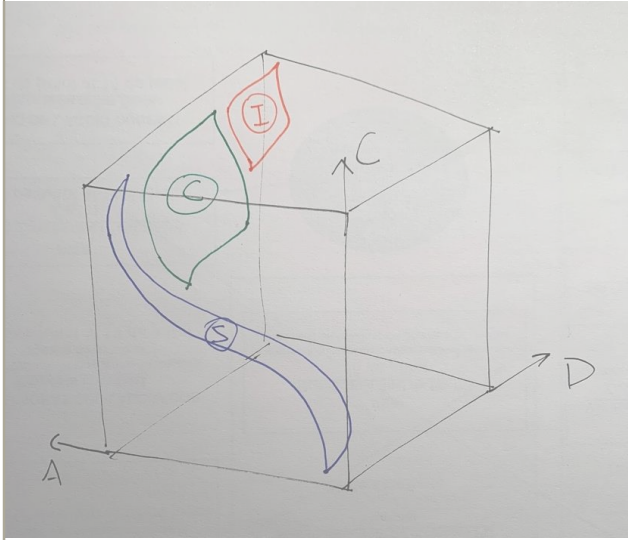


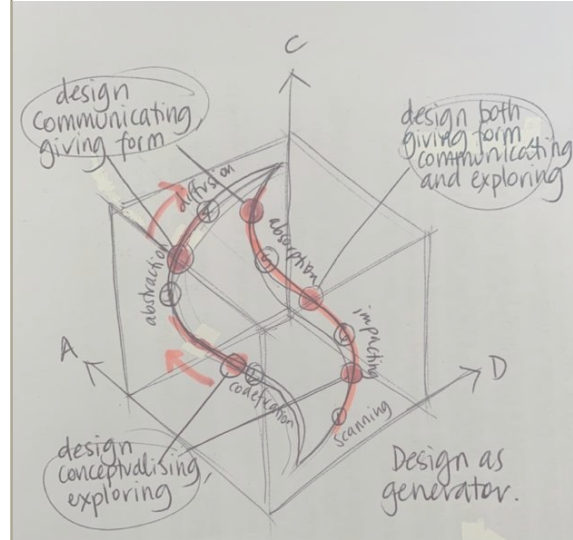
Chapter 6: Big Science and Design Thinking: complexity and knowledge diffusion

- ▶ Innovations in diffusing knowledge from Big Science through design to non-scientific audiences
 - ▶ Design as an expression of complexity, creating *associative context* for emergence of knowledge
 - ▶ Builds on conceptual frameworks for knowledge diffusion: Boisot's I-Space and Social Learning Cycles.
 - ▶ Integrates Baumberg's categorization of Simplifier Science (natural sciences) and Constructor Science (applied science)
 - ▶ Design practices and approaches codify and abstract big science knowledge through aesthetic and utilitarian expression, creating new contextual meaning
 - ▶ Proposal of new SLC's for A) Simplifier Science, B) Constructor Science and C) Innovators
 - ▶ 3 example cases featuring design mapped to SLC
 - ▶ Proposal of design as a *Generator* and *Connector* in the way it influences SLC knowledge diffusion

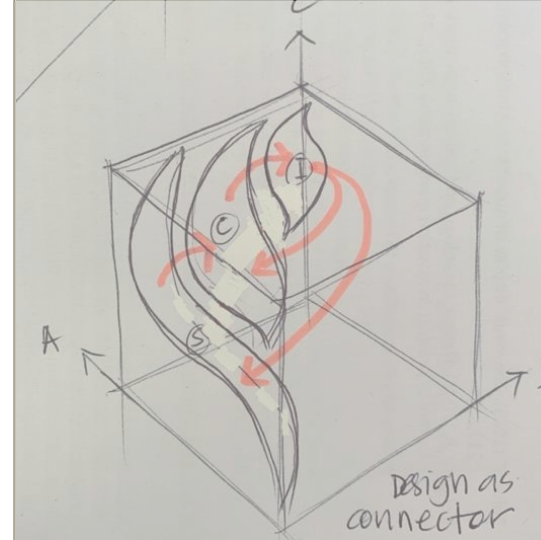
Proposing new Social Learning Cycles and how design activity may influence



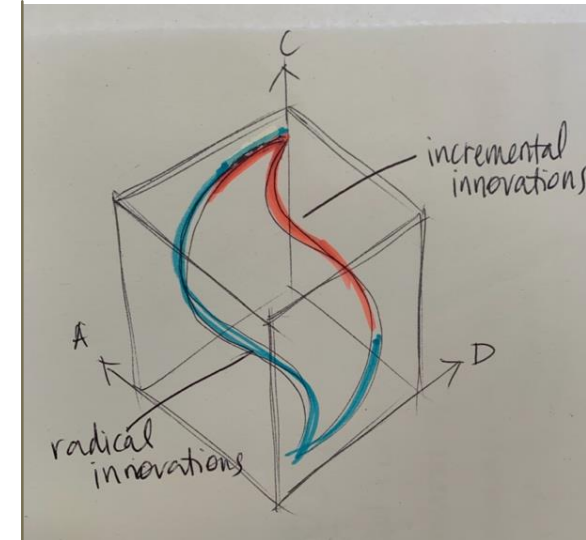
Simplifier, Constructor & Innovator SLC



Design activities **generating** movement within a SLC



Design activities **connecting** across SLCs



Where radical and incremental design innovation may lie in the SLC

???

3 case examples



IdeaSquare, CERN

ATTRACT
Challenge Based Innovation
Crowd4SDG



Museum Visitor
Experience

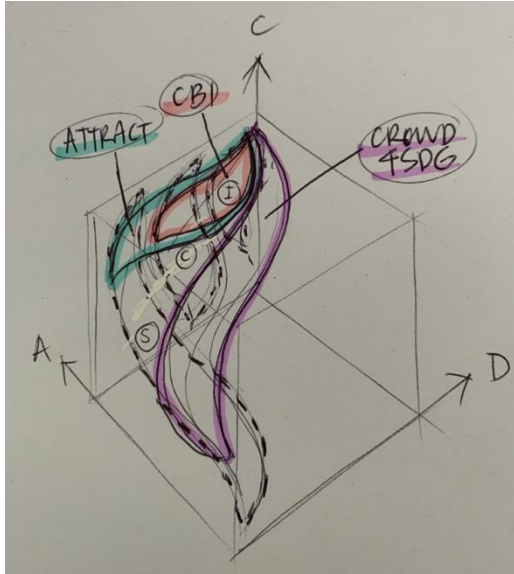
Universe in a Virtual Room



Applied Innovation
Lab, ARC Centre
Dark Matter

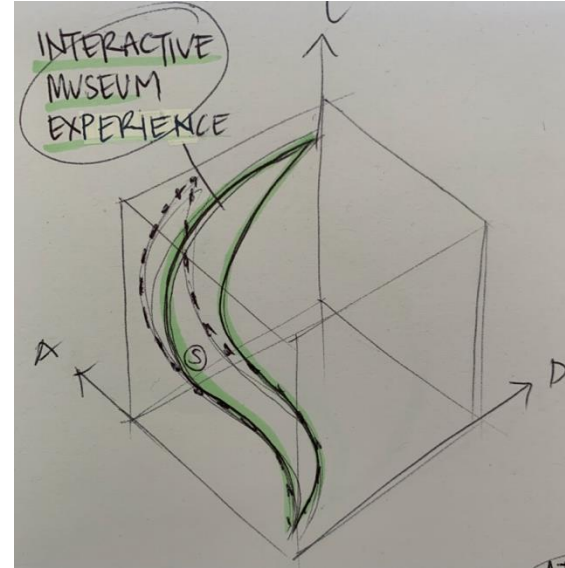
Kreative Kits
Challenge Based Innovation

3 case examples



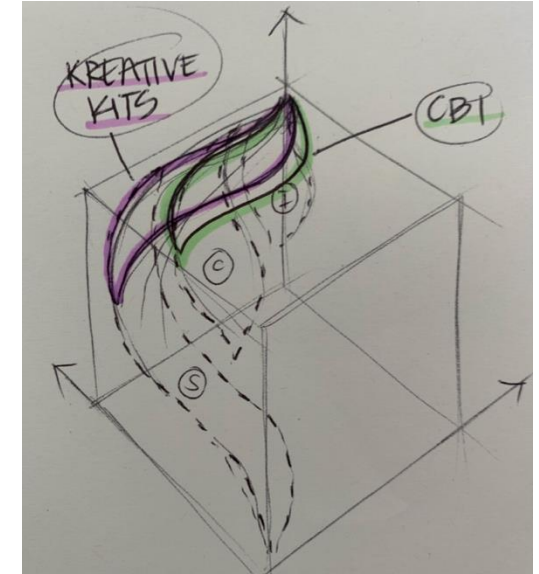
IdeaSquare, CERN

ATTRACT
Challenge Based Innovation
Crowd4SDG



Museum Visitor Experience

Universe in a Virtual Room



Applied Innovation Lab, ARC Centre Dark Matter

Kreative Kits
Challenge Based Innovation

Chapter 6: Summary Status

- ▶ Our estimate of current level of completion: 60%
- ▶ The following additions/revisions will be completed by July 31st
 - ▶ Better connection between sections, consistent language, expand societal impact & new audience component, implications for open innovation
 - ▶ Use of examples, e.g. touch screen to demonstrate proposed design influence on SLC
 - ▶ Write conclusion, design section hard edit, defining innovation, fix references
- ▶ our chapter includes figures used from other sources, permission needs to be asked from them as follows:
 - ▶ Boisot, M., Nordberg M., Yami, S., Nicquevert, B. (eds). (2011). Collisions and Collaborations: The Organization of Learning in the ATLAS Experiment at the LHC (Oxford: Oxford University Press). **Text quoted from Chapter 2, section 2-4 (pages 32-44); Figures 2.1 (page 35), 2.2 (page 38), 2.3 (page 40) & 2.4 (page 42)**

Chapter 6: Key messages, insights

- **Design offers new, innovative ways of diffusing big science knowledge**
- Builds on **Boisot I-Space** and **Baumberg's Science classification**
- **New types of Social Learning Cycles** (SLC) for Simplifier Science, Constructor Science and Innovators
- **Design as Connector or Generator** for SLC, diffusing big science knowledge
- Design practices + approach can codify and abstract knowledge
- **Complexity framed via associative context** to continuously generate knowledge
- Discuss 3 cases of design initiatives with: particle physics, astrophysics and dark matter