concrete

50-80 years lifespan

cement

crackless 1000 years

180 years warranty

pre-stressed

artificial stone

160 years

everlasting

CONCRETE. INEVITABLY.

ANASTASIYA GERASIMOVA

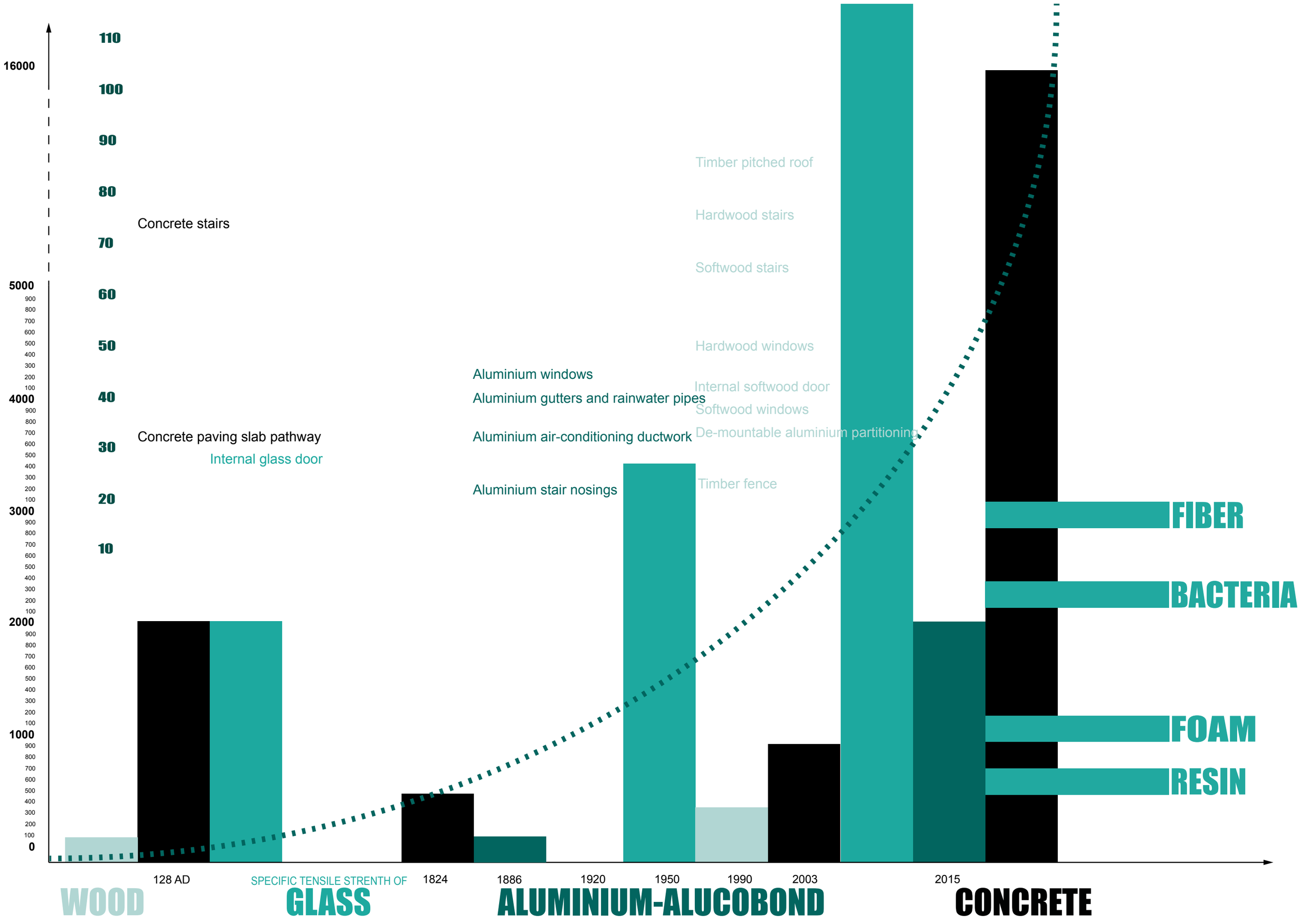
victor moldovanu

AMO, The Berlage
Theory Master class, ‘12 Acts of Demolition’

LIFESPAN OF THE MATERIALS

VS

SPEED OF DEMOLITION-CONSTRUCTION PROCESS


16000
5000
4000
3000
2000
1000
0
110
100
90
80
70
60
50
40
30
20
10
Concrete stairs
Concrete paving slab pathway
Internal glass door
Aluminium windows
Aluminium gutters and rainwater pipes
Aluminium air-conditioning ductwork
Aluminium stair nosings
Timber pitched roof
Hardwood stairs
Softwood stairs
Hardwood windows
Internal softwood door
Softwood windows
De-mountable aluminium partitioning
Timber fence
FIBER
BACTERIA
FOAM
RESIN
128 AD
1824
1886
1920
1950
1990
2003
2015
SPECIFIC TENSILE STRENTH OF
WOOD
GLASS
ALUMINIUM-ALUCOBOND
CONCRETE

109 years



St. Peter's Basilica, Rom, Vatican City,
Italy, 1506 - 1615

building like it will last forever with demolishable materials

building temporary with materials that last forever



The Ark Hotel, Dongting lake,
Hunan Province, China
30-story building built in 15 days

15 days

1500

2014

PARADOX:

All materials become less demolishable but the speed of contruction-demolition process increases

CEMENTING A LEGEND DAMMED CONCRETE! SOVIET CONCRETE: THE GOOD& THE BAD NAZI CONCRETE: THE UGLY CONCRETE GOES EAST BRUTALITY VS. HUMANITY KINDER,GENTLER,BRUTALER?

0 100 200 300 400 500 600 700 800 900 1000 100 200 300 400 500 600 700 800 900 2000 100 200 300 400 500 600 700 800 900 3000 100 200 300 400 500 600 700 800 900 4000 100 200 300 400 500 600 700 800 900 5000 16000

128 AD **Pantheon**

Greeks and Romans also discovered that crushed potsherds and tiles as artificial pozzolans

In combination with lime and aggregate, these natural cement concrete mixtures of today that crack. Combined few months of completion, why has the ancient lime-pozzolan concrete remained crack-free after 2000 years of service? To build a long-lasting concrete structure, it is important to find an answer to this question

1796 natural hydraulic cement James Parker from England patents by calcining nodules of impure limestone containing clay, called Parker's Cement or Roman Cement.

1824 PORTLAND CEMENT ASSOCIATION **invention of portland cement**

1867 voided biaxial slabs Joseph Monier patented a design for reinforces garden tubs, beams and posts.

1884 earnest ransom patented a reinforcing system using twisted rods

1849 invention of reinforced concrete

1919 Meis van der Rohe proposes concrete highrises

1927 Eugene Freyssinet develops successful pre-stressed concrete

modernism

1931 SAVOYE

futurism / constructivism

1936 HOOVER DAMN

1952 UNITE D'HABITATION

arts&crafts / expressionism

1956 GUGGENHEIM // RONCHAMP

1958 Felix Candela masters the concrete shell

1959 LA TOURETTE

brutalism

1964 Place Victoria in Montreal, ht 624 ft. using 6000psi concrete columns

1970 fiber reinforcement in concrete was introduced.

1976 ROYAL THEATRE LONDON

lightweight

1981 polymer-impregnated concrete

1989 CHURCH OF LIGHT

bare

2000 JUBILEE CHURCH

stone immaculate

polished

2001 LiTraCon

translucent



2003 "monolith foundation: built to last a 1000 years"

crackless

2009 MIT engineers find way to slow concrete creep to a crawl



Professor Franz-Josef Ulm with the nanoindentation machine in his research lab.

bacteria mix concrete

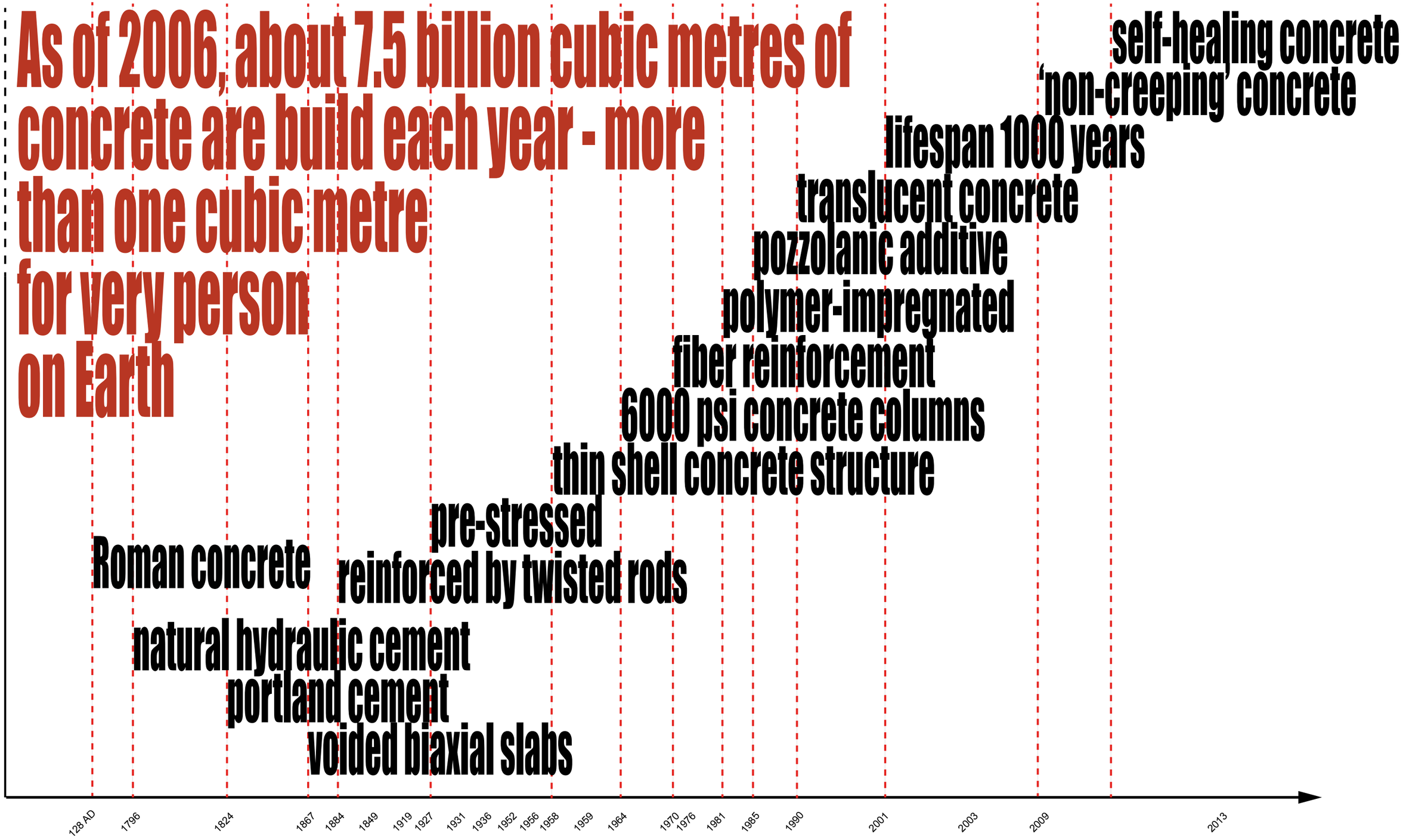
super-high-tech

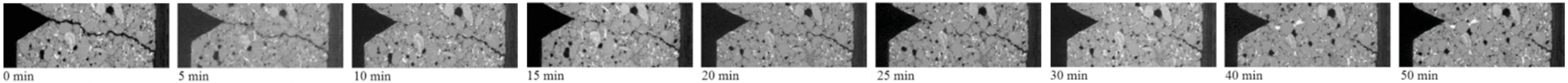


2013 it is possible to create concrete that has self-healing capacities. As the pH value of concrete is very high, only the so-called alkaliphilic bacteria are able to survive. We have mixed several of these bacteria into a cement paste and after a month found the spores of three particular bacteria where still viable.

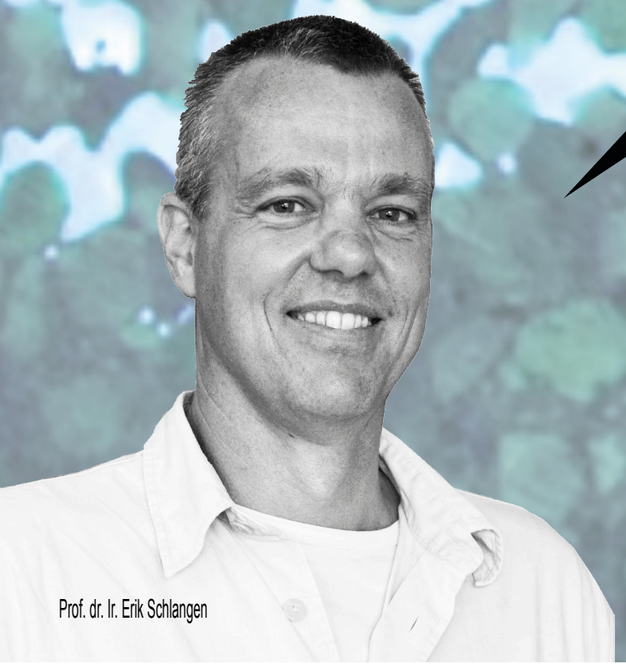
erik schlangen

As of 2006, about 7.5 billion cubic metres of concrete are build each year - more than one cubic metre for very person on Earth

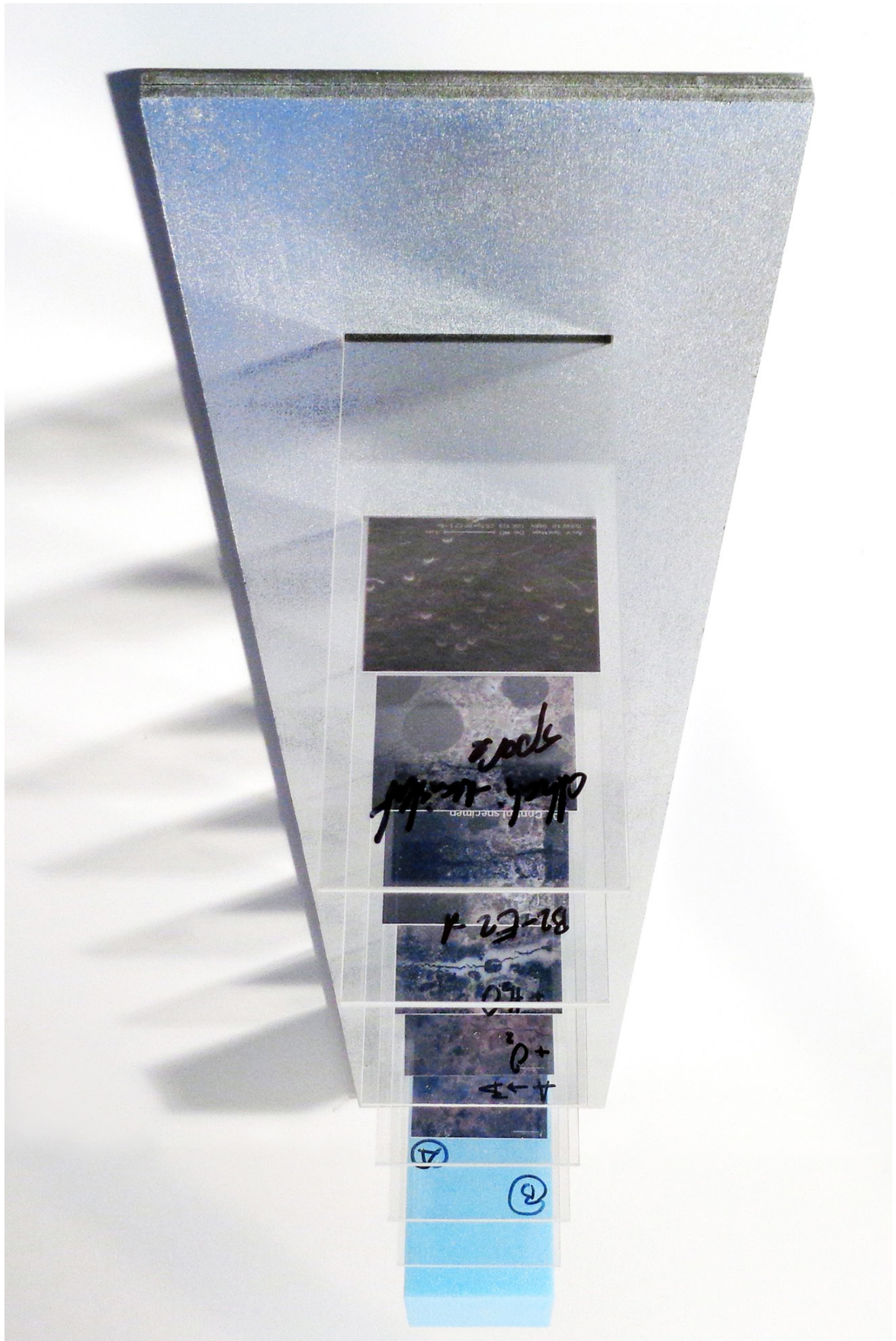


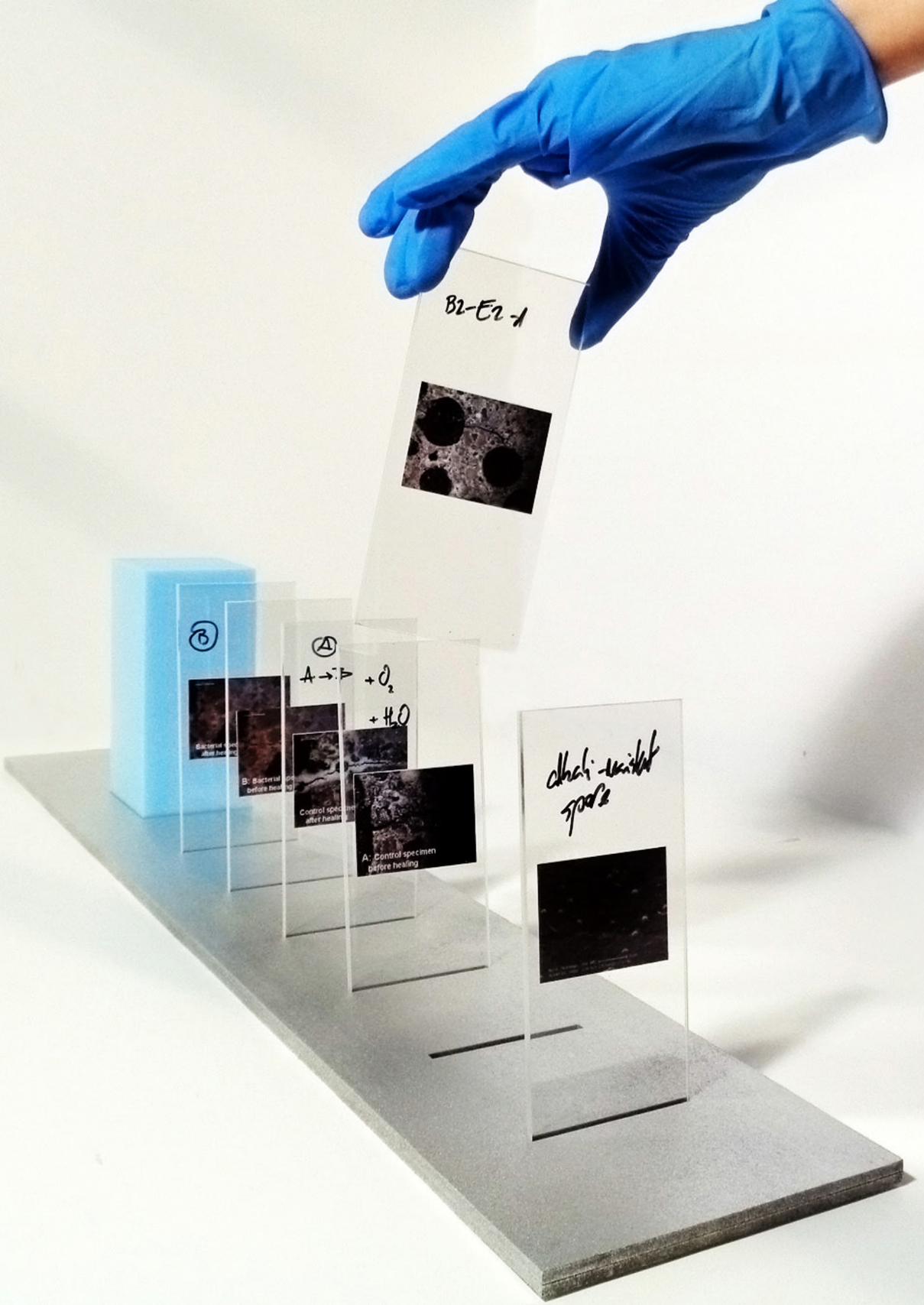


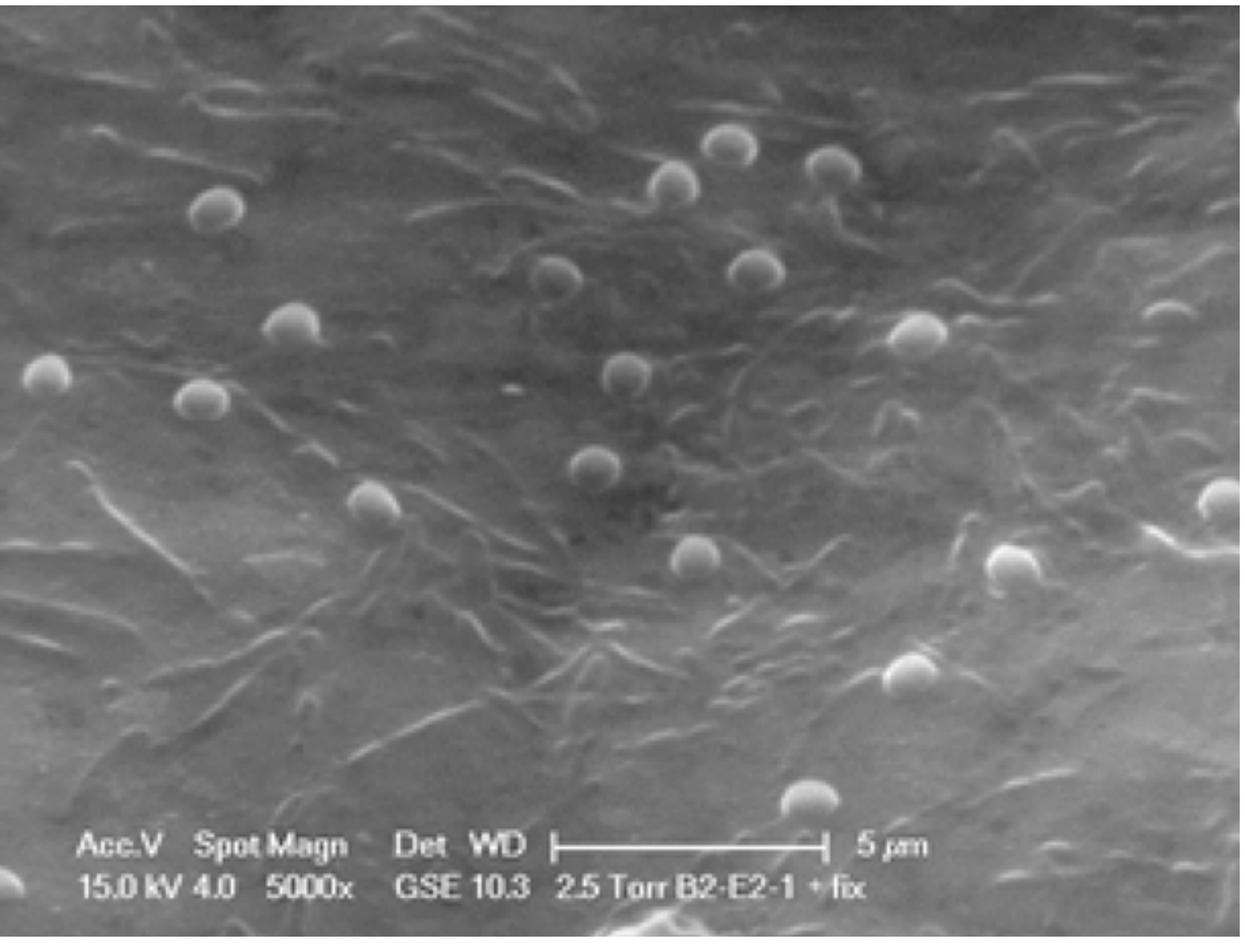
Developing a new technology which uses bacteria to fill cracks in concrete



Prof. dr. Ir. Erik Schlangen

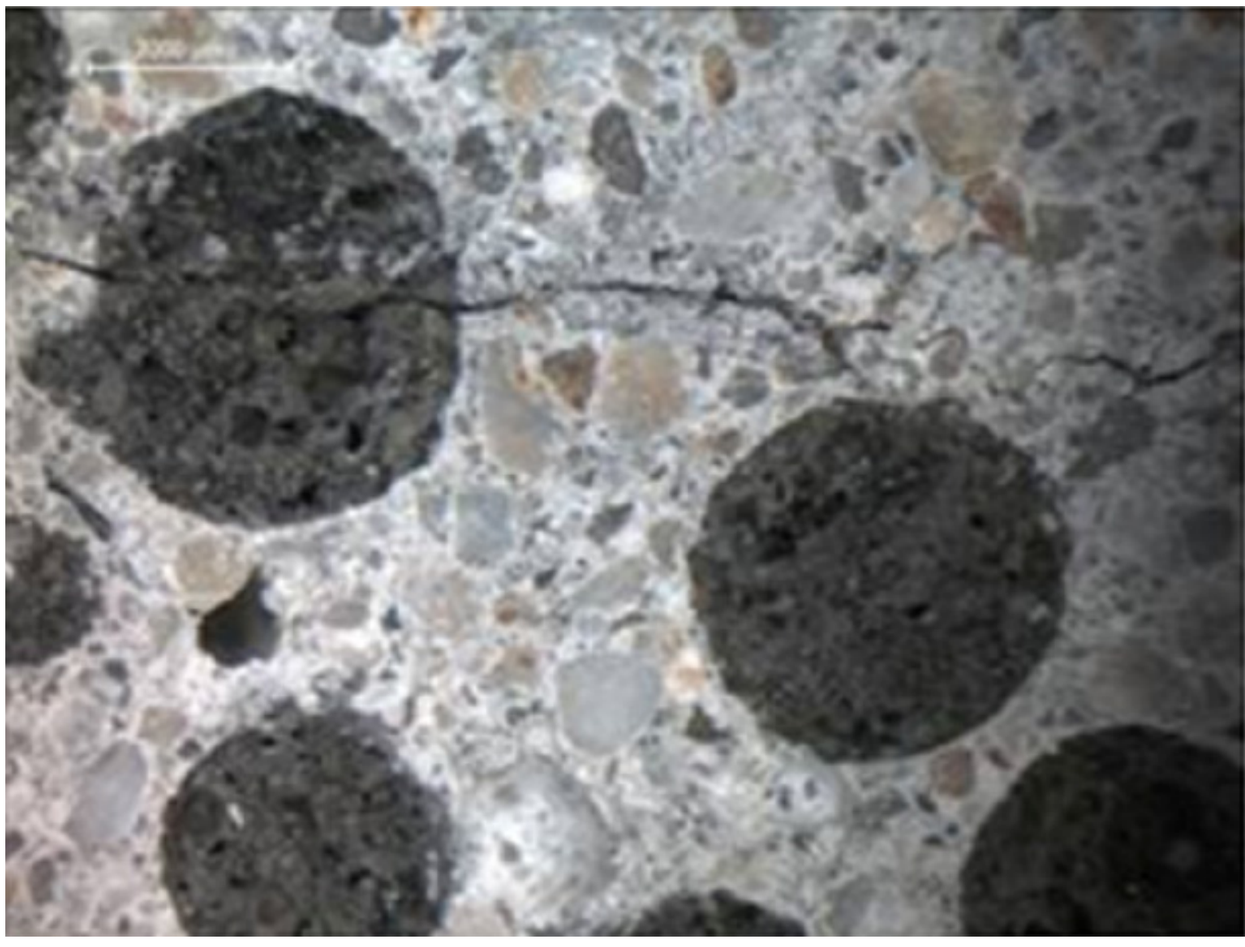



B2-E2-1
B
A
A: Control specimen before healing



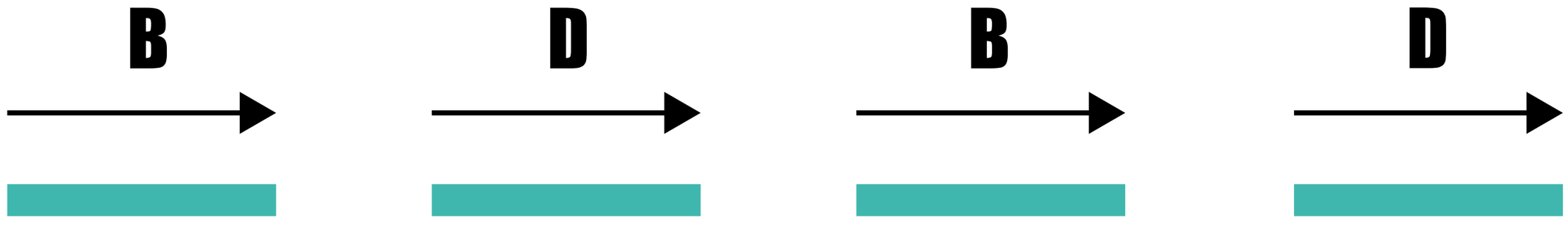
Alkali-resistant spore forming bacterium (Bacillus strain B2-E2-1)

H.M. Jonkers, *Bacteria-based self-healing concrete*, TU Delft, Netherlands



Self healing admixture composed of expanded clay particles loaded with bacterial spores and organic bio-mineral precursor compaund.

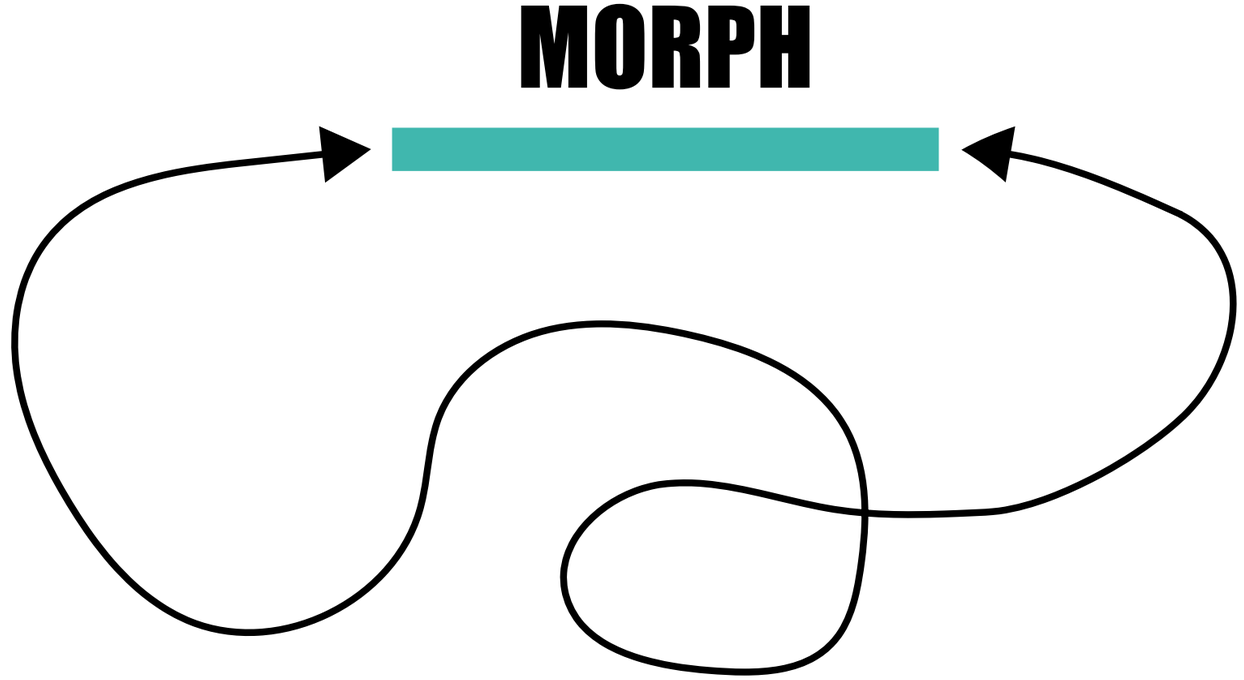
H.M. Jonkers, *Bacteria-based self-healing concrete*, TU Delft, Netherlands



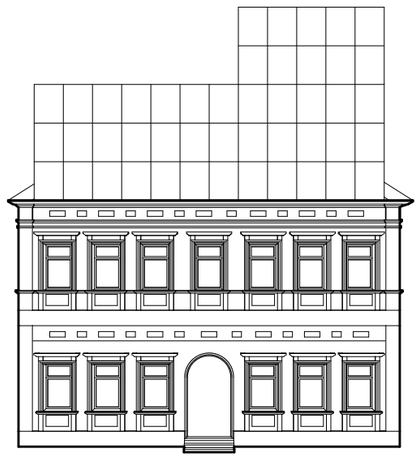
linear process

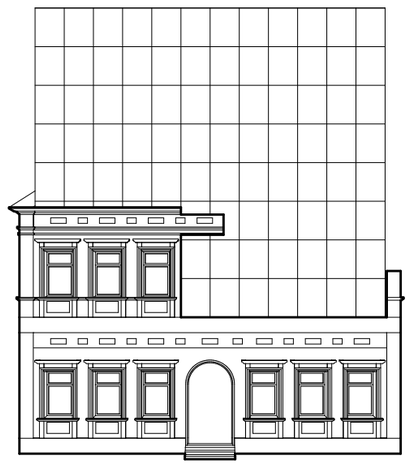
~~PRESERATION~~

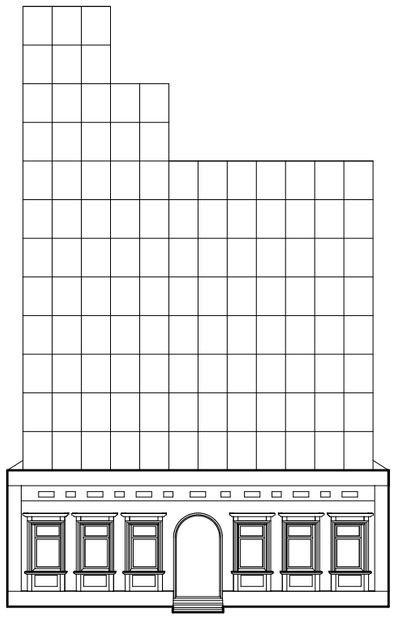
~~DEMOLITION~~

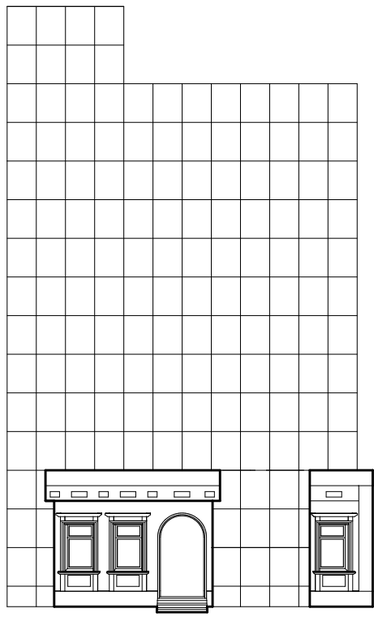


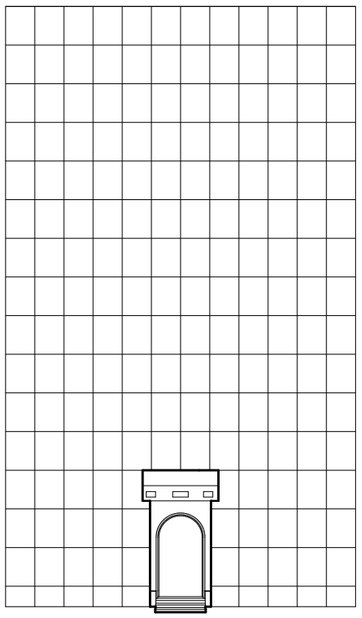
overlapping process











MORPH

Bacterias that stimulate the growth of a concrete material



Bacterias that stimulate the dacay of a concrete material

It is a process which shows gradual transformation which consists of both - process of construction and demolition simultaneously.

“Chiefly, this is to include in design a degree of complexity, even of contradiction embodied in the simultaneous processes of growth and decay in our buildings, that heightens and intensifies our humanity.”

Woods, Lebbeus. “‘Inevitable Architecture’.” LEBBEUS WOODS. July 9, 2012. Accessed March 27, 2015. https://lebbeuswoods.wordpress.com/.

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