

Knowledge Art: Visual Sensemaking Using Combined *Compendium* and *Visual Explorer* Methodologies

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ABSTRACT

In this paper, we describe the integrated use of two methodologies for collaborative sense making, one based on facilitated hypertext for collaborative modeling, and one based on images as mediators of group dialogue. We term both the process and product of this *knowledge art*, the integration of rational analysis using modeling with network visualizations and art using images (paintings and photographs). We present a case study of this process as conducted in a program at Verizon.

Keywords: *Hypertext, sense making, leadership development, collaborative argumentation, knowledge management, art, aesthetic.*

INTRODUCTION

We have begun integrating two methodologies for collaborative sense making, Compendium¹ and Visual Explorer². In this paper we describe one application driving this integration, a leadership development program for middle managers at Verizon. The purpose of the program, called *Facing and Solving Complex Challenges* (FSCC), is to make shared sense of a leadership challenge in sufficient depth and breadth so that it can then be adequately addressed. Knowledge art addresses the need for support in the process of conducting the FSCC program, as well as the future use of the outcome of the program. We term both the process and product of this *knowledge art*, the integration of rational analysis using modeling with network visualizations and art using images (evocative paintings and photographs). The notion of *knowledge art* helps to articulate shared meaning and to make sense out of complex and ambiguous aspects of leadership in organizations.

The technology and approach we describe helps with the pragmatics of “on the fly” capturing, recording, and reuse of knowledge for decision-making.

COMPENDIUM

Developed by Verizon beginning in 1993 to aid business process redesign projects, *Compendium* has been applied to more than 75 projects by organizations including the former NYNEX and Bell Atlantic, Verizon, NASA and the Corporation for Public Broadcasting [8]. The Compendium approach facilitates the collaborative creation of the content of a knowledge repository, by

¹ Developed at Verizon; see www.compendiuminstitute.org

² Developed at the Center for Creative Leadership; see www.ccl.org

combining hypermedia, group facilitation techniques, and an analytical methodology rooted in knowledge modeling and structured analysis [9]. Compendium combines three aspects. The first is modeling facilitation, which guides team members in collaborative construction, elaboration, and validation of knowledge models using a software tool (Figure. 1). Facilitators also pay special attention to the capturing and display of informal, or conversational, insights and discussions, and assist team members in linking and managing these ideas. The second aspect is IBIS facilitation, which assists the team in surfacing assumptions and representing design rationale as argumentation [10]. Finally, facilitators pay attention to group process and the emotional climate of sessions, using the modeling approach as part of their toolkit to help surface and bridge communication problems and gaps. Compendium addresses key criteria for the successful introduction of knowledge management into the work practice of organizations.

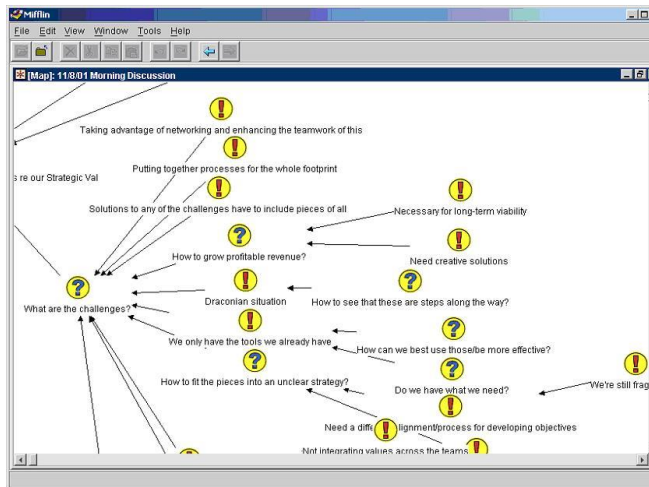


Figure 1: Compendium Map of Issue Discussion

In 1999, Verizon began collaborating with the Center for Creative Leadership (CCL) to explore how Compendium might aid leadership development programs and processes, as well as how leadership development theories and practices might inform Compendium’s ongoing development and application.

VISUAL EXPLORER

Visual Explorer (VE) is a tool for enhancing group dialogue and sense-making [4]. It consists of 203 images of great variety in content and style, printed on 8.5” x 11” paper, selected for their power to facilitate metaphorical and emotional connections. In typical usage, participants are asked to select an image (while browsing the entire set) that evokes for them some important aspect of the

previously defined challenge (or issue, idea, etc.) of which the group tries to make sense. Dialogue proceeds in small groups, using the images as a kind of metaphorical scaffold: first, to describe their challenge, and then to invite the perceptions and impressions of others. Developed by CCL, VE is based in research and practice showing that images are building blocks and carriers of ideas, emotions, intuitions, knowledge, and action patterns.

The particular images now used in VE were selected from a much larger archive, using the criteria shown in Table 1. These criteria (applied such that they are met by the set of images as a whole) were developed from our experience at CCL in supporting dialogue using images sampled from collections of postcards and photographs.

Table 1: Visual Explorer Image-Set Selection Criteria

- ✓ Ripe with metaphoric connections to issues in organizations, work, life

- ✓ Unusual, pithy, or funny situations with which people can identify
- ✓ Capturing something essentially human
- ✓ Shows psychological or emotional tension; psychological truth implied or provoked
- ✓ Scenes of people doing together; drama; working or playing together
- ✓ Evokes "hmm, I wonder about that" Or "That reminds me of"
- ✓ Clashes of dissimilar things or ideas; disturbing; dream-like
- ✓ Aesthetically beautiful, interesting, and/or diverse genres
- ✓ Diverse in humanity (race, gender, ethnic, national, cultural, religion)
- ✓ Portrays myths, fantasy, fairy tales; archetypal





Figure 2: Example of Visual Explorer Images

THE FSCC PROGRAM

A typical FSCC workshop consists of two days in which middle managers from a variety of functions explore shared leadership challenges. Coming in, they usually experience their work relationships with each other as being less than optimal, by their separation into functional silos. The program attempts to facilitate cross-functional understanding of complex issues (e.g. post-merger strategy, customer care, market erosion), followed by post-program action teams addressing these issues.

It is within this context that we have integrated Compendium and VE; into the method we call knowledge art. Participants have an initial round of dialogue using images each selects to represent his or her view of a *self-identified* leadership challenge. The dialogue covers the facts of each challenge, as well as the harder-to-express intuitions, emotions, perceptions, personal connections, metaphors, and stories conveyed by the images. Then another round of dialogue begins using Compendium. Participants identify and discuss what they regard as their most important *shared* complex challenges. (By “complex” we mean urgent and important, *and* not simply amenable to known techniques or formulas, thereby requiring reflection and adaptation.) Participants’ ideas are mapped using Compendium’s hypertext software projected on a shared display. The facilitator from time to time draws attention to the display, seeking verification, reviewing the flow of thinking, and inviting reinterpretation and repatterning of the map itself.

During this Compendium session, one of the facilitators asks: “Can any of the VE images previously selected contribute something important to the present conversation?” Inevitably a number of images do in fact have such resonance for

the group, and the digital thumbnails of the images are mapped into the display (Figure 3). Further dialogue leads to further integration of the images into the hypertext (now more properly “hypermedia”) display. A map, using previously recorded elements, is created for the purpose of reframing the current thinking into a number of succinct “How-To Statements.” Participants then cluster these into affinity groups of focal problems that the group wants to tackle, coupled to evocative images for each cluster (Figure 3).

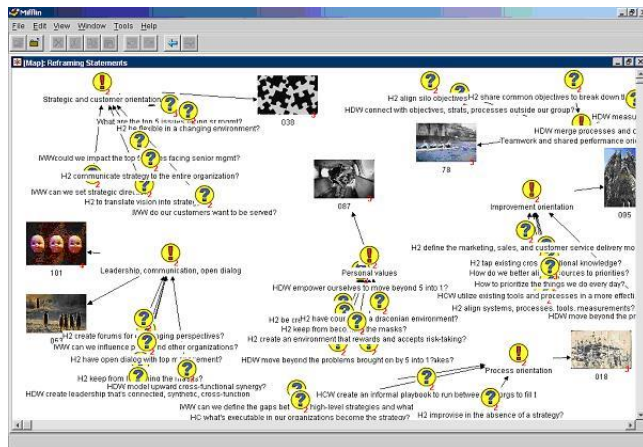


Figure 3: Compendium with Visual Explorer Images Showing the Map of Challenge Reframing and Clustering

On the second day one of the senior executives of the division joins the group, listens, contributes, and offers guidance. A cleaned-up version of the map is used to seed this conversation, and a new version includes the executive’s input (Figure 4).

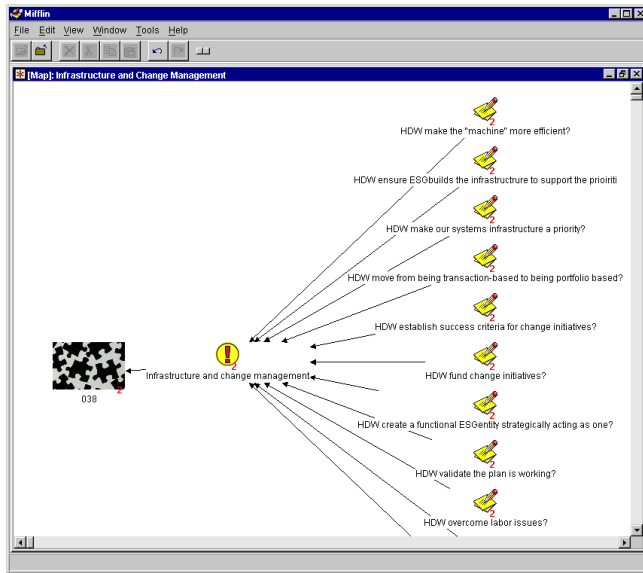


Figure 4: Map for Dialogue with Executive

By capturing the discussion, sense making and analysis in Compendium, the thinking of the group is made explicit. This artful product of the group is available for subsequent reuse, both by the same group at later times and by other groups. Indeed, one of the Verizon groups examined the knowledge art generated by an earlier group in order to understand what work had been done already and avoid ‘re-inventing the wheel.’ Compendium re-use mechanisms and examples are provided in greater detail in [7].

KNOWLEDGE ART

In trying to define knowledge art we are motivated by observations made during the FSCC program. The artistic aspect transforms what is otherwise formulaic, reductive, or hyper-rational into a creative, synthetic process resembling art making. Following are several facets of this artistry, similar in many ways to previously identified competencies supportive of leadership in the face of complex challenges [5].

The VE images, whether on paper or in the Compendium display, encourage the use of *metaphors* for exploring the challenge. Sense-making takes on the character of *serious play*, in which participants playfully entertain possible meanings, connections, and combinations. The images and metaphors often lend themselves to humor; or, to a kind of back-and-forth game; or, to stories and other forms of narrative. Representations of meaning are subject to what Gombrich calls *making and matching* and *crafting* [3]; contrasted with simple repetition of stock symbols, clichés and formulas. Ideas are morphed into other

ideas, with an intention of “getting it right”—a notion which includes good-form (even beauty) as well as truth. The availability of *multiple media*—words and images in paper and digital form—and robust *tools* to work with those media, supports artistic representation and shared sense making. Facilitation using a shared display can beneficially modulate the *rhythm* or *timbre* of the dialogue, by periodically slowing down for example [2]. Finally there is what might be called the *aesthetics of engagement*. Participants often find pleasure in working and playing with these media and tools. This engagement is often physical, visceral, and emotional. Handling the paper images seems important, as does standing near the projection screen, shoulder-to-shoulder, jostling and pointing, and directing the rearrangement of elements.

Hypermedia appears to add not only dimensions of persistence, reusability, and connections to other electronic documents and media, but also extends and enhances the face-to-face participation in new and promising ways.

Knowledge art suggests ways for the further development of inviting and effective hypermedia, including its use in collaborative settings.

DISCUSSION

Our work is about developing methods and tools for the creation of useful shared knowledge within and among communities of practice, especially as useful for the enactment of effective leadership. In this context, we suggest that knowledge art has four key aspects:

Tools: Mifflin (the software component of Compendium) provides a shared display for mapping text and images, as well as for storing, recalling, reusing, and remapping. In terms of knowledge art, Mifflin is a software tool that provides a shared “canvas” as well as the means for “painting” and editing on the canvas. Visual Explorer images afford handling, selection, examination, and appreciation, while the digital forms easily assimilate into digital knowledge maps for further shared construction (and storage, reuse, etc.) of knowledge.

Media: The media in this case are twofold: the digital media of the Mifflin software and thumbnail digital images, as well as the images printed on paper.

Representation: The purpose of the method is to represent knowledge in useful, flexible, creative, reusable and durable ways. In this case we are especially interested in representing complex, multi-faceted aspects of meaning as required for effective leadership. “Framing” and “reframing” is an important part of the process of representation. We observe that the standard forms of representation used within organizations are often restrictively narrow and inflexible. With knowledge art we combine collaboratively constructed, morphable representations such as the visual maps in Mifflin, and collages of images afforded by Visual Explorer.

Participatory artistry: We aspire to make knowledge art highly participatory. Although a prevalent conception of art (and leadership) centers on solo virtuoso performance, an alternative conception of art focuses on wide participation in service of everyday meaning-making. The avenue for this involves putting knowledge and art in the middle of dialogue, and providing tools and media for creative engagement.

Participants often say something like, “All well and good but how could I ever do anything like this back on the job?” One answer is that we expect most of our participants will not much change behavior in this way, as the result of a short program. Good enough that they got fresh insights on their complex challenge from their colleagues in two intense days of work. Good enough that they practiced some skills of dialogue, such as perspective taking.

A scientist with an entrepreneurial bent offered another kind of response: “It’s up to us to invent our own ways of working better using visuals and images. Working this way gives me some ideas. Nobody saw anything like PowerPoint ten years ago, now we all use it.” One participant told us after the program that he has developed a key presentation that he draws each time, chart by chart in front of his audience, adapting it as he sees fit. He says, “It’s fresher and more personalized this way, and more compelling for the audience. I get more of their attention this way.”

A key idea here is linking visual sensemaking and dialogue. Knowledge art works best in the as part of a process of collaborative inquiry. Visual sensemaking is a shared activity, one in which leadership inheres in the relationships rather than just the leader.

ACKNOWLEDGEMENTS

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