
sustainable
development
the survival of the humanity on earth


Apollo 17 1972

UN 193 countries september 25 2015

three dimensions

social sustainability

economic sustainability

environmental sustainability

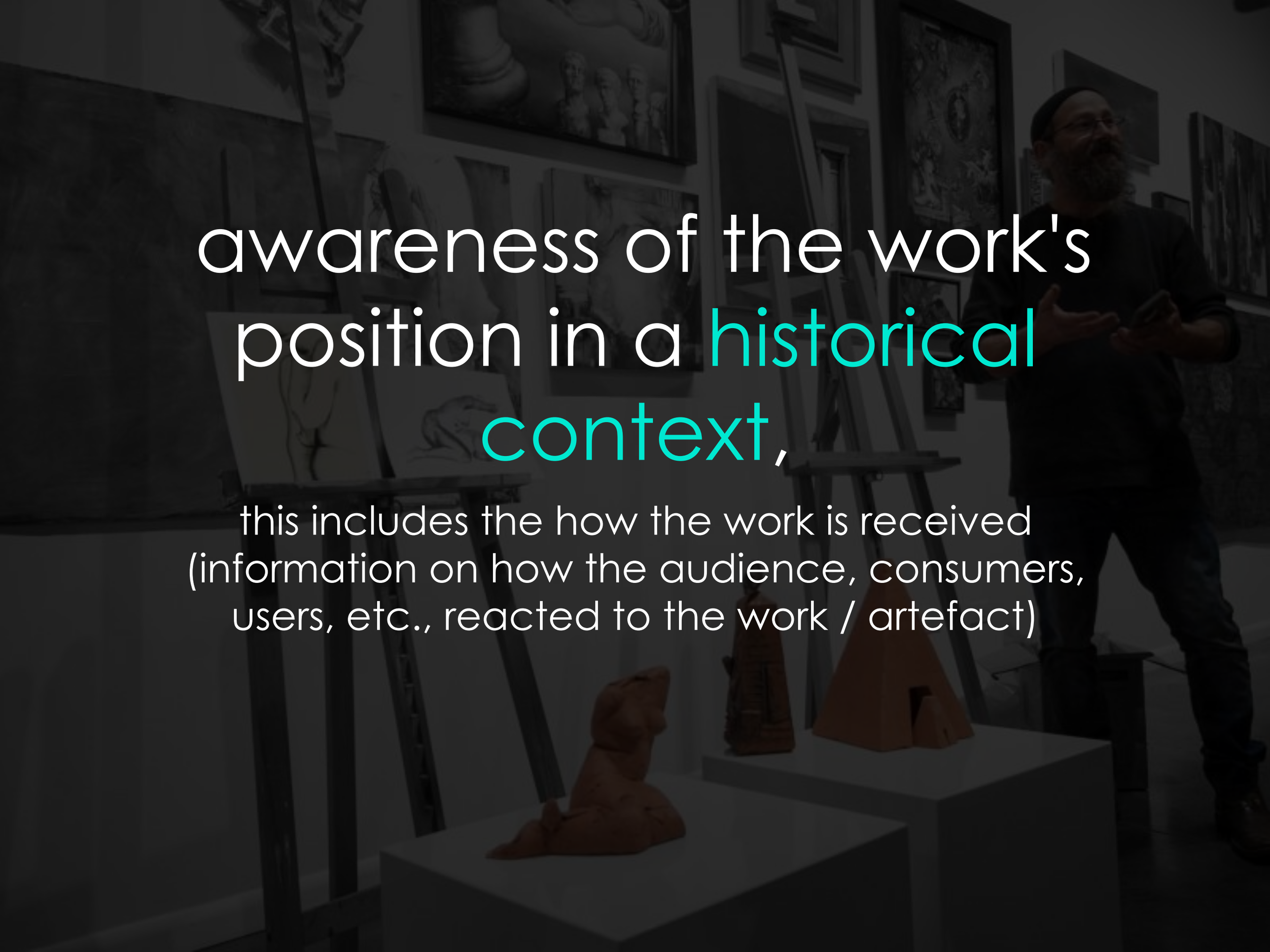
social sustainability

well-being, justice, agency, individual's rights and needs

availability

artefacts should be designed to be useful, without change, for as many people as possible

awareness of the work's ethical consequences and possible interpretations / use of it and your own position in relation to the work



awareness of the work's position in a historical context,

this includes the how the work is received (information on how the audience, consumers, users, etc., reacted to the work / artefact)


NO CHILD
SHOULD WORK
HERE

economic sustainability

distribution of wealth and economic resources, poverty reduction, sustainable growth

Local Craft Market

wealth stays in the local economy,
wealth is not accumulated

Amazon

sustainable development

social sustainability

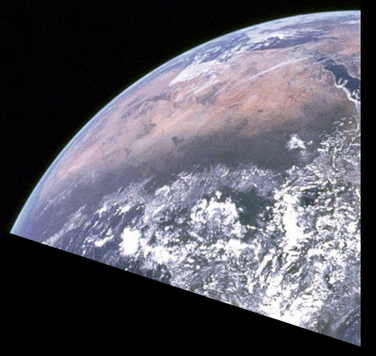
availability, and awareness of the works ethical consequences and position in historic context

economic sustainability

distribution of wealth, craft sector vitalise local economy

next lesson: environmental sustainability

environmental sustainability



Global Footprint Network, National Footprint Accounts 2019

Global Footprint Network, National Footprint Accounts 2019

Global Footprint Network, National Footprint Accounts 2019

planned obsolescence

2 500 hours 1924
1 000 hours 1940

The Centennial Light, since 1901 at the fire station in Livermore, Californi


FAIRPHONE

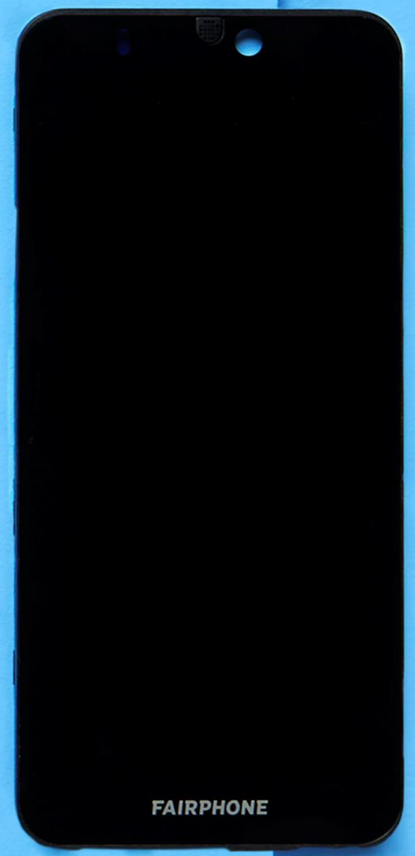

FAIRPHONE


Speaker Module


CT301
50006


Bottom Module


Change
is in your
hands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cradle2cradle

from cradle to cradle

design paradigm, everything is recyclable

recycle, reuse as is, overhaul, repair

material recycling

downcycling

energy recovery

Blevis, E. (2007).
Sustainable
Interaction Design

Invention & Disposal, Renewal & Reuse

Sustainable Interaction Design

linking invention and disposal

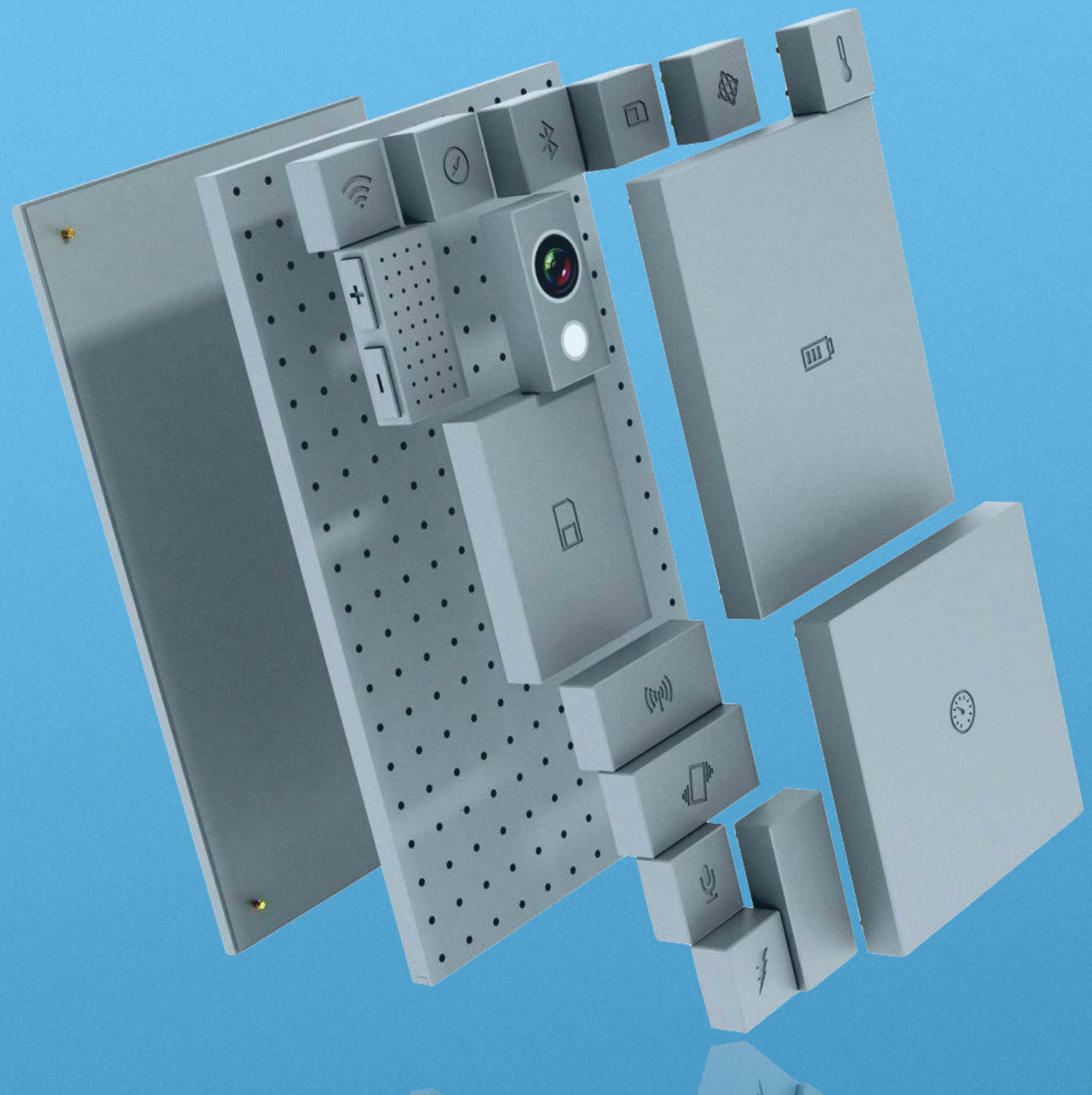
promoting renewal and reuse

promoting quality and equality

de-coupling ownership and identity

linking invention and disposal

promoting renewal and reuse

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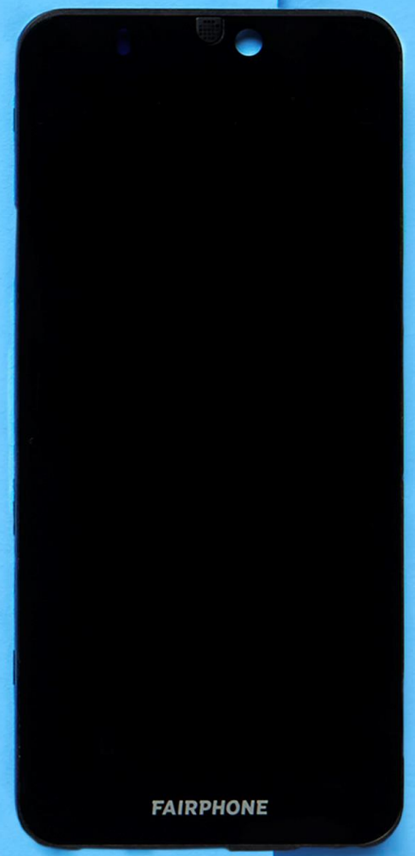
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promoting quality and equality

reuse as is,

achieving longevity of use,

sharing for maximal use,

and achieving heirloom status

de-coupling ownership and identity

sense of selfhood and construct of identity as these motivate relationships to the materials of consumption

is 3D printing green?

"junk on demand?", or

small scale green production?

”junk on demand”

endless customisation could lead to dramatic increases in throw-away consumer products – "crapjects"

amplifying fast fashion – items in varied colours and designs on demand could

small scale green production

Kreiger and Pearce (2013), life cycle analysis of plastic objects

compared personal 3D printers to industrial mass-production

with green electricity of your household 3D printing can

reduce energy consumption 55%-74%

reduce emissions up to 25% for PLA plastic

three pieces of advice

avoid or carefully design
temporary support structures

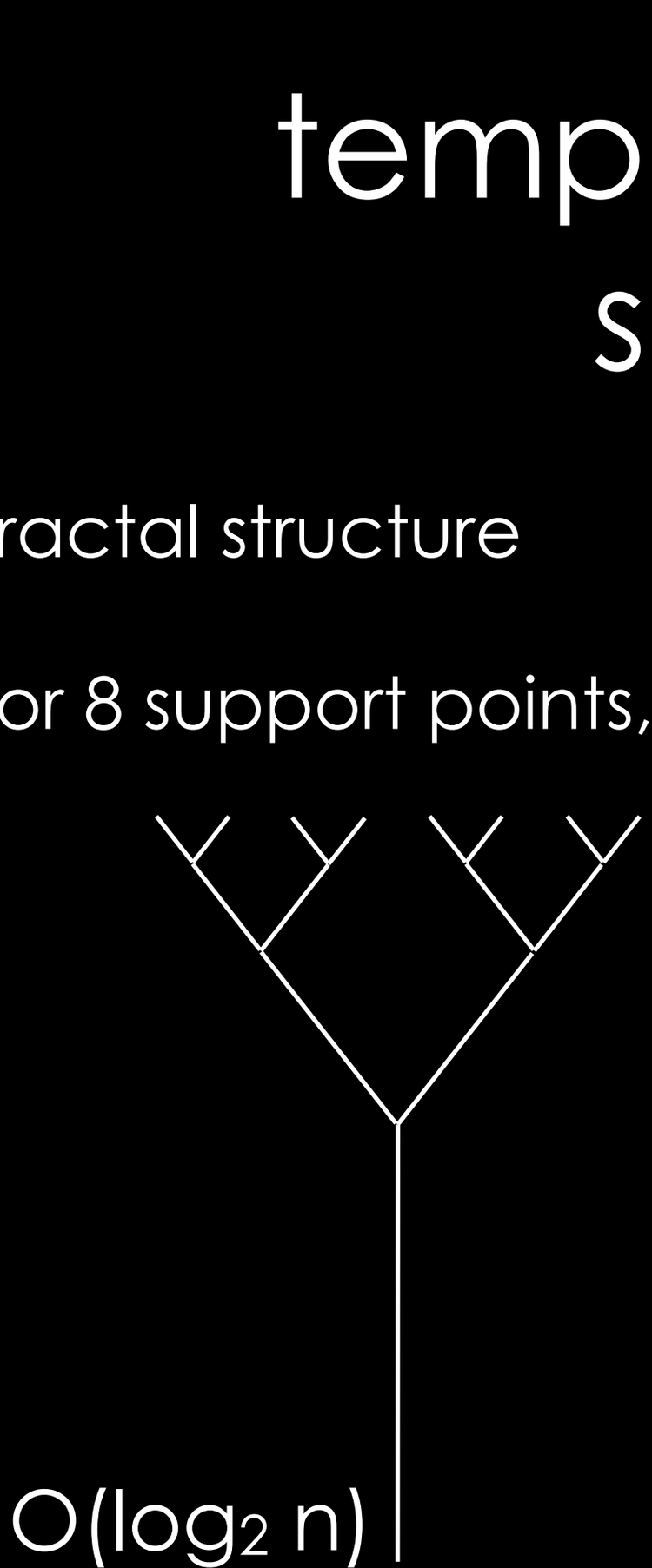
use renewable *polylactide* PLA plastics

apply digital technologies when they
save energy and material

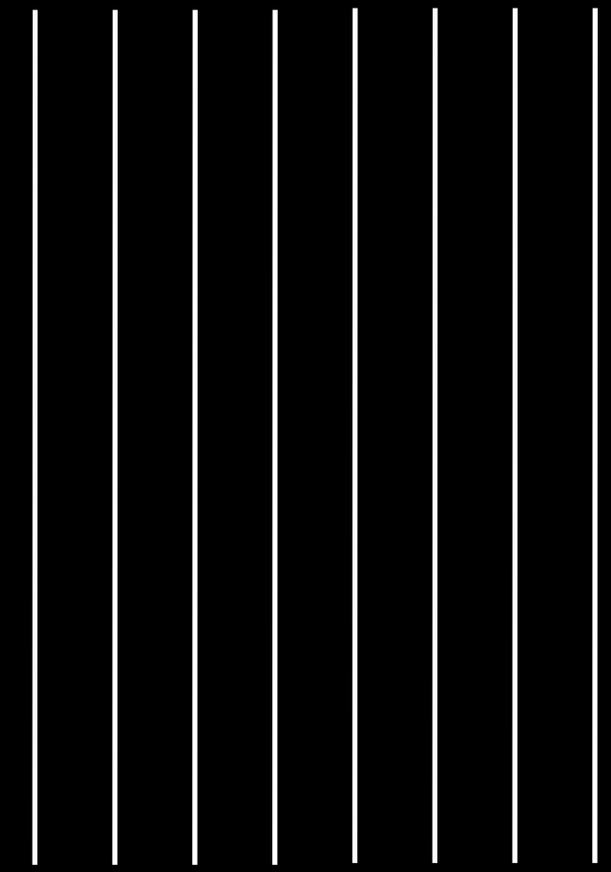
temporary support structures

fractal structure

for 8 support points, 29% material of linear structure



$O(\log_2 n)$



$O(n)$

is 3D printing green?

YES, if used cautiously

with renewable materials

and green electricity