

# Systems Scribing

## An Emerging Visual Practice

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## Introduction

*Scribing*, also known as graphic recording or graphic facilitation, is a visual practice: an artist maps out ideas—draws—while people talk, and the speakers see a picture unfold in front of them [1]. Scribes work across all sectors, primarily in meetings, conferences, and educational settings. They draw on blackboards, dry-erase boards, paper, and other large surfaces. “Wall scribes listen to the conversation and draw what they hear, which is a form of instant feedback and visual translation for participants” ([2], pp. 37). *Systems thinking* is a conceptual framework to “make full patterns clearer . . . and to help us see how to change them effectively” ([3], pp. 7). Thinking in systems connects us to the natural world, each other, and ourselves to help close the ecological, social and spiritual divides of our times ([4], pp. 4).

Systems scribing is the joining of scribing with systems thinking; merging these two disciplines creates a practice of visualizing whole systems through live, in-person drawing [5]. Systems scribing can be done in the moment, similar to graphic recording; it can also be done over time to track iterative cycles of feedback between the scribe and those who are generating content. Systems scribing incorporates an understanding of systems theory and emphasizes systems thinking as a filter through which the scribe makes artistic and content choices. It differs from the straightforward recording of content, in that the systems scribe uses specific interpretive devices—such as defining relationships, feedback loops, and mental models—in various combinations to help structure their interpretations. Essentially, systems scribing aims to reveal dynamics and interdependencies organically, in a manner that illuminates and clarifies the structure of group thinking.

There is an inherent challenge in organizing information in a visually coherent manner when trying to depict hours of spoken word. A scribe does multiple things simultaneously: they listen to many different voices, filter and categorize content, make artistic decisions, and draw ([6], pp. 113). As a result, many scribes have created their own simple visual vocabulary—including shapes, icons, and metaphors—to help move through this process quickly (Haussmann and Scholz, 2016). When combined, they become a narrative ([7], pp. 157-172). Ideally, this approach to framing and organizing information quickly produces legible and useful artifacts.

Many scribes develop timesavers informed by their own skill sets, their experience or education, and the sectors and clients they serve. Graphic recorders typically convey information sequentially, or based on the dominant cultural reading direction—for example, in North America reading happens from left to right and from top to bottom on a page. The result is usually a chronological organization of the content

as it is spoken. This approach to visual practice includes developing vocabulary and shortcuts (such as organizing “chunks” of content to separate information) and utilizing drawing to make “sketchnotes,” visual notes that summarize short presentations or concise ideas (see [8], pp. 129-131; [9], pp. 6-11).

The lifespan and use of the resulting graphic recordings are often bound to an event: participants engage with the pictures for a short time, usually right after they are created in a conference hallway or break area; later they might receive a digital copy of the images for reference. The primary intent of the work, though, is to facilitate direct reflection and to provide immediate impact within a narrow window of time. Finished pieces are referred to as “maps” that can become starting points for future work. (*See Figure 1.*)

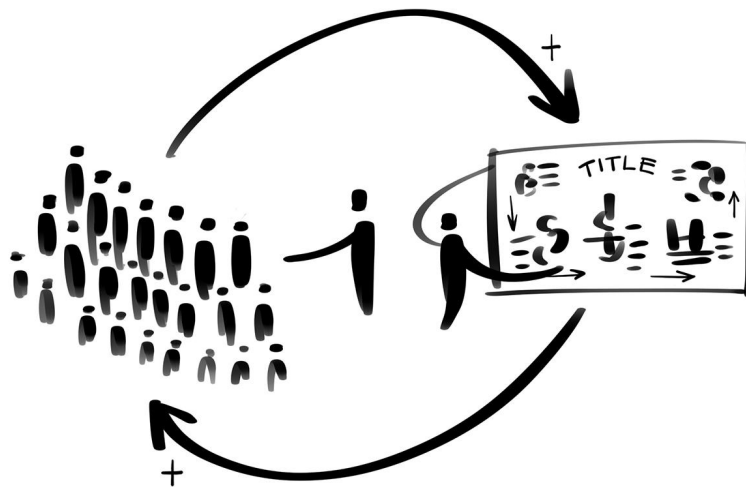


Figure 1: Recording with linear flow that shows group engagement.

By contrast, systems scribing highlights dynamic structures and behaviors and breaks from a compartmentalized approach. The systems scribe listens to the content (as spoken by the participants in a meeting, for example), takes notes (mental or written), and makes marks when a connection or relationship becomes apparent. When drawing, the scribe moves back and forth across the surface, connecting information, paying attention to the underlying dynamics, and attempting to model what is being said (in the present) into what has been said (in the past), saving space for what might be said (in the future).

Systems scribes use frameworks from the field of systems thinking to help them organize and synthesize content as it is being presented. They have studied systems thinking frameworks such as the “iceberg” [10], feedback loops ([3], pp. 79-92; [11], pp. 25-27), archetypes ([3], pp. 378-390), stock and flow ([11], pp. 17-25), Distinction, Systems, Relationship, Perspectives (Distinction, System, Relationship, Perspective) ([12], pp. 9-50), and complex adaptive systems [13].

By drawing a picture, a systems scribe can effectively “help a system see itself” ([4], pp. 35)—whether the “system” is a group of 20 people who work together or a subset of a global corporation or network. The picture of a system makes evident the choices, actions, relationships, and externalities of that system,

as well as the consequences of the way the system operates. Where a graphic recording produces a fixed map of a conversation, the product of a systems scribe is more like a blueprint or diagram, intended to be changed and updated as a group gains insight and ideas evolve. The drawings produced in sequential sessions relate to one another, changing as the participants in a system reach a better understanding of their challenges and direction. (See Figure 2.)

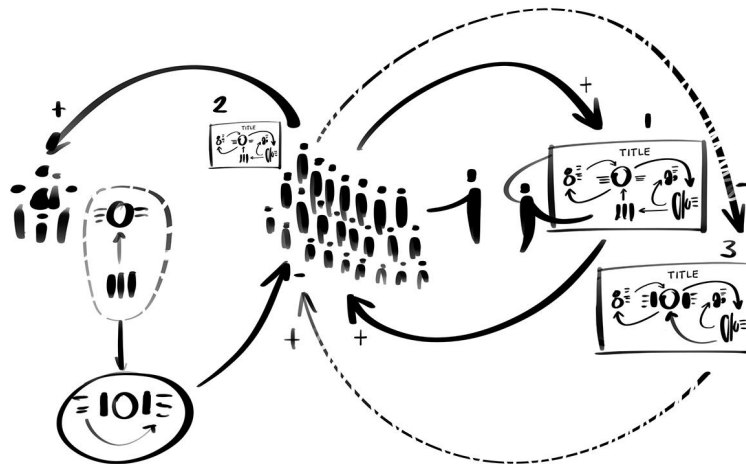


Figure 2: Mapping with an organic flow and system engagement through iteration.

Graphic recording and scribing of all kinds are intended to increase awareness. Although the terminology can seem to overlap, we do not believe there is a right or wrong use of any of the professional descriptors. This exploration of systems scribing is intended to add a dimension to an already quickly growing field of practice.

## The Evolution of Scribing

Six clear generational waves in the field of scribing have shaped the now global and distributed practice ([1], pp. 3-4):

1. **1970s: First-Wave Originators** came from a background in architecture and organizational consulting. They included David Sibbet, Jennifer Landau, and founding members of Grove Consultants, along with Michael Doyle of Interaction Associates. Sibbet originated the terms Group Graphics® and “graphic facilitation” to describe methods that use visuals interactively to facilitate group understanding in organizational contexts ([7], pp. 1, 3).
2. **1980s: Second-Wave Originators** had a background in architecture, facilitation, education, and the military. They included Matt and Gail Taylor, Jim Channon, and Bryan Coffman. The current use of the term “scribing” comes from this wave, when knowledge workers who drew on walls during collaborative sessions were called “wall scribes” ([6], pp. 113).

3. **1990s: Third-Wave Early Adopters** were those who learned with the originators and helped further seed the field in the United States. They began applying the practice in management consulting, organizational change, not-for-profits, and collaborative design environments [14]; scribes began teaching and coaching, and an international community started to form around the Ernst & Young Accelerated Solution Environments and IFVP (International Forum of Visual Practitioners, n.d.). The practice spread to Canada and Europe.
4. **2000s: Fourth-Wave Early Majority** are those who learned from the previous generations in a hands-on manner, employing markers and wall surfaces as well as digital technologies [15]. The market expanded to Australia.
5. **2010s: Fifth-Wave Self-Directed Majority** are people who learn about the practice on their own, from books and videos by those who came up in the first four waves. Practitioners appeared in Central and South America, the Middle East, India, Africa, and Asia.
6. **2017– : Sixth-Wave Collaborative Majority, Innovators, and Questers** today are people crossing regional boundaries to share best practices and evolve the art form ([16], pp. 285-294). They are making technological advances, and weaving Indigenous, wisdom, and spiritual traditions into the existing visual practices to raise consciousness around the path of human evolution and our relationships with species and the planet [1].

Systems scribing is influencing at least three current trends in visual practice: (1) More people from backgrounds such as coaching, teaching, and design are becoming interested in the field. (2) Visual practitioners are searching for the next evolution of the practice that integrates human intelligences (mind, heart, body) with different ways of knowing. (3) The times are calling for the scribe to encompass, parse, and make sense of complexity.

## Levels of Scribing

There are levels of scribing that directly correlate with a practitioner's understanding of systems and ability to represent them. According to Otto Scharmer's "four levels of listening," the quality of attention that we listen with evolves from habitual to generative ([17], pp. 10-12). Kevy Bird has adapted this framework to apply to visual practice. (*See Figure 3.*)

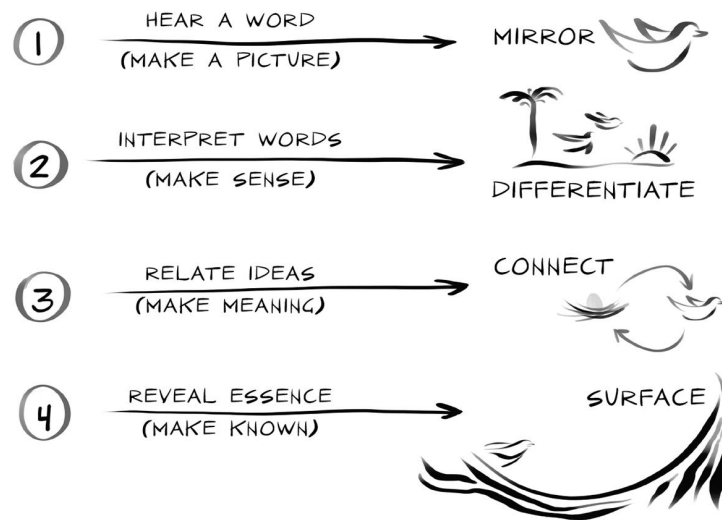


Figure 3: Levels of Scribing.

**Level 1 scribing: Mirror.** We hear a word and make a picture. Our drawing is literal; someone says “bird” and we draw a bird. This is object-oriented scribing, with a focus on naming individual parts.

**Level 2 scribing: Differentiate.** We interpret words and make sense of parts by expanding our vantage point. We draw what we hear in a factual context and organize similar parts into clusters.

**Level 3 scribing: Connect.** We relate ideas and make meaning by stepping back to see the entirety of a person or situation, seeking to understand relationships and structures. This level is where systems scribing is particularly useful. We shift from noticing sequential movements to noticing dynamics from above, as a slice of time.

**Level 4 scribing: Surface.** We reveal an emerging future potential by connecting with our capacity to let go of the past and tap into the true present moment within social and energetic fields. Once we sense the reality that wants to unfold, a drawing can help define the forces in play; a group can then engage with them to move into a realm of possibility [1].

Systems scribing is an integrative approach that works on all levels of visual practice. Through sharing this framework in workshops and in conversation, it has become clear to us that most graphic recorders are functioning at levels 1 and 2, mainly because that is what most clients need or want. Scribes express great curiosity about how to shift into levels 3 and 4. We believe that systems scribing can help with this transition, as a gateway to a new kind of relational understanding and representation.

## The Evolution of System Scribing

In the early 1990s, Bird started working with the MG Taylor Corporation, a company that had developed a collaborative methodology called DesignShops™, which employed “group genius” to find solutions to challenging problems. There she absorbed systems thinking by osmosis, working alongside those already

familiar with the field, to design and deliver facilitated sessions for companies seeking change [18]. The MG Taylor way was highly interactive; no individual role was isolated from the team's creative objective to provide multi-stakeholder solutions in condensed periods of time.

As a novice scribe, though, she had difficulty drawing representational images, as was the standard with other graphic facilitators at that time. Working with Bryan Coffman, who was trained as a systems engineer, Bird embraced his visual modeling method—using elements of actors, frames, relationships, and annotations[19]—that originated in the mid 1980's and was further developed with Jay Smethurst in the late 1990's ([6], p. 118). Bird and Riehl have since integrated Cabrera's DSRP framework [20–22], into a potential systems scribing method, closely resembling Cabrera's DSRP Diagramming as follows:

- **Distinctions** (interactions between identity and other): Annotations are one form of distinction that help clarify the parts, relationships and frames, and provide context to the model. The other distinctions being made are all the content (words, images) in the map that add to the underlying DSRP structure.
- **Systems** (interactions between parts and wholes): Parts represent the people (actors) and components of the picture or system, drawn as shapes, and they can be differentiated through use of texture and color.
- **Relationships** (interactions between actions and reactions): Relationships reveal proximity and interdependencies. Arrows can show how one part influences another. Shapes reveal relation through proximity, size, and distance.
- **Perspectives** (interactions between points and views): Frames define boundaries and help differentiate parts of a picture. Frames are an ordering device, and can be represented by boxes or circles, or even the edge of the drawing surface. Frames are the root perspective but actors also have perspectives that "frame" the issues or content.

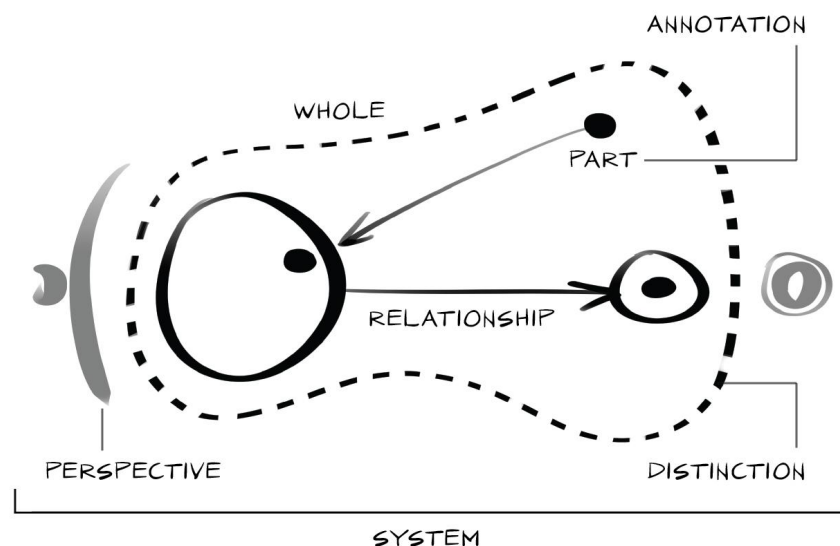


Figure 4: Example of a model.

In the late 1990s, Bird moved to Cambridge, Massachusetts, where she started working with William Isaacs and the company dia•logos. Here the merging of dialogue ([23], pp. 4-46) and scribing took root in her own practice, specifically around the principles of potential, participation, coherence, and awareness ([24], pp. 29-69). The scribe became an integral player within the system, functioning to visibly reveal the meaning revealed through a conversation.

In 2007, Bird joined the core team of the Presencing Institute, working closely with Otto Scharmer to create an action research platform situated at the intersection of science, consciousness, and profound social and organizational change [25]. Her scribing took on the role of anchoring cultural shifts over time; her images have translated key concepts, tracked the institute's growth, and helped share the narrative of its unfolding.

At the World Economic Forum's 2011 annual gathering in Davos, Switzerland, Bird mapped the "too big to fail" housing and financial crisis that was central to the "great recession" of the early 2000s while a presenter explained the scenario. This was a setup for a 90-minute session called "Hyperconnectivity" in which about 50 participants explored the dynamics of cybersecurity, finance, pandemics, and sociopolitical contagion. She was part of a team representing the Value Web, a global network of process designers and facilitators that worked with the Forum to conceive and deliver the session [1].

Around this same time, Bird began supporting Executive Education programs at MIT's Sloan School of Management, scribing for courses in the System Dynamics Department. This opportunity allowed her to begin combining the concepts of systems thinking with scribing in a context where experts could offer a critique of the attempts. (See Figure 5.)

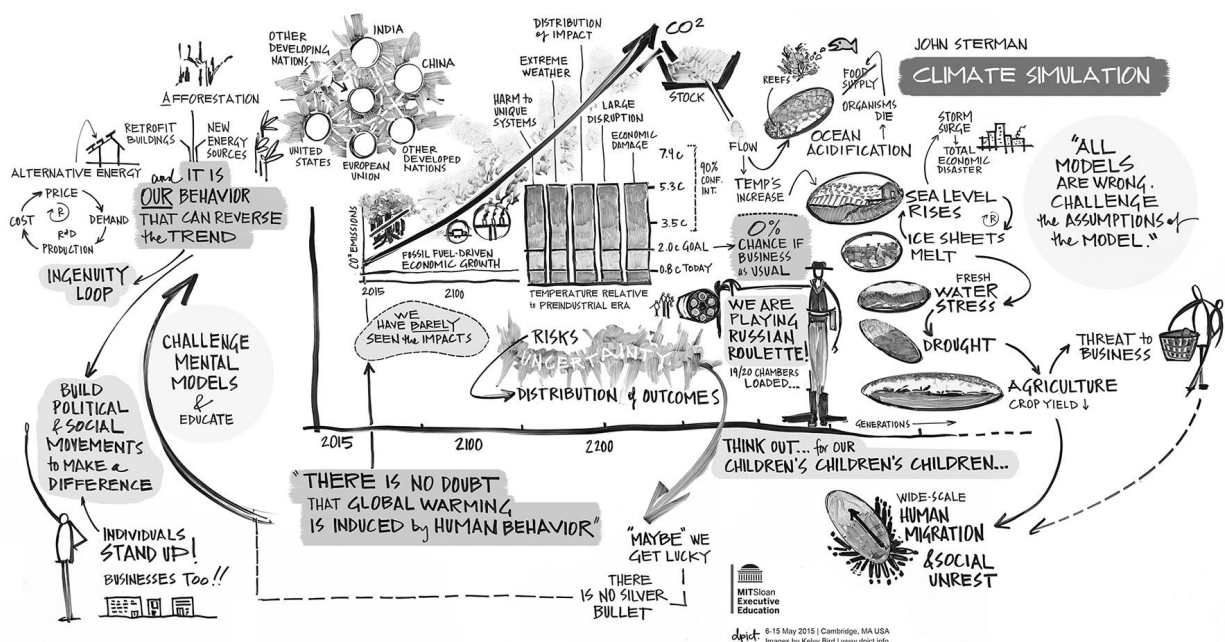


Figure 5: Example of an image from a 90-minute C-ROADS climate simulation led by John Sterman, director of the MIT System Dynamics Group. Dry-erase ink on whiteboard, 4'h x 8'w, 2015. See [www.climateinteractive.org](http://www.climateinteractive.org).

Another developmental thread was Bird's work from 2011 to 2014 with LeAnne Grillo at Camp Snowball [26]. This annual gathering, initiated by the Waters Foundation and what is now the Academy for Systems Change, brings systems thinking into classrooms, schools, and school districts through engagement with students, teachers, and administrators, and superintendents. In 2016, Bird began sharing the iceberg model in her visual practice workshops, and then in 2017 conceived the Systems Thinking Studio Sessions to explore and consolidate knowledge on the topic within the field of practice [5].

Jessica Riehl, meanwhile, had begun her graduate studies in 2013 in the MFA Collaborative Design program at the Pacific Northwest College of Art. The program was created by Zackery Denfeld, J. P. Reur, and Cathrine Kramer and was inspired by Denfeld's earlier research and his interdisciplinary study of complexity, systems thinking, design practice, architecture, and cybernetics. In particular, Denfeld wanted to "provide a bridge between seemingly insurmountable world views" [27].

The program's foundational class in systems thinking, taught by Howard Silverman (Silverman, n.d.), was her formal introduction to systems thinking. She was simultaneously introduced to the work of David Grey [28], the founder of xPlane, a Portland, Oregon-based visual thinking consulting firm. She received training in visual thinking, design research, and business design, and used rich picturing in her presentations ([29], pp. 35-36). Like Bird, Riehl realized that the convergence of her training in these two disciplines (visual thinking and systems thinking) offered a unique opportunity to illustrate and engage with complex problems. She began visually illustrating and working with systems thinking models when she met Bird in 2018. In 2019, she started training with the Human Systems Dynamics Institute in order to expand her understanding of systems thinking and models.

After meeting in 2018, Riehl and Bird initiated a more intentional exploration of systems scribing. Riehl introduced Bird to the DSRP framework ([12], pp. 9-50), in which she saw immediate parallels to her own experience with 2D modeling, and a potential blending of approaches that would help scribes as they learned to embrace these topics. They used the DSRP model, then, to develop an approach to representing systems that would help scribes refine their practice.

Inspired by her work with Bird and the challenges inherent in scribing systems, Riehl prototyped a visual vocabulary during her study with the Human Systems Dynamics Institute in 2019. The visual vocabulary is based on the work of Glenda Eoyang [13]. It offers graphic "shortcuts" that a scribe might use in live systems scribing with a client. (*See Figure 6.*) Other practices and models in systems thinking might also benefit from the creation of a visual vocabulary that is quickly and easily drawn.

## HUMAN SYSTEMS DYNAMICS VISUAL VOCABULARY



Figure 6: Prototype of a visual vocabulary for system scribing.

# Learning Experiments

## Prototype #1: Portland

The first systems scribing workshop we led took place in Portland, Oregon, in February 2018. About 20 participants from North America, most of them scribes, gathered on blind faith with palpable excitement to explore systems thinking. The workshop design followed a learning cycle, adapted from Chris Argyris, in which the final topic of one session fed directly into future sessions on the same topic (see Figure 7) [30].

- **Explore:** Scan what the group knows and download experience.
- **Decide:** Decide what to dive into, who shares what, and a specific process.
- **Do:** Share knowledge and apply it in practice.
- **Reflect:** Reflect on experiences by journaling, reviewing drawings, and debriefing.
- **Make sense:** Converse, document insights, and identify what to explore next.

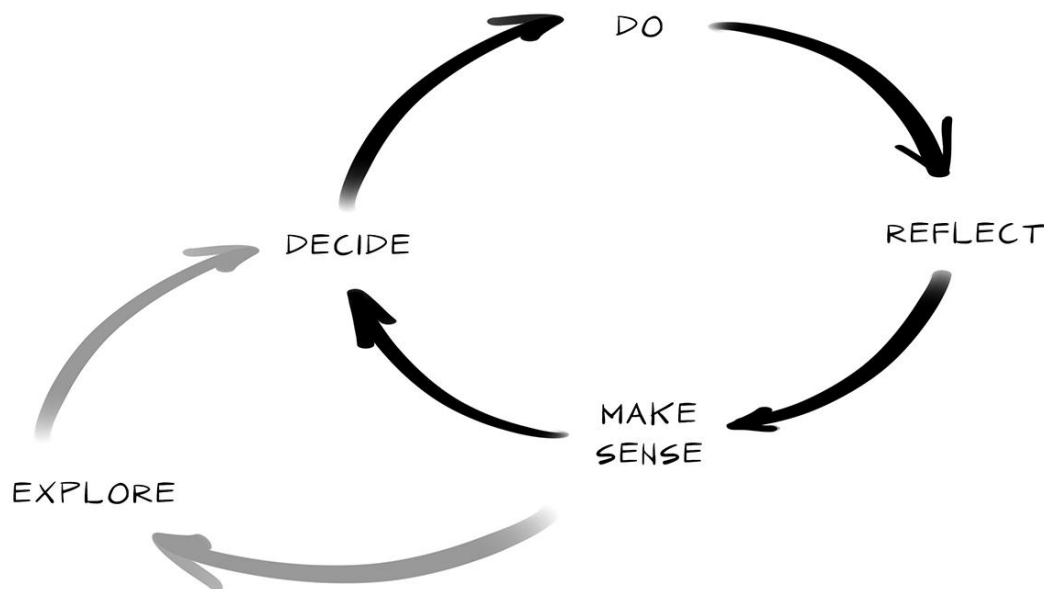


Figure 7: Expanded learning loop.

During the session, participants jumped into open discussions about vocabulary and form. While seeking a common language, the group quickly became tied up in semantics. Only a few in the room had expertise in systems thinking, and it became clear that in the roughly eight hours available to us we could only scratch the surface of possibility. Most participants left with some new understanding and curiosity, but also a sense that the subject would be difficult to apply in actual practice, especially with clients not versed in systems thinking.

## Prototype #2: Toronto

In April 2018 we experimented again, this time in Toronto with 12 participants representing North and Latin America. We chose to explore DSRP theory (Distinction, Systems, Relationship, Perspectives), developed by Derek and Laura Cabrera ([12], pp. 46-50). Everyone attending was already familiar with the iceberg model, and we wanted to add another layer, an additional framework. We thought that with DSRP a scribe would be able to choose one part of the formula as a starting point and then build the other elements into the scaffolding.

The group first broke into teams to explore each aspect of the DSRP theory, and then scribed the same content—from an NPR story on walkouts and teacher pay [31]—four times into different quadrants on the same sheet of paper, each time drawing with one element of the theory. (*See Figure 8.*) In general, we achieved more clarity in this session, but were all still left wondering how to incorporate the learning into current scribing practices.

We also learned that we would need a more thorough understanding of systems thinking ourselves in order to teach it in this new context. We had the capacity in the room to play and fail, but we needed to define the new terminology more precisely in order for it to take root.

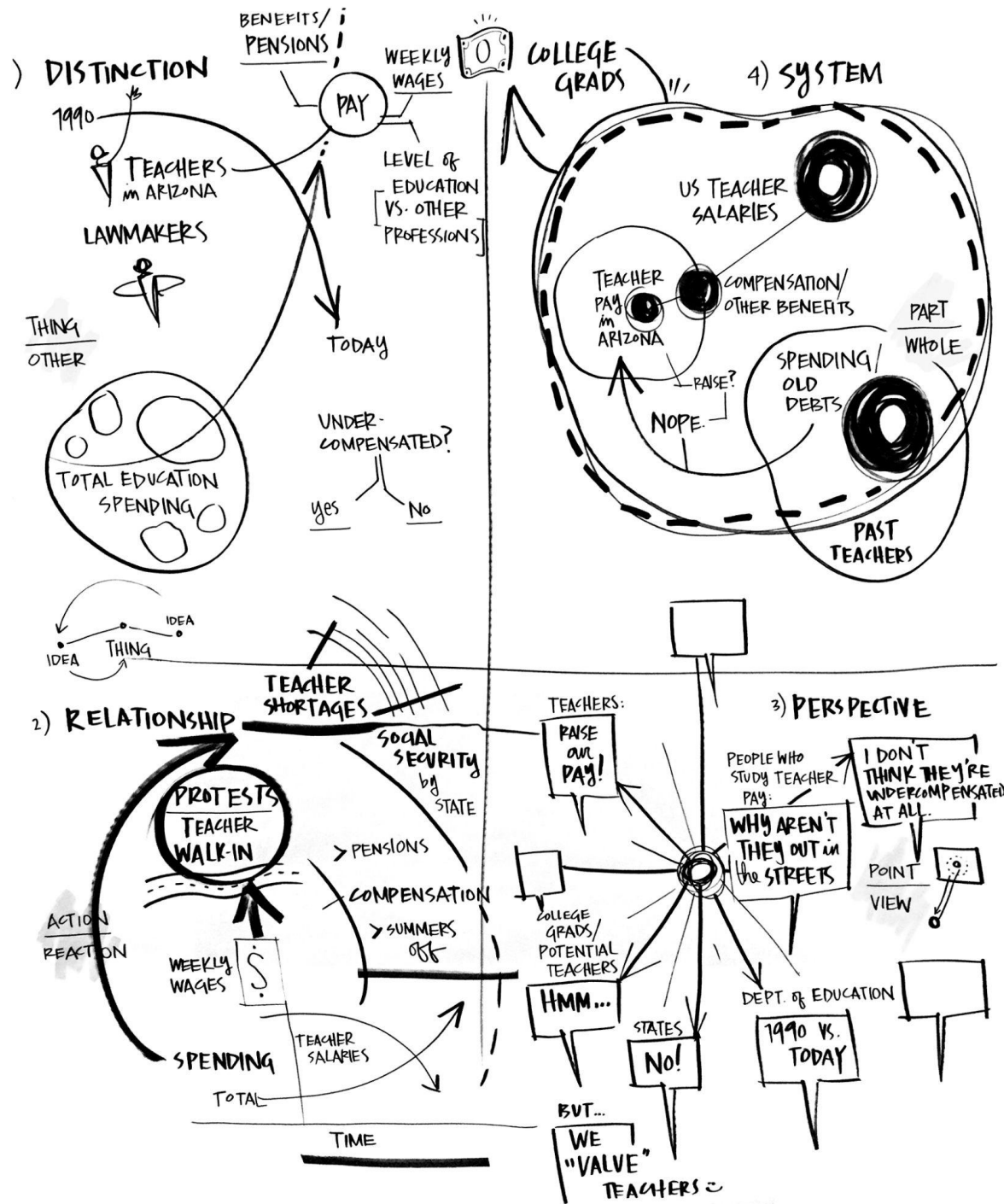


Figure 8: Learning DSRP, drawing by Reilly Dow. Marker on paper, 46.5 x 55", 2018. The practice fields in order: "distinction" (top left); "system" (top right); "relationship" (bottom left); "perspective" (bottom right).

## Prototype #3: Hamburg

In an advanced visual practice workshop, and after a conversation with the Cabrerias, we decided to include additional devices from their framework. The three-day program loosely followed this design: review previous workshop materials (including the iceberg framework, which had been applied in depth); learn to differentiate sections of content by using barbells, jigs, and part parties ([12], pp. 101-107); address the role of containers (also called holding spaces) coupled with archetypal energies; and tap into how generative scribing is connected to one's inner calling. Thinking about systems was introduced as a specific tool for moving from level 2 to level 3 scribing by shifting the attention of the practitioner from distinction to relation.

Again, we confronted different levels of understanding. This time the group consisted of about 20 participants from the Northern and Western Hemispheres. We worked on large sheets of paper, but the group agreed that a collage approach would be a useful tool, using pencil and sticky notes instead of permanent markers. The participants appreciated the layering of frameworks and not being wed to only one. And there was consensus that the pressure to "get it right" (the intellectual component of scribing) removed emotion and intuition from the drawing process, which could have positive or negative consequences, depending on the needs of a client.

## Practical Application

We offer here a case study of systems scribing in use, through an image Bird drew during an educational program called u.lab Prototype Camp, offered through MIT and the Presencing Institute [1]. The three-and-a-half-day in-person gathering was launched with a 90-minute on-line broadcast to about 15,000 people, as part of an MITx MOOC (massive open online course): u.lab: Leading from the Emerging Future [32].

The image she drew over three-plus days onto a 4'x14' whiteboard included content from the initial broadcast, subsequent presentations, dialogue, and group work. (See *Figures 9a, 9b, and 9c.*) The long-standing and high-trust client relationship, the limited wall space, and the nature of the meeting topic itself—learning about prototyping while working on existing projects—provided a perfect opportunity to embody the application of systems thinking.

The creative process needed to be highly iterative. At the end of each day, Bird photographed the drawing on the wall. Then, based on input from conversations with participants and her own internal sensing, she edited sections of the image to make room for new content the following day. This process intentionally played with stocks and flow—the concept that there is limited room for a continuous stream. In this case, wall space was the stock, and ideas and pictures were the flow.

To manage the process, she also incorporated the notion of feedback loops. Through careful editing, she reduced the presence of some ideas and reinforced the presence of others. For example, the large olive-green arrow on the right represented the "best possible unfolding future" and was preserved throughout the session. But the large gold arrow in the middle was irrelevant after the first day and came off. (See *Figures 9a and 9b.*) Notice, also, small changes, such as the size of the person to the right of the iceberg. This represented a shift in scale and reduced importance.

She also loosely used the iceberg as a visual framing device that captured the dynamics below the waterline and the results above. By opening up the bottom right edge of the iceberg, she made way for the section on dynamics to expand. In the final digital production, she emphasized this section by leaving the background white and darkening the surrounding areas.

The drawing gave the group a consistent, physical reference point throughout a dense and changing program. It also presented a synthesized version of key themes that had formed over the group's arc of learning. The final picture reflected shared—rather than any one individual—experience. To this day, it serves as an artifact for the collective memory of that group and the Presencing community at large.

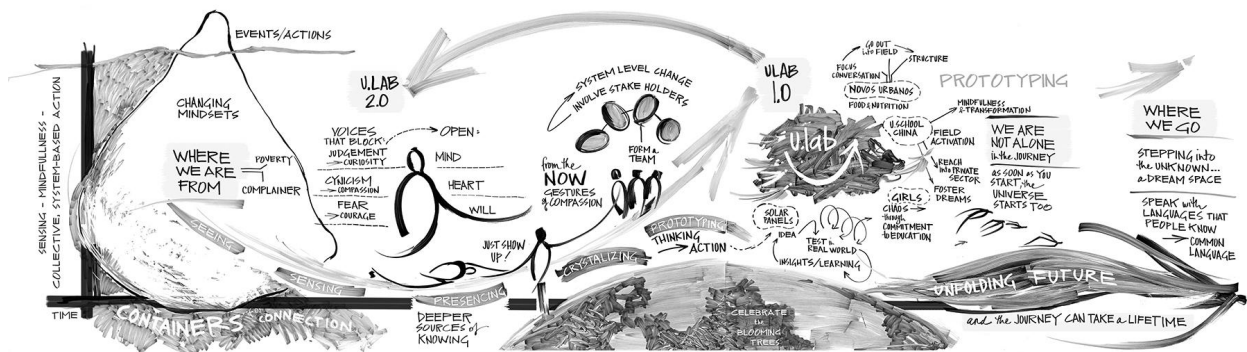


Figure 9a: Drawing after the first day.

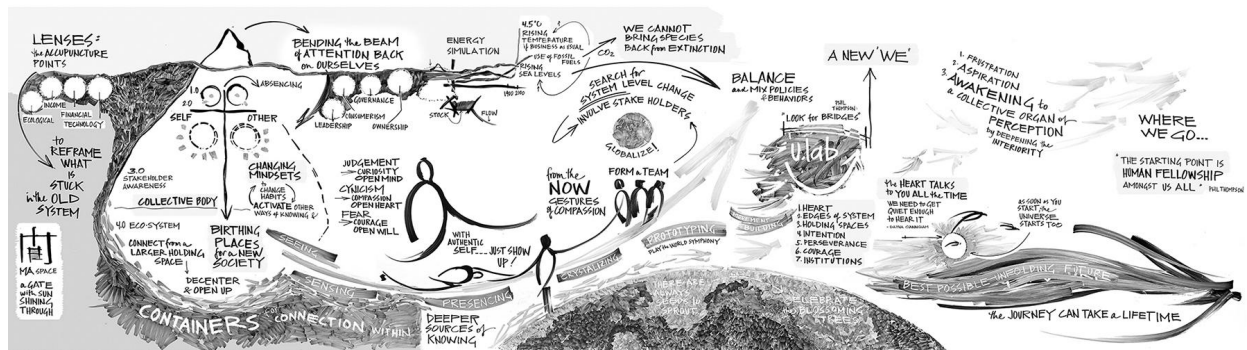


Figure 9b: Drawing after the second day.

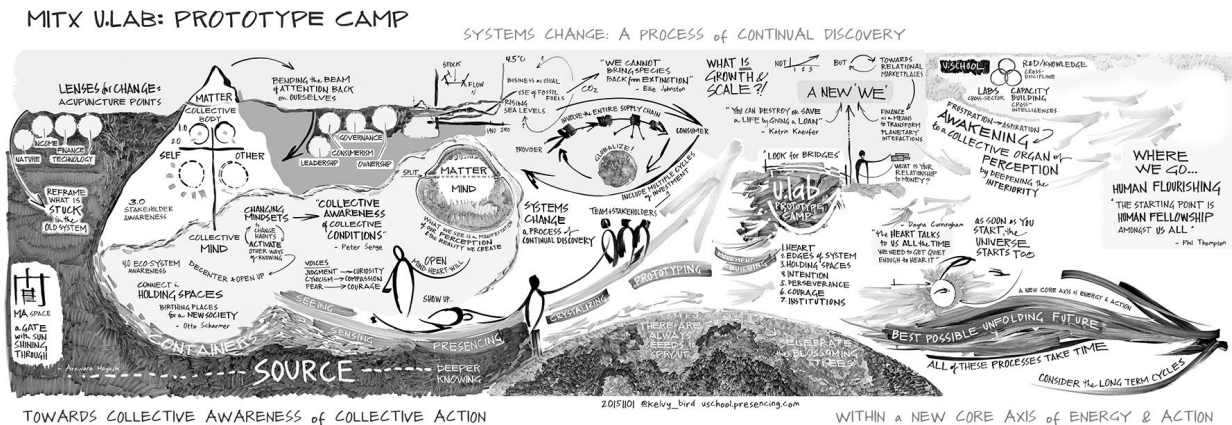


Figure 9c: Drawing after the fourth day.

## Future Directions for Systems Scribing

Our goal in this article was to document and share what we have learned about combining the two separate disciplines of systems thinking and scribing. Through the Visual Practice workshops, we have introduced over 60 scribes to systems thinking. Based on our experience, we believe that systems scribing can be an indispensable tool for accessing a more holistic understanding of our interconnected world. We are at the boundary of our own model here. Where to next? Our conversations during workshops have raised some specific topics that, in the coming years, systems scribes will want to explore further ([33], pp. 20; [34]). These include the roles of:

- **Mindfulness:** It is extremely challenging to find stillness when one needs to simultaneously name, differentiate, include, exclude, connect, and order a continuous flow of verbal content. How can practices such as meditation, journaling, drawing, and spending time in nature help us know what it is to “be in the pause,” or to be “in” a question without trying to answer the question?
- **Multiple intelligences:** Systems scribing requires various capacities—including those of the head, heart, and hand ([17], pp. 20)—in order to fully sense and diagram a system. These include a mental acuity to name parts and interdependencies; an emotional intelligence to perceive the members of a system are affected by it; and drawing skills to translate complicated topics into ordered groupings.
- **Bias:** How do scribes encompass different perspectives and mental models while preventing their own biases from influencing the drawing? More scribes are coming to the practice from science, business, and other arts backgrounds, bringing with them different lenses.
- **Culture:** How do region and culture influence a scribe’s natural approach? Scribes in the Northern and Western Hemispheres, for example, tend to think and operate more linearly. Scribes in the Southern and Eastern Hemispheres tend to think and operate more organically.
- **Boundary:** Scribes need to become more skilled at understanding how the boundaries of a model [3] define what is in and out of a picture, and how to adjust images to depict boundary expansion

and contraction. What represents the edge of the system? For example, if a scribe is working with educators, should the model also consider and represent the voices of students?

- **Participation:** As complexity increases, how can scribes collaboratively work with their clients and audience? How will technology enhance or detract from the interaction and sensemaking? What happens as scribes begin to inspire participants to visualize their understanding of the system, explore visually, and self-organize to draw their complex problems? Since many scribes teach workshops, systems thinkers may benefit from learning the practice of scribing as an additional tool in their tool kit.

As we move through the sixth wave of scribing and beyond, visual practitioners will be increasingly called both to function as systems thinkers and to represent systems that cross linguistic, regional, and cultural divides. Scribing, in general, offers the opportunity for rapid visual feedback between participants, to more quickly understand the field of conversation. Imagine what happens if there is a systems scribe in every meeting room? What becomes possible when we can see the system emerge on a surface in front of us?

Scribes will need to collaborate in new ways among themselves, the social field they are scribing for, and with practitioners of other disciplines to amplify the perspectives in a drawing. To effectively understand the terrain they seek to represent, scribes will also need to move beyond their comfort zones and go into the disquieting space of not knowing, as well as learn to stay present in increasingly complex contexts. Scribes and their clients will also need to understand how different systems thinking frameworks can be applied in different situations and to approach it with a mindset of exploration.

Systems scribing is in its infancy. Its evolution will also require the thought and contribution of non-visual practitioners, researchers, clients, and enthusiasts to reach maturity. The domain of knowledge will expand as the ideas presented here—and other journeys into this topic, still to be documented—are shared, tested, and improved upon. In order to grow, the practice will require dedicated platforms to track learning, clients who are ready to hire and experiment alongside scribes, and more scribes willing to cultivate their understanding and representation of systems.

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