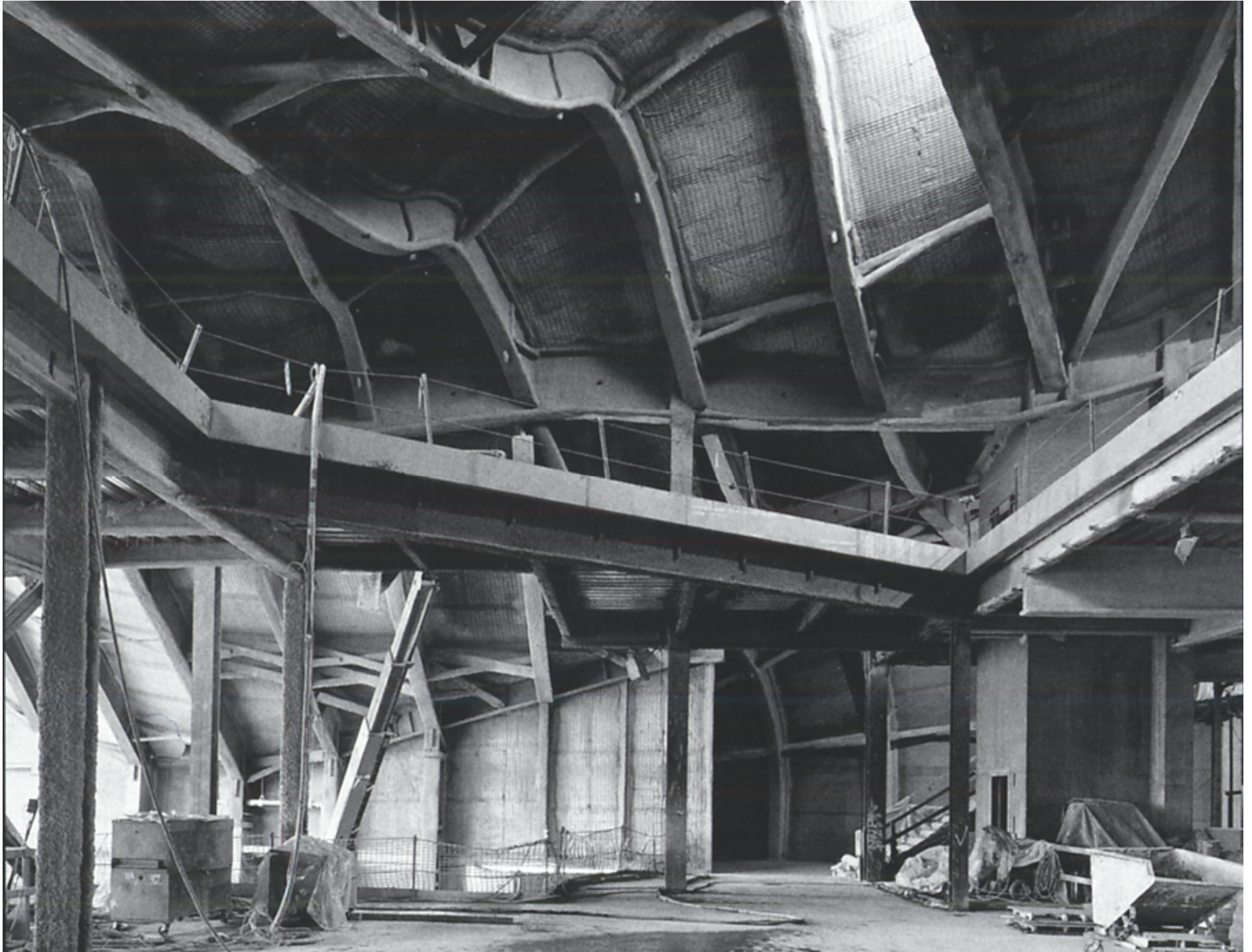
Steel pipe stanchions are added to support tubes that will carry the metal skin

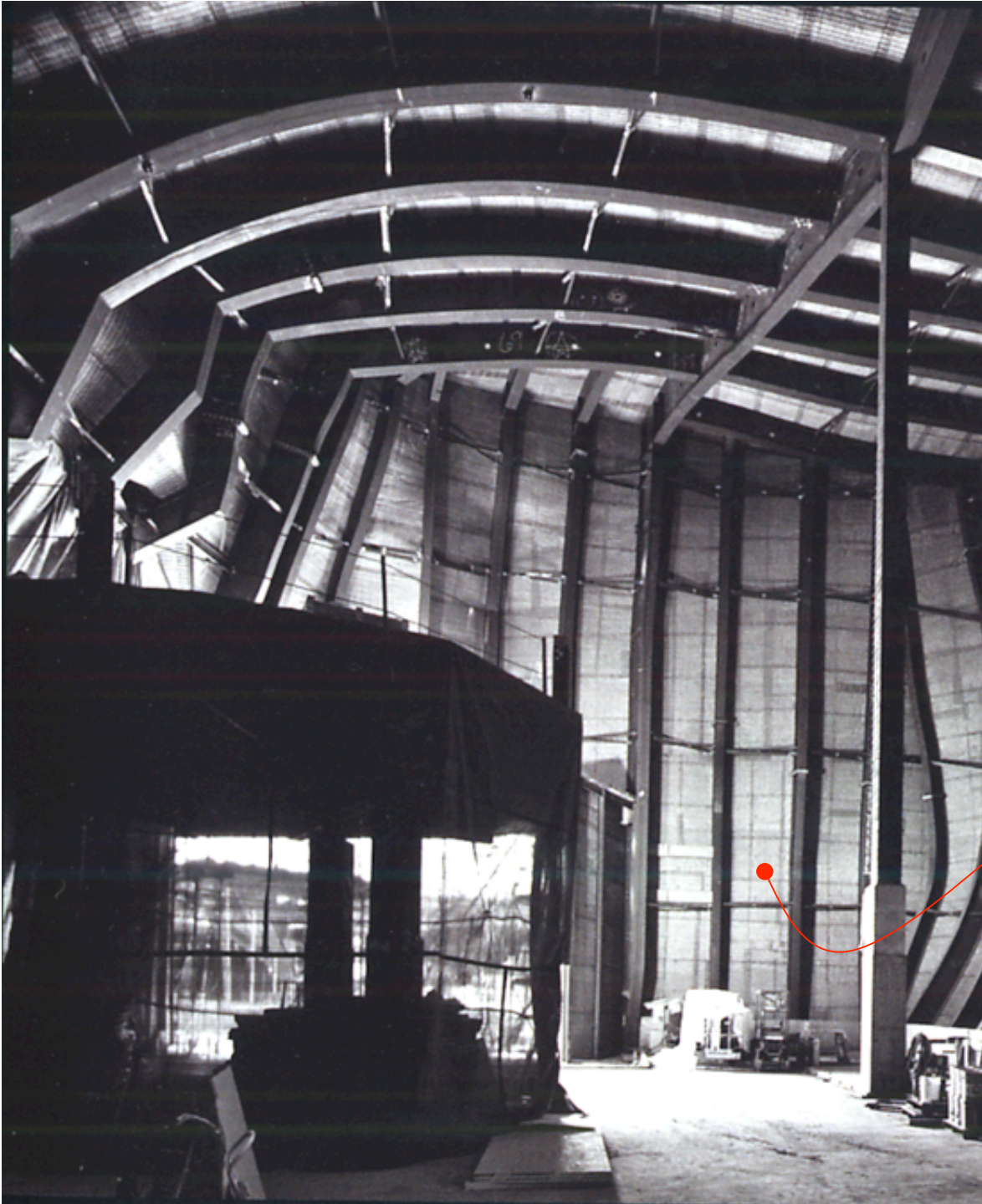


• The presence of Nelson's or shear studs indicates this steel is designed to work in composite action with a concrete (shot-crete) sprayed on skin

• Sprayed-on fire protection







● Foil-backed insulation blankets between the steel noodles



Looks like a bead of sealant between the shingles

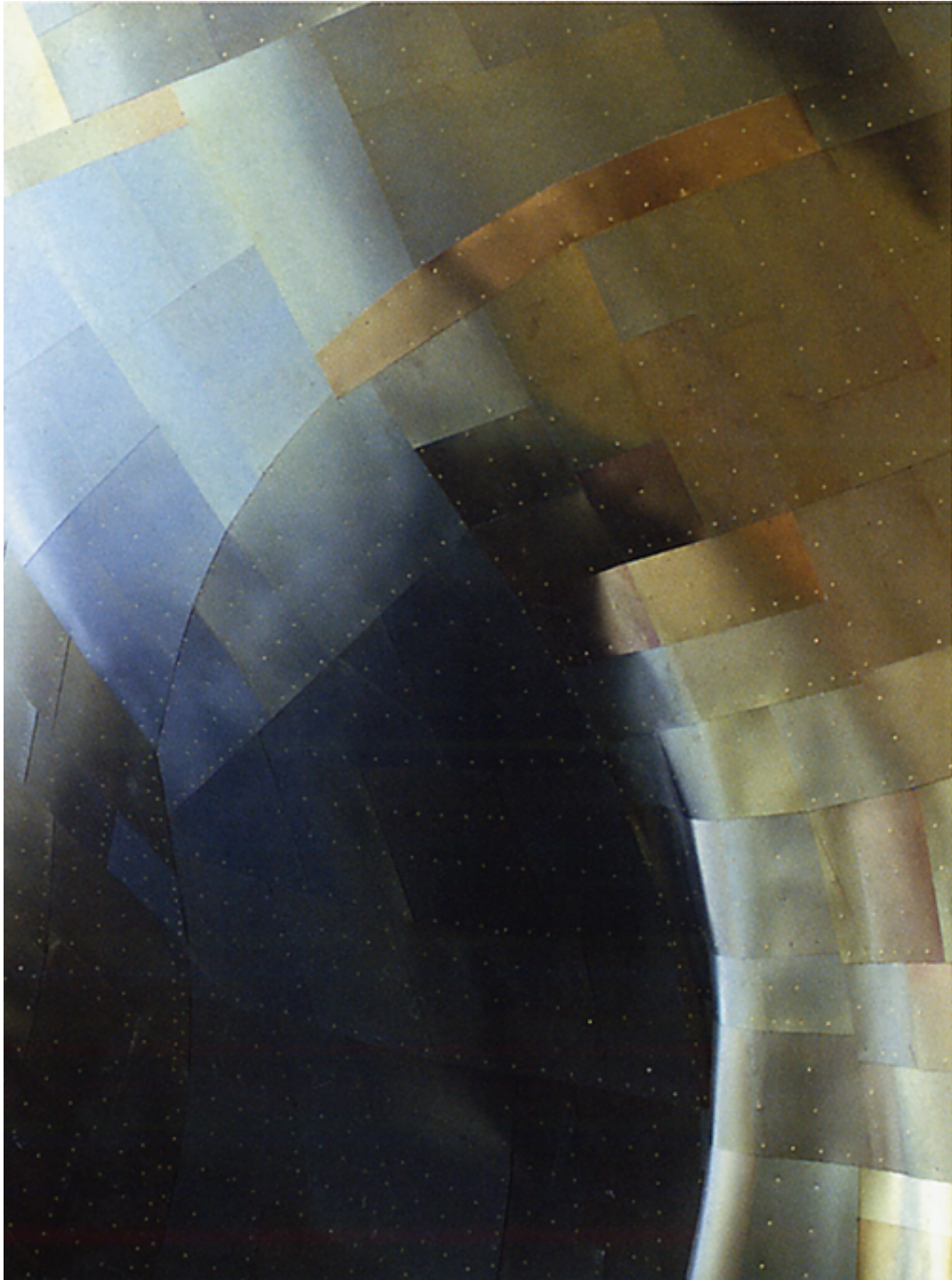
Metal shingle (21,000 in varying sizes)

Sprayed on concrete bonding skin

Stanchion (2,400 thus)

Still has all 10 fingers! (seems happy about it)



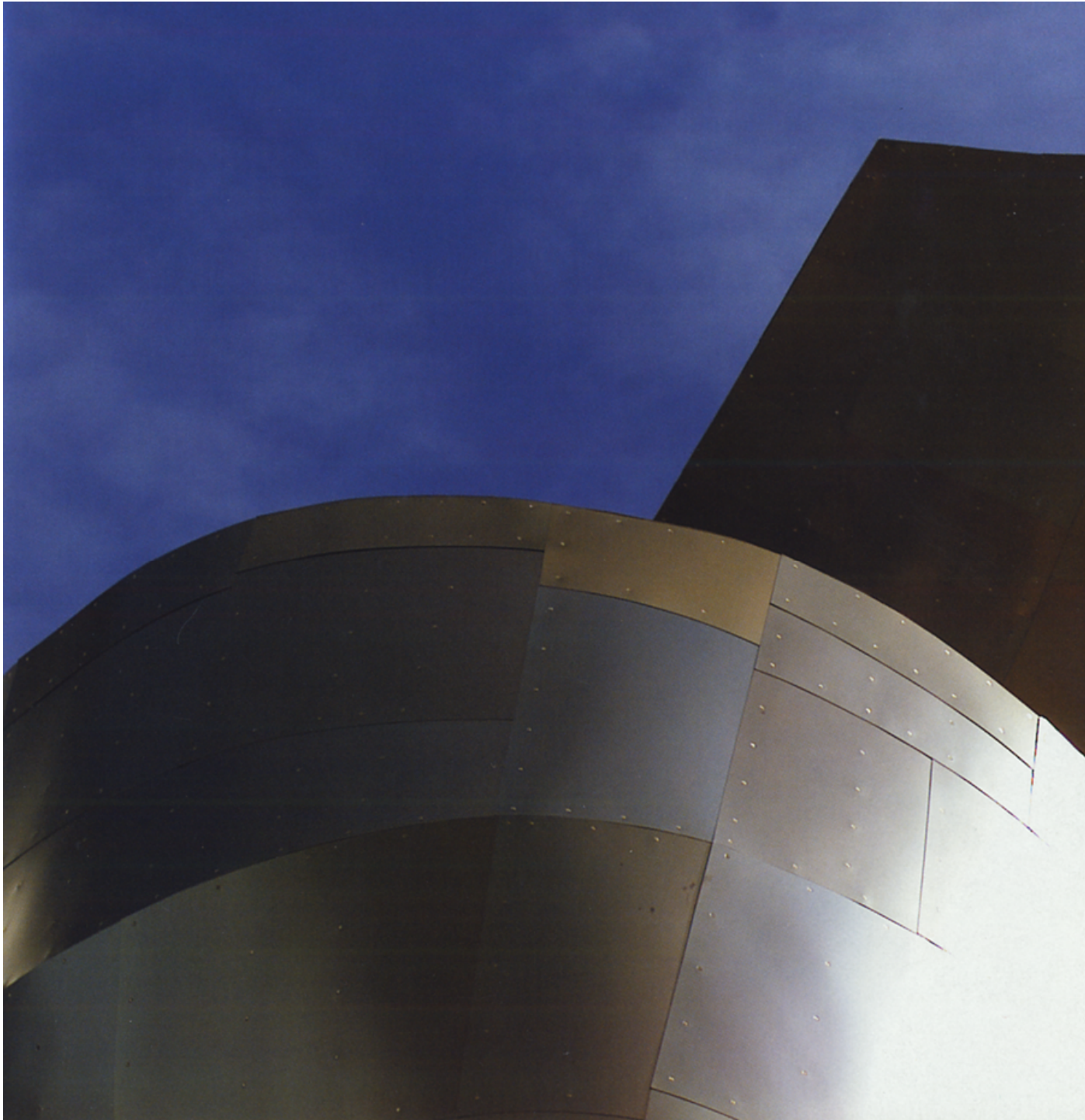


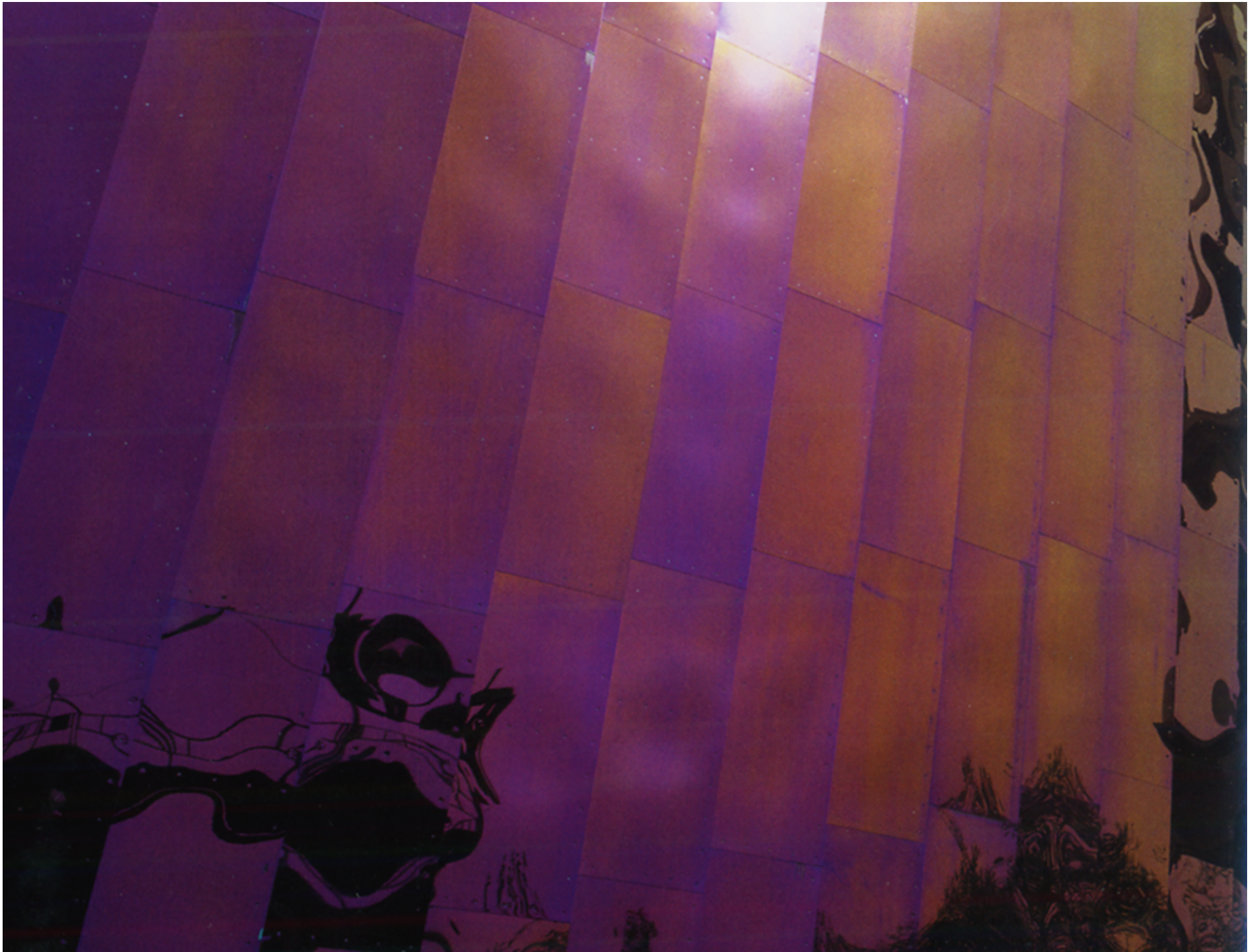
Metal shingles come in aluminum and stainless steel. Gold color from glass bead and chromic/sulfuric acid bath treatments.

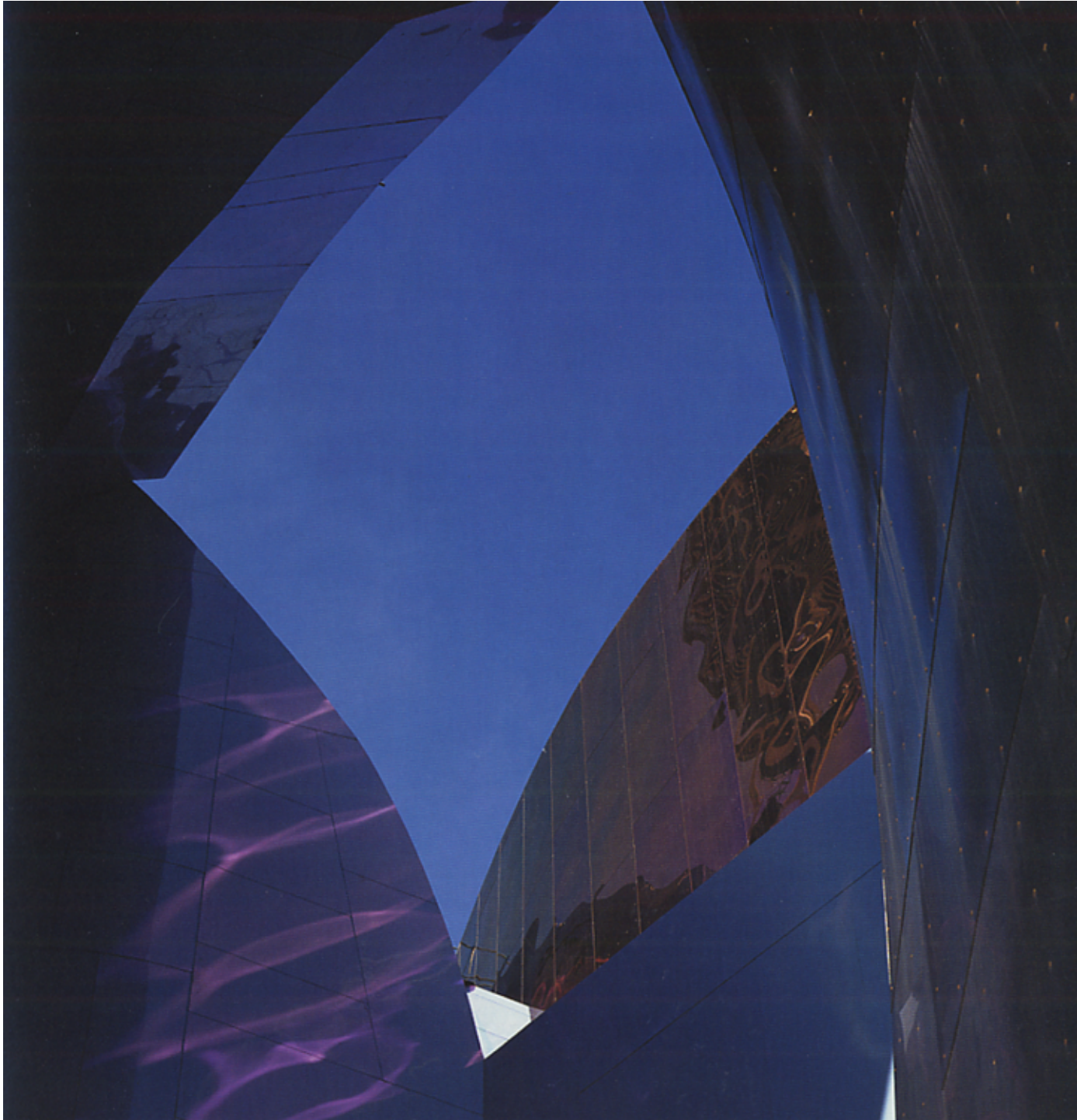
The longer the stainless remains in the bath the more thicker the layer of chromium oxide (the lens) builds.

A short bath gives	Bronze color (11 min)
	Blue color (13 min)
	Gold color (15 min)
	Red color (16 min)
	Purple color (17 min)
A long bath gives	Green color (18 min)

The authoritative source on metals "Architectural Metals" by L. William Zahner













● Wood shingles simulating thatch

● Metal shingles simulating wood shingles simulating thatch?





