

State of Extremes

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Ravid Rovner

Rhizomatic Mind Maps as a Form of Design Thinking

A rhizomatic mind map is a visual schema representing a simultaneous web of interconnections produced by an individual, creative thought process.¹ Such a map may serve as a personal tool for assembling and organizing knowledge and ideas, with the aim of leading to an innovative project. In the field of design, a rhizomatic mind map enables the designer to synchronize visual information, material and formal characteristics, measurements, concepts, ideas, associations and more – in order to formulate an innovative question in design research. This article will demonstrate that rhizomatic mind mapping, in contrast to hierarchical mind mapping, constitutes a form of design thinking.

The term “rhizome” is used in botany to refer to a plant stem that lacks a bulb, sending out roots and shoots in all directions. The philosophers Gilles Deleuze and Félix Guattari borrowed this term and reformulated it as a philosophical concept in order to describe a form of thinking that evolves as a network with no single center. According to Deleuze and Guattari, the rhizome is a horizontal plane that contains related elements organized in a non-hierarchical manner, and holds the potential for infinite expansion and for the formation of endless interconnections as more elements are added.² Accordingly, rhizomatic mind maps form coherent networks containing different forms of knowledge and ideas that expand in all directions, and are interconnected by means of lines, arrows, forms and colors.

A rhizomatic mind map is distinguished from visual tools that hierarchically map knowledge, data or associations. Hierarchical mapping includes all forms of analysis in which contents diverge from a single point of departure. Examples of this type of mapping are numerous: a flow chart begins with a question that is provided with several answers, which in turn lead to further questions and so

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The term “Rhizomap” has appeared in recent years in various non-academic publications. See, for instance, Jan Cisek and Susan Norman, “Rhizomapping, Rhizomaps, Rhizomatic Learning, Mindmapping – New Ways to Take and Make Notes and Learn More Effectively with Mindmapping and Rhizomapping – Speed Reading Tip 17: Take Notes with Mindmaps and Rhizomaps,” *SPD RDNG*, Accessed August 3, 2019, <http://spdrdng.com/posts/rhizomapping-rhizomaps-rhizomatic-learning-mindmapping-speed-reading-tip-17-take-notes-with-mindmaps-and-rhizomaps>.

2

Gilles Deleuze and Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*, trans. Brian Massumi (Minneapolis: University of Minnesota Press, 1987), 7–9.

on, until final answers are reached; a “genealogical diagram” begins with a person (or concept) that branches out to include offspring (or additional concepts), all the way to the last one; a sun mind map begins with a central idea with from which lines radiate out to associations on the periphery of the map. Over the last two decades, theorists of mapping practices have also begun to define and discuss additional, less familiar forms of hierarchical mapping, such as a concept map,³ an argument map,⁴ and a radial map.⁵

A hierarchical mind map is likely the most common and familiar form of mapping, if one is to judge by the frequency of its appearance in the professional literature, where it is simply referred to as a mind map, without mention of its hierarchical organization. The popularity of mind maps can be traced back to Tony Buzan, who coined this term in the 1970s.⁶ Buzan’s mind map is structured by clear rules: mapping begins from a subject located at the center of the map, and is broken down by means of branches that expand outwards – each branch represents an association that is given a different color, forking out into additional branches that are coded according to the same principles. Some theorists support Buzan’s rules, according to which the branches carry words whereas their points of intersection remain empty [fig. 1],⁷ while others present maps based on an inverse method, according to which the intersections among branches are marked by words, while the branches are devoid of content [fig. 2].⁸ The differences between these two types are aesthetic rather than essential. The principle, in both cases, is the hierarchical structure, which requires of the map’s creator to first determine its subject, and then to break it down in a systematic manner.

Most of the digital mapping programs marketed today offer tools for the creation of one or more types of the hierarchical mapping diagrams mentioned above.⁹ Such programs undoubtedly have numerous advantages: they enable us to see the big picture (as described verbally), while attending to nuances. Additionally, they enable us to move among different areas on the map and develop separate subjects without losing touch with the overall context. Yet almost all of these programs, despite their advantages, limit our ability to create a rhizomatic mind map, which offers numerous other advantages.¹⁰ The idea underlying these different types of hierarchical maps is that every problem has a structured solution

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A “concept map” is a form of analyzing a single concept, which is written at the top of the page and broken down so that a word marks each intersection of branches and each branch bears a comment that links it to the next intersection. See, for instance, Martin Davis, “Concept Mapping, Mind Mapping, Argument Mapping: What are the Differences and Do They Matter?” *Higher Education* 62, no. 3 (2011): 279-301. Bella Martin and Bruce M. Hanington, *Universal Methods of Design: 100 Ways to Research Complex Problems, Develop Innovative Ideas, and Design Effective Solutions* (Beverly, MA.: Rockport Publishers, 2012), 38-39; Martin J. Eppler, “A Comparison between Concept Maps, Mind Maps, Conceptual Diagrams, and Visual Metaphors as Complementary Tools for Knowledge Construction and Sharing,” *Information Visualization* 5 (2006): 203; Kam Knight, *Mind Mapping: Improve Memory, Concentration, Communication, Organization, Creativity, and Time Management* (Charleston, SC: CreateSpace Independent Publishing, 2012), 141-148.

that can be organized in accordance with an ordered scheme, and executed based on predetermined guidelines. Yet the initiation of a design project from a single point of departure immediately imposes limits on the final product. As the design theorist Vasilije

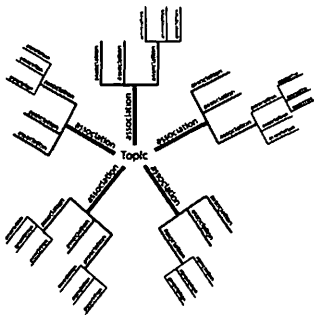


Fig 1:
Schematic
diagram of
Buzan's mind
map

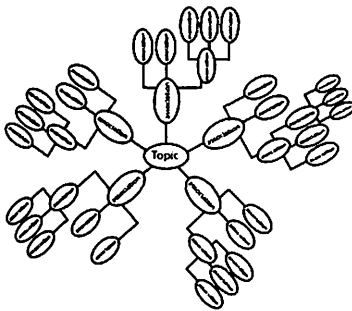


Figure 2:
schematic
spider diagram

Kokotovich rightly argues, design problems are not hierarchical in nature, and hierarchical mind maps thus provide designers with limited tools.¹¹ In their place, he offers an initial outline for “non-hierarchical mind mapping,” which calls to mind the rhizomatic mind map discussed in this article.¹² What follows is an examination of the fundamental differences between these two types of maps, focusing on rhizomatic mind maps.

Differences between Hierarchical and Rhizomatic Mapping

Rhizomatic mapping is distinguished from all types of hierarchical mapping by its form, contents, creation process and goals. The following are several of these fundamental distinctions:

1. De-centralization: Whereas hierarchical mind maps are based on a center that radiates outwards, a rhizomatic mind map

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The form of an “argument map” is reminiscent of a “concept map,” yet is constructed as a continuum of points that together form an entire argument. See Davis, 278-301.

5

A “radial map” is a diagram composed of concentric circles. The research subject is placed in the central circle and related terms, associations or ideas are placed in the surrounding circles. This type of mapping is referred to by different names in the work of various researchers. See, for instance, the “onion map” described in Robert A. Curedale, *Design Methods 1: 200 Ways to Apply Design Thinking* (Topanga, CA: Design Community College, 2012), 60-259; the “offering-activity-culture map” in Vijay Kumar, *101 Design Methods: A Structured Approach for Driving Innovation in Your Organization* (Hoboken, NJ: Wiley, 2013), 46-47.

6

See Tony Buzan, *Mind Map Mastery: The Complete Guide to Learning and Using the Most Powerful Thinking Tool in the Universe* (London, 2018), 14.

does away with the center and places equal importance on the periphery. In place of deductive thinking (from the general to the specific) concerning a single idea, the map presents a network that synthesizes knowledge and thoughts. A concept, idea, or data are only part of a large picture that expands out in different directions and that has infinite potential. In the absence of a center from which things radiate outwards or where they come together, any element has equal theoretical value to all other elements, based on the creator's decisions.

2. Synchronized interconnectivity among a range of elements: whereas a hierarchical mind map is composed of words and sometimes also of images, a rhizomatic mind map may also contain data, figures, concepts, quotes, images, diagrams, thoughts, associations, and so forth, which are consolidated into a single ensemble by means of synchronic tools such as lines, arrows, colorful schemas, icons, and more. There are no accepted rules, set forms, or conventional colors. Researchers create their own internal legend for organizing the map. The synchronic interconnections are at the heart of the map's innovative character, visually reflecting the manner in which information is gathered, deciphered and located on the map and thus capturing an individual thought process consolidated in a given field of research.

3. Openness to external content: Whereas a hierarchical mind map is a closed system that views the whole as reflecting the sum of its parts, the rhizomatic map is open to the integration of contents that are not directly derived from the core subject, but are rather related to it by the map's creator. One can add elements from other fields, locating them in a manner that connects them to the map's existing elements, and thus understanding their place within the expanding network. A rhizomatic mind map presents the manner in which concepts and ideas from different fields were woven together in the creator's mind, and deciphered in a unique manner based on independent decisions. It presents the structured contents of consciousness without compromising their complexity.

4. An orientation towards the research question: a hierarchical mind map opens with a question about a core issue, while the structure in its entirety provides the answer.¹³ By contrast, a rhizomatic mind map begins without an agenda, and ends with a research question. It enables the researcher to search for the

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See for instance, Davis, 282; Martin and Hanington, 118-119; Knight, 21-26; Carven Miles, *Mind Mapping: Comprehensive Beginners Guide to Learn Simple and Effective Methods in Mind Mapping* (Carven Miles, 2019), 50-54.

8

See for instance, Curedale, 75-76; Kumar, 206-207; Eppler, 203; Kokotovich, "Problem Analysis and Thinking Tools: An Empirical Study of Non-Hierarchical Mind Mapping," *Design Studies* 29, no. 1 (January 2008): 55-56. Buzan calls this type of mapping a "spider diagram." See Buzan, 126-127.

9

See the comprehensive entry in Wikipedia, "List of Concept and Mind-Mapping Software." Accessed August 3, 2019. https://en.wikipedia.org/wiki/List_of_concept_and_mind-mapping_software.

10

There are programs on the market that allow for the addition of bypass connections, yet these connections visually preserve the hierarchical structure.

11

Kokotovich, 58.

12

Ibid., 51.

13

Buzan, 138.

missing *place*, the *area* that has yet to be studied, exhausted, or deciphered. Its goal is to define a unique research niche that reflects the researcher's personal interests and subjective capacity for innovation. The map is created in order to identify unexpected interconnections and thus point to new ideas and creative trajectories. The map is complete when the goal is reached: when the research question and its unique hypothesis become known.

5. A combination of knowledge and ideas: whereas a hierarchical mind map is based purely on associations, a rhizomatic mind map is based on a combination between two types of maps – a “map of ideas” and a “map of knowledge”. A “map of ideas,” like a hierarchical map, is designed to map ideas and associations. Yet in contrast to a hierarchical map, the process of its creation reveals new interconnections that lead to additional ideas. The second type is a “knowledge map” whose goal is to teach us about a given area, without the need to introduce innovation. A knowledge map transforms a textual-linear format (written or orally transmitted) into a spatial-synchronic sphere. This process requires us to attend to every element and to connect it to the whole, and thus improves our understanding of the material. This map also constitutes a mnemonic tool for its creator, so that he or she can easily identify one element out of the whole when needed. A “knowledge map” offers an absolute substitute for writing summaries. A rhizomatic mind map combines the idea map and the knowledge map while effacing the lines between them. It is based on knowledge that creates new ideas and ideas that require an expansion of our knowledge, and gives expression to creative thinking combined with a research-based infrastructure. Mind mapping strives to avoid the automatic nature of associative thinking by locating trajectories of associative thought within a larger system of contexts, in order to reveal new and unexpected connections. The mapping of knowledge strives to reveal the gaps – those areas in which the map's creator lacks knowledge – thus anchoring the project in research and providing a solid basis for innovation.

A Rhizomatic Mind Map as a Form of Design Thinking

Designers exploring a new field of research are often faced with a blank slate, which they are required to study for the first time. Even

when they possess partial or deep knowledge of the field, they are seeking to break new ground. In either of these cases, the process requires going beyond one's reservoir of personal knowledge and initial intuitions. A rhizomatic mind map synchronizes the knowledge accumulated in the course of research – be it morphological, material, technological, historical, theoretical, or a combination of the above – with thoughts, ideas, and free associations concerning this body of knowledge. Just as design is an adaptation of form, function, materials, colors and so forth to a user, context, budget and more, a rhizomatic mind map adapts its form to its content while delineating the range of interconnections between its different elements.

In order to demonstrate the rhizomatic mapping process, let us take as an example the field of research concerning teapots. A certain researcher who specializes in ceramics will focus on ceramic teapots. In accordance with her personal range of interests, she will map teapots according to their design in different traditions and the use of different technologies (pottery-making, casting, 3-D ceramic printing, and more). Based on her personal interest in parametric, virtual teapots, she will discover, for instance, the *Utah teapot*, which represents the group Unfold's material representation of such a teapot.¹⁴ She will locate the teapots on the map and forge connections between them by means of synchronic links with other elements on the map. The research question that such a map may yield could be: "How will virtual parametric teapots influence the design of traditional teapots?"

As the above discussion reveals, rhizomatic mind mapping is more complex than hierarchical mapping. It requires the adaptation of form to contents; highly developed associative abilities in order to introduce new and extraneous factors into the core subject; the diversion of the research field in unusual directions; the grounding of associative trajectories within a synchronic network; and a willingness to continue and expand the research project and reveal the gaps within it, rather than clinging to what is already known. This type of mapping constitutes less stable ground, for the introduction of every new element requires its examination in relation to the entire system – especially since the end result is a design question, rather than an answer. It is clear, however, that this unstable terrain, which is groundbreaking and challenges accepted boundaries, gives

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Unfold, *Utanalog*,
Ceramic Utah teapot.
Accessed August 3,
2019, <http://unfold.be/pages/utanalog>.

expression to the unique thinking skills of designers. A design project must begin free of prejudice and external dictates, and open to experimentation with the unfamiliar. A rhizomatic mind map makes this possible.¹⁵

In the Information Age, the visual and written expression of contents made possible by a rhizomatic mind map is a necessity required by our reality. Our immediate access to an endless stream of knowledge requires of designers to exercise choice, organizational skills, and the creation of interconnections in order to produce meaning. At the same time, the virtual tools provide means for analyzing, processing and presenting this wealth of information. These tools redefine the role of designers and the processes of design thinking. The exhibition "State of Extremes" includes several works that reflect this new reality and its complexities.

Keiichi Matsuda's *Merger* (2019) is a 360-degree short film that presents the future work environment as a crescent-shaped station containing virtual control tools. The employee uses these tools to interpret knowledge that is presented all around her using variegated means: charts, graphs and chronological schemas, as well as rhizomatic mind maps. This is not an optimistic film. At any given moment, the woman can only obtain a partial view of the data that surrounds her, whereas the viewers can change the camera's angle and observe all of the data, while losing sight of the woman. The result is an anxiety-provoking experience of information overwhelm.

Another, more optimistic work is *Map of Human Emotions* (2015) by the Chinese artist Qiu Zhijie, which presents two rhizomatic maps – one of human emotions and one of human relationships – in the form of geographical maps. The synchronic interconnections are based on topographical mapping: a strong connection between events, with one leading to the next, is represented as a river, central events are represented as mountaintops, and so forth. Zhijie proves that visual organization can create meaning in a chaotic field of information. His maps, like rhizomatic mind maps, go beyond infographics to create meaning, offering a non-linear narrative which readers can explore in all directions.

In conclusion, design thinking in the Information Age cannot remain linear or hierarchical. When forced into procedural templates that analyze and break it down, the resulting structure contains none of the potential of radical design thinking, which opens up

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It is thus surprising that the comprehensive literature on design thinking contains hardly any rhizomatic maps, whereas hierarchical maps are frequently mentioned. See, for instance, Martin and Hanington, 118-119; Kumar, 206-207; Curedale, 65-66, 75-76, 83-84, 125-126, 253-254, 259-260, 263-264. Curedale also presents one non-hierarchical map that he calls a "communications map," which visually presents relationships between people and organizations, and is designed to study existing communications strategies. This is a rhizomatic map due to the connections that run across distinct areas, yet it is not a rhizomatic mind map, for it is intended to present knowledge in the form of a consolidated and conclusive narrative of social connections within a community. It thus lacks the dimension of ideas opening up onto new research possibilities.

onto unexpected connections. By contrast, the interconnectivity, conceptual openness, and complex synchronization processes that are essential to design thinking are revealed and organized by rhizomatic mind maps, so as to achieve innovation in the field of design.



Qiu Zhijie,
*Map of Human
Emotions*, 2015

Appendix: An Outline for Creating a Rhizomatic Mind Map

The following are non-binding guidelines for creating a rhizomatic mind map:

1. Every mind map begins with a specific field of research (such as teapots, or ceramic teapots), as well as an orientation to creating a product (such as the design identity of a commercial company, a curatorial plan for an exhibition, a series of lectures and so forth).
2. The next step is approaching a trustworthy source of information concerning the area of research, such as a book, article, lecture, film and so forth. The information is selectively represented on the map in the course of reading, listening or watching, rather than later on:
 - The researcher extricates concepts, central figures, dates, names of materials, technologies, processes, quotes and so forth based on his or her personal interests.

- Subjects are located at established distances from one another, in accordance with the map's inner logic.
- While placing the contents on the map, a legend is created: if two elements are of the same type (i.e. industrial technologies), they are marked using the same color or form.
- Fields of knowledge and ideas are interconnected synchronically by means of one- or two-way arrows, lines with or without explanations, broken lines, colors, icons and more. There is no need to mark all the connections – only the ones that interest the researcher.
- Every association, idea, thought, content-related question, critique and so forth that arises while mapping the knowledge is written on the map. It is important not to disregard ideas or questions, since they require development and are thus the catalyst for the continuation of the research process.
- An additional source of knowledge is located, and the process is repeated.

3. When the sheet of paper fills up another one is added to it, and the process continues.

4. Living with the map: the map is left open on a desk, taken everywhere, and made constantly available for additions and changes.

5. When a mistake is noted in the location or interconnections of a certain element, it is cut out, repasted, and reconnected.

6. The process ends when the research question becomes clear. The product – the design identity, exhibition, lecture, and so forth – will constitute the answer to the question.