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Makerspace Communities and Ecosystem Strategy, Co-Creating Social and Operational Infrastructure

Design Research Master's Thesis By Mary Kahle

Makerspaces hold the potential to support entrepreneurship, small-scale manufacturing, access to STEAM (science, technology, engineering, arts and math) education and community engagement. However, makerspaces globally face many challenges including scalability, sustained funding, trained staff, diversity, inclusivity, and accessibility. There are interconnected systemic issues preventing the ideal-state to emerge across scales.

Kahle's research design included interviews, in vivo coding, observational studies, and analysis through collaging, to synthesize the research into insights for a final prototyped ideation card deck, Cards for the Collective. A speculative digital collage by the designer titled Maker-mall, was used as the workbook backdrop. This represents the potentials of an interconnected, regenerative maker ecosystem, where makers and consumers collaboratively approach circular consumption and production. Additional collages were made using a DIY maker magazine. Depictions of hands from all instructional content were clipped from the publication as an analysis of genders represented in over 300 pages.

A participatory workshop was designed to aid in the codevelopment of the ideation card deck, which includes over 160 cards and 10 categories. The deck acts as a versatile tool and can be brought into a framework or method to shape to the community's particular goals.

The outcome provides grass-roots maker communities and small-scale makerspaces with facilitation tools to co-develop equitable, sustainable and accessible programmatic and organizational outcomes.

















Collage title: 'Show of Hands' II by Mary Kahle

How to Use:

The Cards for the Collective have unlimited potential as an in-depth ideation tool or quick brain-storming activity. This card deck is meant to be used in group settings with diverse stakeholders. Use the cards collectively to spark creative strategy, educational programs, innovative product, evaluation & assessment, and collaborative conversation.

The approaches provided are based on mapping techniques that enable a group of people to holistically depict and explore eco-systems within any organization, program, product, service, or strategy.

To start, we suggest getting familiarized with the card deck categories, terms, methods, and questions. Take some time to look at the cards and their meaning.

Next, you can choose one of the 3 approaches to use from the **Rules** cards, in conjunction with the card placement diagram. OR, depending on your goal, you can 'break the rules' by placing the cards in relation to one another however you wish.

The outcome or direction of the activity is dependent on the central card (placement #1) chosen at the start. All other cards are used to fill out the landscape. The layout might be a road-map or model for your goal.

The diagram in this workbook is a suggested placement for the cards. Card #1 acts as the focal point for the activity. The order of card selection depends on the approach that you choose from other **Rules** cards.

We suggest positioning each card deck face down by category and numbered order based on the placement diagram. You can choose to shuffle each deck before placing, and then choose a card at random from the top. OR you can look through the cards and purposefully select a specific card to place in the face up position.

From here you can use the cards to spark ideas and identify connections. Using sticky notes with the cards can be helpful for sketches and notes, together with the cards, to elaborate on or refine your concepts and strategies.



Analysis, Evaluation, and Planning

The **Ground** deck is infused with methods from business, marketing, research and design to help guide this approach.

Shuffle each deck, choose random or specific cards.

1. Ground card(s)

2. Root card(s)

3. 4., **5. Cultivate** and/or **Activate** card(s)

Use as many or as few of the cards as you like to address the question or problem.

Speculation

Speculative questions can help inspire innovative ideas and prompt 'out-of-thebox' thinking.

Shuffle each deck, choose random or specific cards.

- **1.** Wild card(s)
- 2. Root card(s)
- **3. 4.**, **5. Cultivate**, **Activate** and/or **Ground** card(s)

Use as many or as few of the cards as you like to address the question or problem.

Card sort

A card sort is performed with a diverse group of stakeholders. The deck becomes a document or artifact for the organization to collect shared definitions.

To start, the group will choose cards and collaboratively discuss the meaning and definition.

Use the **Propogate** cards to add more terms as needed.

Feel free to write your definitions directly on the card or use sticky notes first.



All research, collages, and designs by Mary Kahle, Design Research MSDes, Alumni 2023, Drexel University, Westphal College of Media Arts & Design. Contact mk@kahle-studio.com