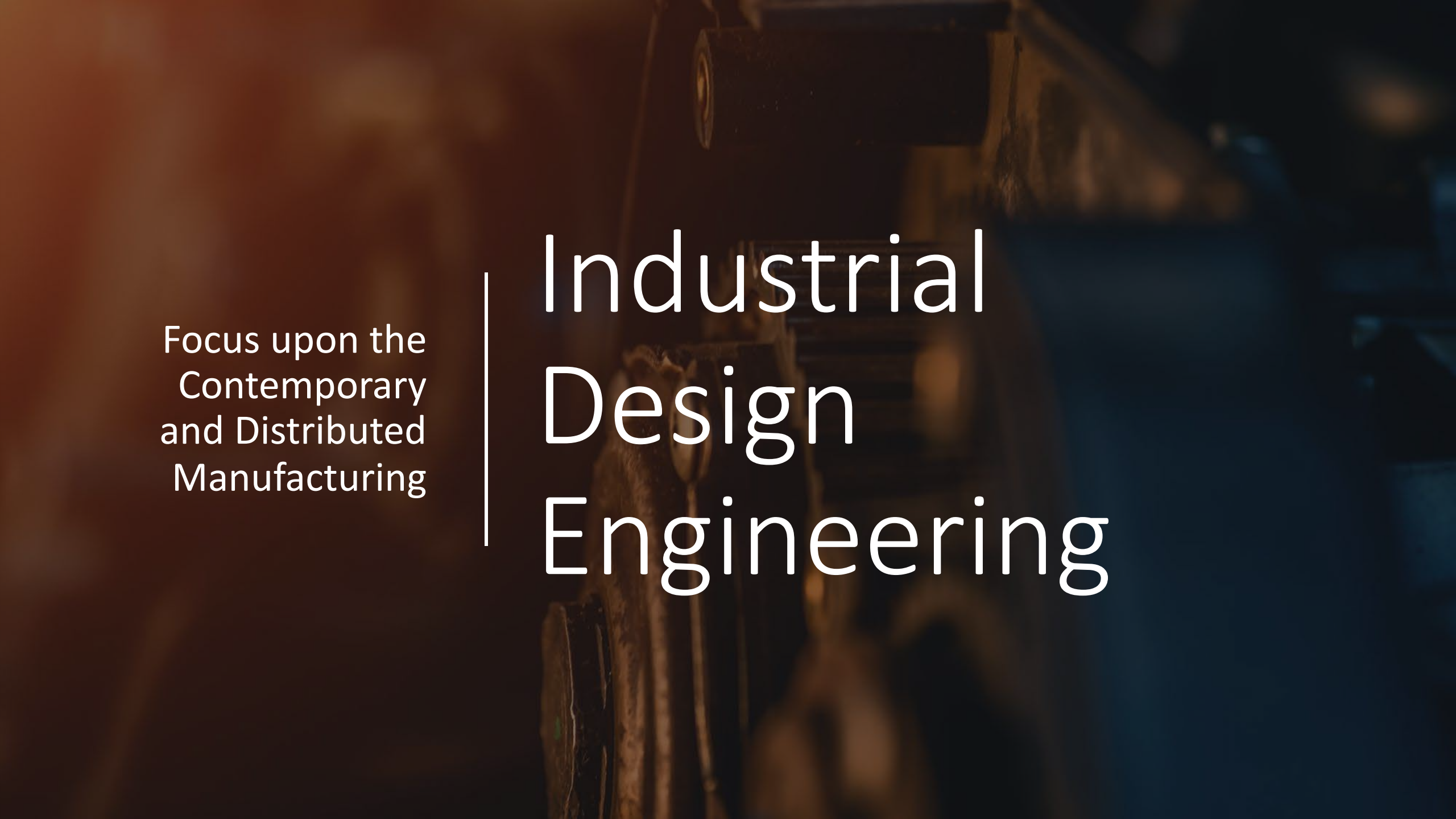
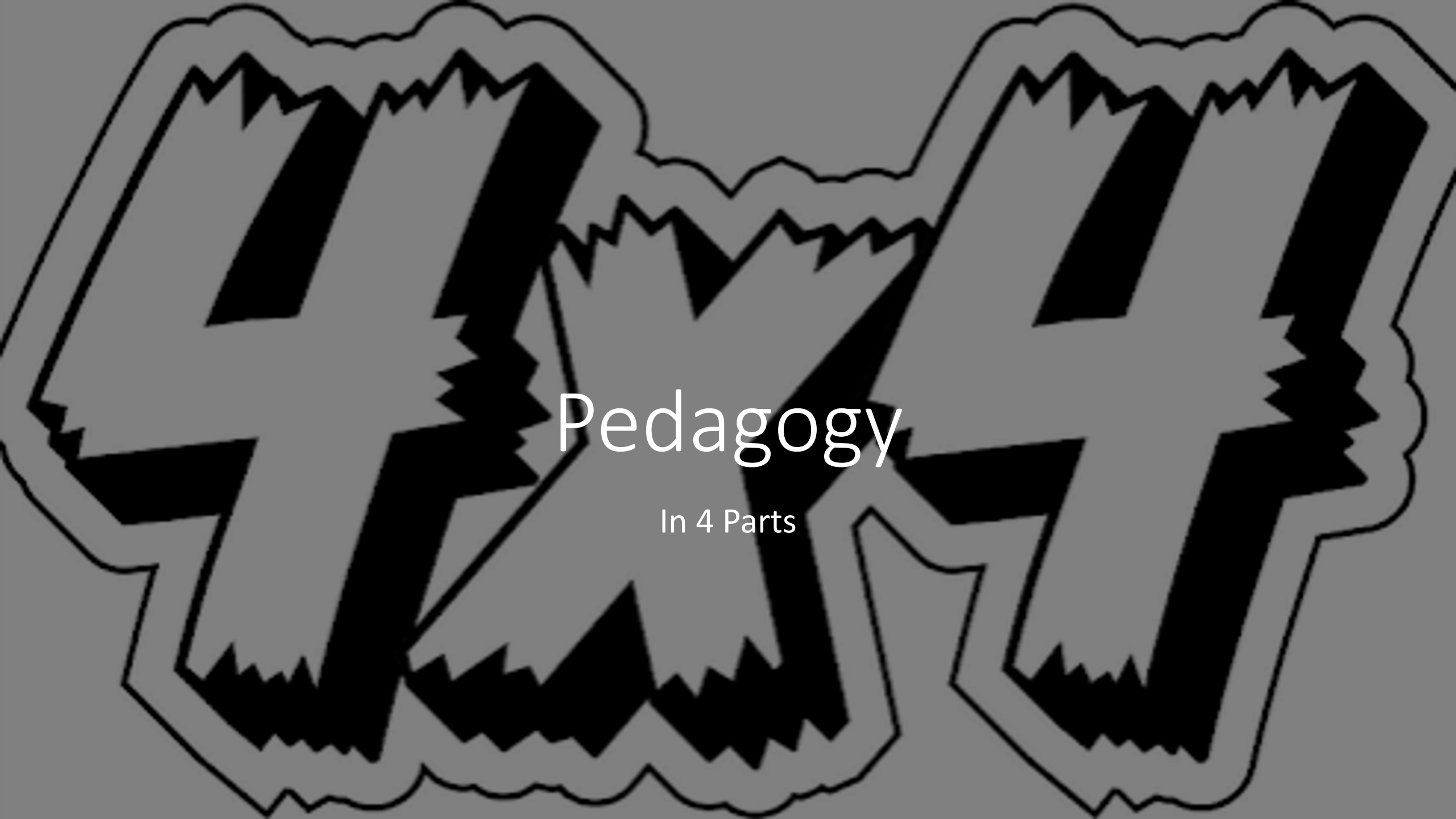


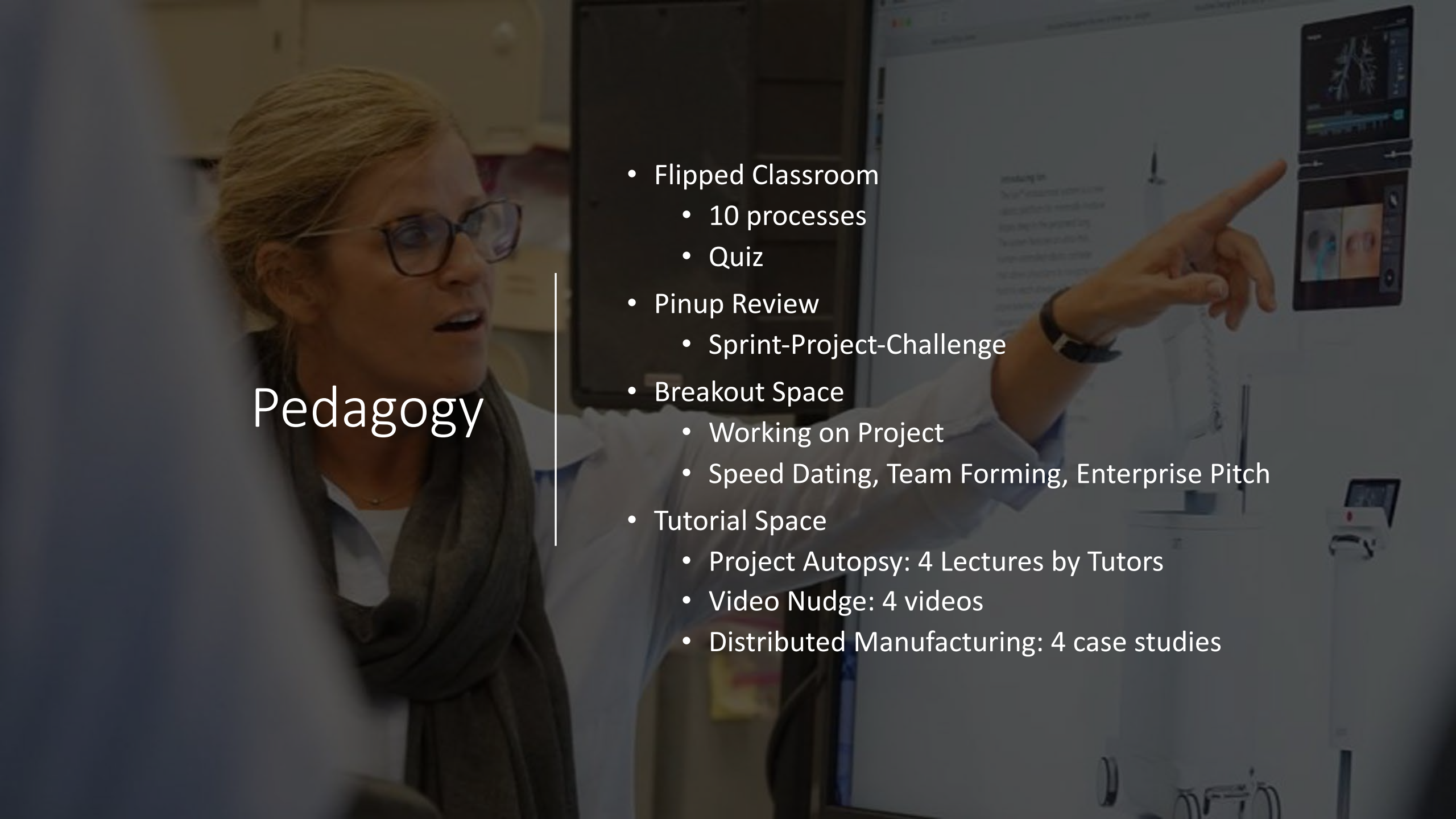
Focus upon the Contemporary and Distributed Manufacturing

Industrial Design Engineering



Pedagogy

In 4 Parts



Pedagogy

- Flipped Classroom
  - 10 processes
  - Quiz
- Pinup Review
  - Sprint-Project-Challenge
- Breakout Space
  - Working on Project
  - Speed Dating, Team Forming, Enterprise Pitch
- Tutorial Space
  - Project Autopsy: 4 Lectures by Tutors
  - Video Nudge: 4 videos
  - Distributed Manufacturing: 4 case studies

The Flipped Classroom

DURING

PRACTICE

IN CLASS

PREPARE

PROCESS

OUT OF CLASS

BEFORE

AFTER

Semester 2, 2021

Micro Enterprise

Program

Design Sprint: Setup a makerspace and build a craft-paper product, 3 weeks

- 1-3
- Focus upon sheet metal
- Laser cut and build (opt)

Design Project: The SPM Project, 6 weeks

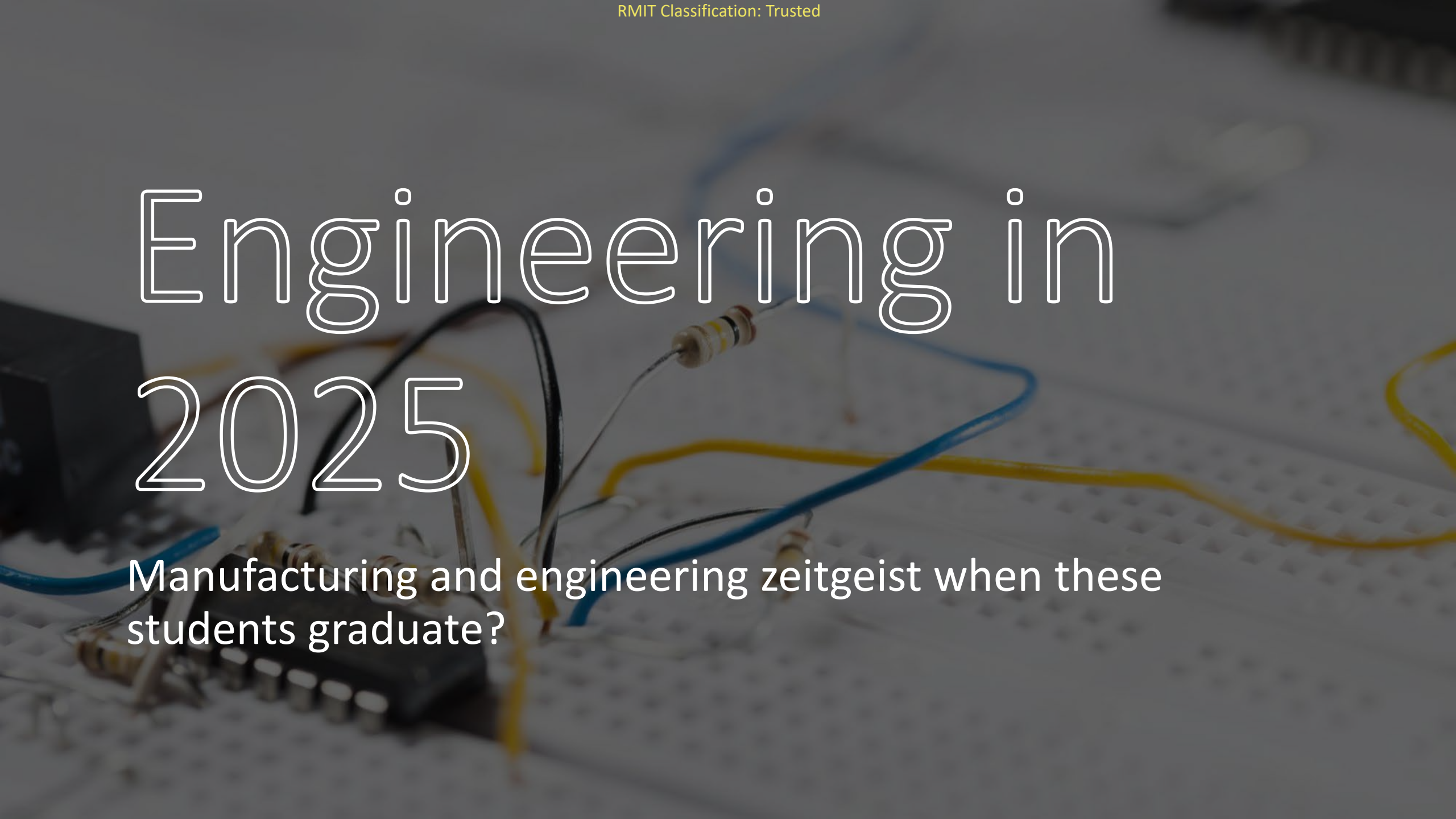
- 4-9
- Design and Build
- How things work (factory equip)

Design Challenge: Distributed Manufacturing, 3 weeks

- 10-12
- Brunswick makerspaces and Job work places (our map)
- Your Vendor Base (your map and address book)

Theory and Practice

- Practice
  - Sprint: Personal Makerspace Project (PMP)
  - Project: SPM
  - Challenge: Distributed Manufacturing Ecology (DME)
- Theory
  - Distributed Manufacturing
  - Industry 4.0



Engineering in 2025

Manufacturing and engineering zeitgeist when these students graduate?

- Within the maker movement and DIY culture, small scale production by consumers often using peer to peer resources is being referred to as distributed manufacturing.
- https://en.wikipedia.org/wiki/Distributed_manufacturing

Thematics

- Maker Movement
- DIY Culture
- Peer to Peer Resources

Spinning and Rotomoulding

INDUSTRY 4.0

Pre

Manual
Distributed

Low workshop setup cost
High product cost
Many products
Customised
Common IP

Resilient

Circular

1st

Powered
Centralised

High factory setup cost
Medium product cost
One product
One size fits all
Common and closed IP

No resilience to demand drops

Linear

2nd

Mechanised
Centralised

High factory setup cost
Low product cost
One product
One size fits all
Closed IP

No resilience to demand drops

Linear

3rd

Digital
Centralised

Factory setup cost **£50m+**
Super low product cost
One product
One size fits all
Closed IP

No resilience to demand drops

Linear

4th

Digital
Distributed

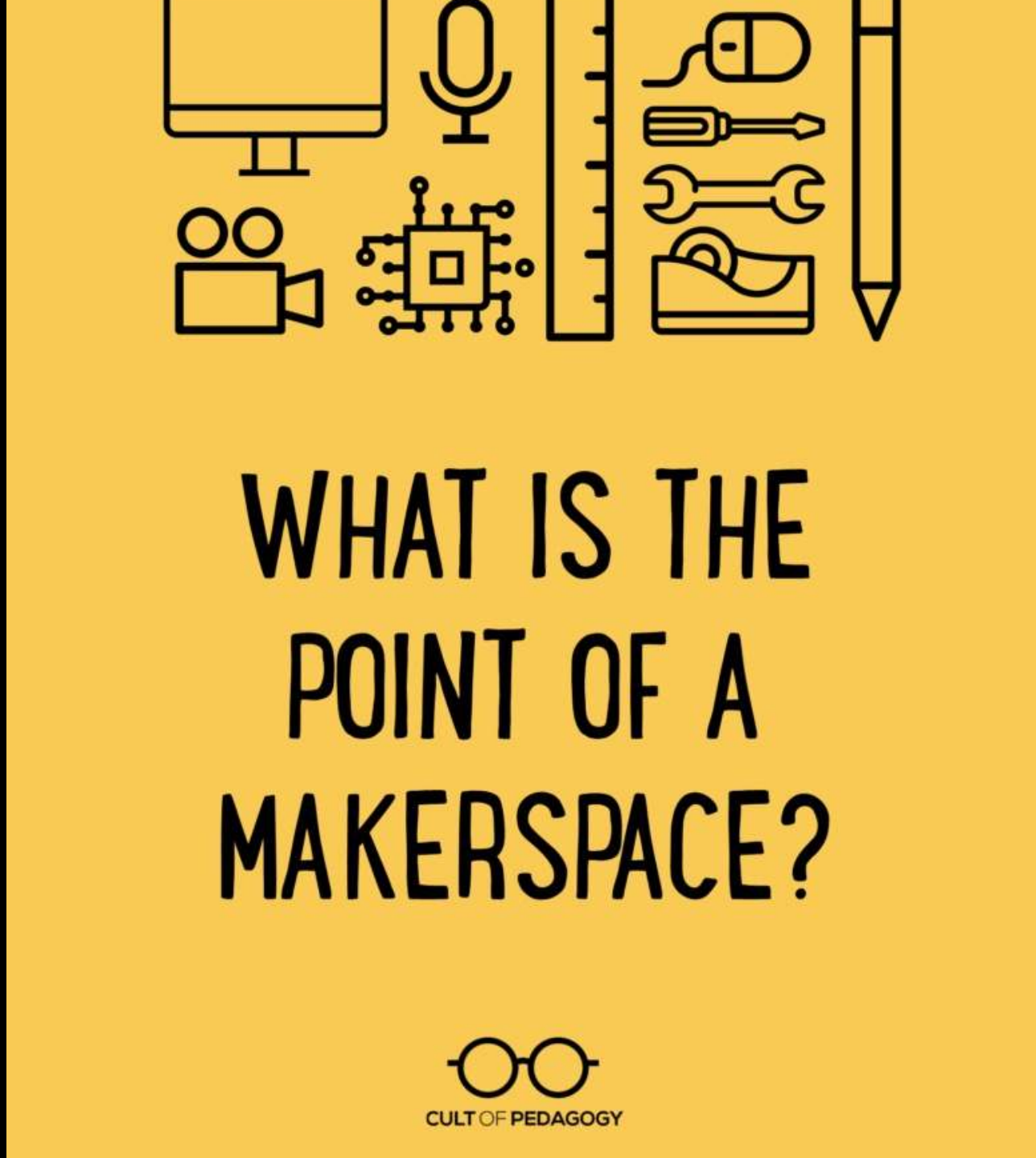
Factory setup cost **£15k+**
Super low product cost
Many products
Mass-customised
Open, data-led design

Resilient, on-demand

Circular


Big Data
and Analytics
Cloud
Computing
Cibersecurity
Horizontal & Vertical
Integration
Robotics
Augmented
Reality
Additive
Manufacturing
Simulation
Internet of
the Things (IoT)
Industry
4.0

Makerspace & Online Learning from home



DIY Tinkering Table
To Inspire Young Engineers

TINKERLAB

TINKERING SPACES

A SERIES OF INSPIRING INTERVIEWS
WITH MAKERS, EDUCATORS, + PARENTS