



Art + Science + Policy: Info-Murals Help Make Sense of Wicked Problems

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Abstract

To manage complexity in the modern world requires large-scale visual language diagrams that are called “information murals.” These murals present the science involved in major global and local issues; describe the policies that may respond to these challenges; and integrate the communication using the arts of diagramming and illustration on a wall-size scale. This article presents numerous examples from business, international task force and government projects. It also describes how information murals can help analytic and decision-making groups accomplish their missions. The author suggests that information murals are the best way to address the difficult, messy and massively wicked problems that decision-makers face every day. He shows some education and training possibilities of the murals and also suggests that the information murals can emerge at times as a new aesthetic genre for the world of fine art.

1. The Problems we Face

Managing meaning in the modern world is difficult. Context is unwieldy. Complexity is growing harder. Uncertainty is more uncertain. Inability to trust incoming information is very difficult with more and more disinformation. Analyzing large systems is deep and highly time-consuming. Comprehending wholeness, interactions and relationships will always be difficult if not close to impossible. Integrating art, science, and policy is overwhelming. Analyzing and synthesizing social messes is, well, messy. Wicked problems are indeed wicked.

2. The Challenge of our Information Environment

Finding a shared sense of meaning has grown exponentially challenging. Despite the benefits of the internet, our information environment has become more overloaded and fragmented. Our thought bubbles grow tighter around us. We search for ways to “see” the bigger picture without losing sight of the details. We increasingly want multiple views of the issues and situations we face. Our academic silos are getting thicker walls. Our cognitive abilities crumble before these rapidly changing challenges.

3. One New Resource: The Information Mural

In this article, I want to describe an evolving human capability that is beginning to help us address some of these issues.

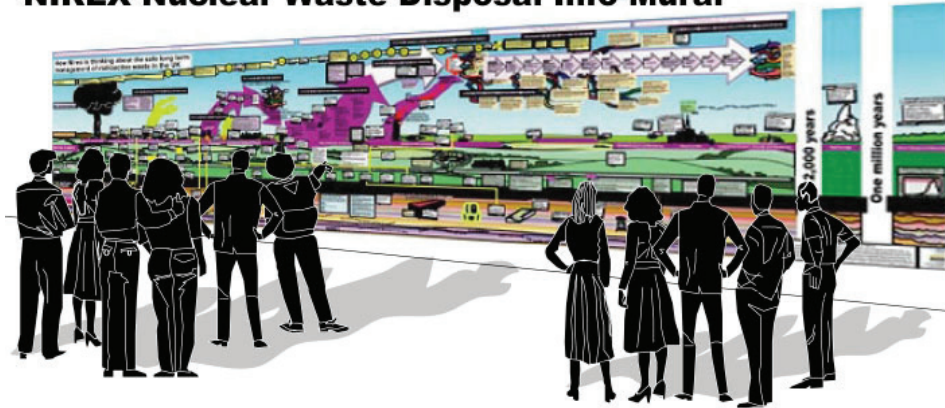
I have been one of a loose collection of scientists-artists who have been using “information murals” to address the messy policy complexity of the modern world. We make use of the tools and ideas of art to explicate and make accessible the dynamics of where science and policy meet. Our info-murals are increasing humanity’s ability to help our minds handle the scale and scope of these daunting issues.

These information murals are, of course, related to the immense creativity of a visual language and information design of recent years. What singles out the information murals as a separate movement is the tackling of huge phenomena with extraordinary research and representation of both the big picture and detail.

4. Example of an Information Mural

First, an example. Our info-murals are often 5 feet by 15 feet in size. Here is an example of an info-mural done for the UK agency in charge of nuclear waste disposal in 2004.

Strategy and Context **NIREX Nuclear Waste Disposal Info-Mural**



When giving us the task of analyzing and displaying the UK’s radioactive waste policy, the managing director said: “I have a group of 60 scientists and administrators all over the county drilling holes and trying to figure out the chemistry and geology. And we have a blue-ribbon commission coming to evaluate us next year. We are not aligned as an organization. I want you to do your thing and show us how you think we think.”

5. What is going on in the NIREX Mural?

The NIREX info-mural timeline is organized left to right in three large sections:

- The history of the nuclear age from the standpoint of radioactive waste
- The current decision-making environment of the UK agency

- The future plans and consequences of the plans for managing the radioactive waste, *stretching out one million years* into the future when a high-level radioactive waste gets back to background levels

It contains approximately 400 text elements and approximately 100 major visual elements and many more minor ones.

Along the timeline, we also used a physical metaphor of the sky, ground level for events, and a series of deeper “below the ground” levels that included:

- The waste and its dangers
- The science and technology about the waste
- The events in the social climate about radioactivity and the waste
- The UK’s governance plans and actions about the waste
- The ethics of dealing with the waste
- The mythosphere, that is the fears, concerns, and feelings—conscious and unconscious—that people have about radioactivity and radioactive waste.

6. Different Ways of Viewing and Using Info-murals

One of the major settings for the use of information murals is in committee and group meetings that are addressing the kinds of problems mentioned in the first paragraph of this article. Sometimes the walls of the meeting room/conference room surrounded the group with different information murals representing different views of the issue being discussed or decided upon.

Part of the design put into some of our info-murals is a challenge (and opportunity) for the viewer or user (actually a “viewser”) to connect elements and patterns into new relationships, new ideas, new understandings. The mural design is, thus, an invitation to participate, rather than to passively accept.

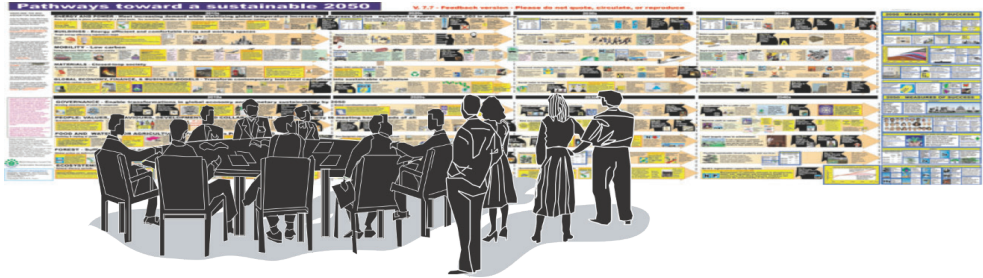
7. The Vision 2050 Challenge

In 2008, the World Business Council for Sustainable Development (WBCSD) organized a task force composed of senior strategists from 29 major companies that spent 18 months developing the *70 measures of success* for global sustainability and backcasting the more than *350 milestones* needed to get us there. These milestones were focused on 10 tracks (energy, transportation, buildings, materials, economy, governance, forests, agriculture, people, and ecosystems) decade by decade over the next 40 years. The pathways include 40 or so “big risks” to the achievement of the measures of success.

8. The Must-haves in a Nobody-in-charge World

Most importantly, the task force identified more than 40 “must-haves”—milestones that are “required to be on track in the first decade” for a sustainable 2050—and which must be accomplished within very tight time frames. Each of these “must-haves” was roughly

equivalent in scale and scope to a project to go to the moon and come back, and they must be accomplished in a nobody-in-charge world.



The Vision 2050 info-mural is approximately 4 x 15 feet in size.

While the individual pathways are organized along a time scale, you can easily make connections between events on different pathways. This mural has been displayed in the atrium lobby of the World Trade Center in Amsterdam as well as in the board room at the Weyerhaeuser company, to give just two examples of its widespread use.

9. Built for Learning, not usual Museum and Gallery Behavior

It has been the habit of many of us visiting a museum to glance briefly at a painting or a photo—and expect to comprehend it instantly. Just the opposite is expected with info-murals. Often, art is seen as a concentrated simplification of emotion and opinion, and expression. To portray the complexity of meaning in today’s world, our work is just the opposite. When we tightly integrate a multitude of words and visual elements at different levels of detail and pattern, we have to change your expectations for interacting with these patterns. “Viewsing” is much more like reading a special analytic report rather than glancing at artworks.

10. Pioneers of Info-murals

The modern history of information murals began in the 1970s with the experiments and explorations described in Bob McKim’s book *Experiences in Visual Thinking*. The approach of information murals has evolved over the past 40 years by a group of artists—led by David Sibbet, Jim Channon, Steve Harrold, and others. Usually working within organizations, we have developed a variety of ways of integrating vital institutional knowledge by means of new styles and new compositional methods.

11. Experience at Boeing

In the 1980s and 90s, Boeing employed Steve Harrold, a full-time muralist for 20-plus years. Why would a huge US corporation hire a full-time muralist?

In the last few decades, Boeing has had as many as 180,000-230,000 employees. If you consider the complexities of companies’ relationship between their past, present, and future and the large size of the group of employees they must communicate with, it is really not

surprising that Boeing got itself an info-muralist. What is surprising, though, is that they felt that info-muraling was an important and distinct communicative device, enough so that they hired someone to do it full time.

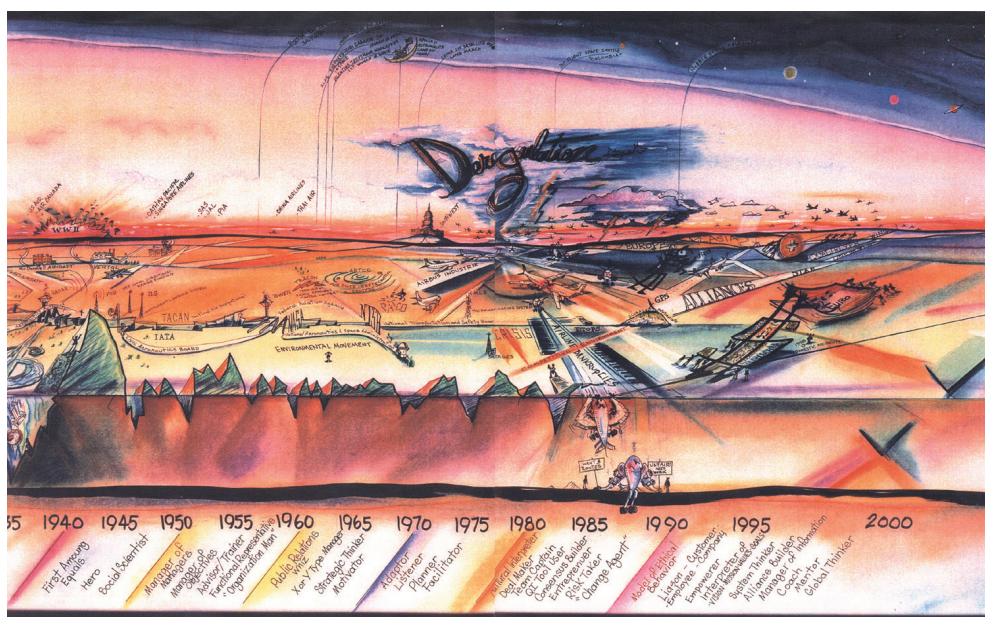
But, then, compare this situation with Renaissance Florence that had perhaps 100,000 inhabitants, and quite a few full-time muralists. You probably know the names of a few of them.

12. History of Muralists

It is not surprising that the murals have arisen to meet this demand in the corporate setting. Powerful organizations in many historical periods have sponsored muralists. Medici, Inc. and Vatican, Inc. sponsored Michelangelo and Leonardo; In the 1920s the newly socialist Mexican government gave Rivera his early employment as a muralist.

And it was relevant and important to some of the most important actions the Boeing company took. The CEO of Boeing once told Harrold that they would not have been able to complete a merger with another aircraft company without Steve's info-murals showing the complexity of integrating the two companies.

Here is part one of Steve Harrold's murals showing the history of aviation.



One of the striking aspects of this mural is the vividness that Harrold portrays: the impact of deregulation of that industry on Boeing with a massive purple tornado incorporating the word “deregulation” as part of the timeline structure of the mural. It shows how powerful government actions were on the airline industry in a way that was rarely conveyed in the many articles and books on the topic.

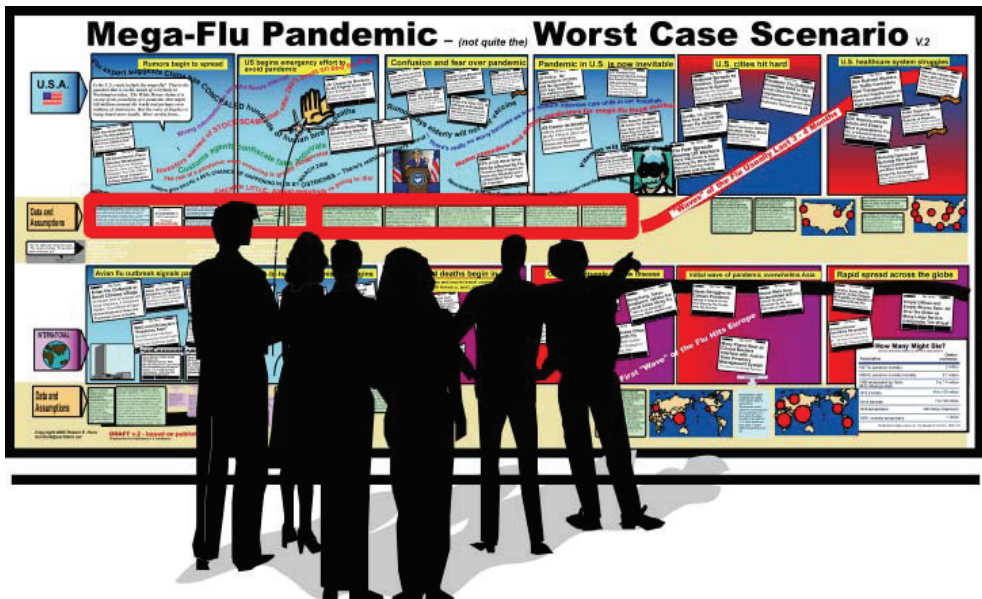
13. Largest Commissions by International Task Forces & Corporations

Most of the commissions for the info-muralists have come from large multinational companies, NGO taskforces, and government agencies. Many of the murals are displayed in public places around an organization to help provide alignment of focus, implementation of strategy, and continuous recognition of organizational goals and requirements.

The common theme of all these works, and many others, is to bring function, impact, pooled knowledge, and beauty at the level that decision-makers in organizations around the world need to “see” what is in front of them.

14. Avian Flu Example

Not only business problems but also portraying the interaction of science+art in the public sphere has become an important subject for info-muralists. When the Avian Flu (H5N1) was emerging a decade and a half ago, epidemiologists got an emergency conference together with 40 invited experts to identify the gaps for addressing the urgent threat. I had the opportunity to provide an info-mural scenario that integrated the complexity of the issues that might be anticipated in the first year of a “Not Quite the Worst Pandemic.” It integrated a future scenario with data from the 1918 epidemic. The mural could be used to track and compare the current COVID-19 pandemic with the 1918 flu. That would create a somewhat different structure for such a new mural but would be potentially useful to epidemiologists. No one is working on that (to my knowledge). Here is about one-half of the Avian Flu mural.

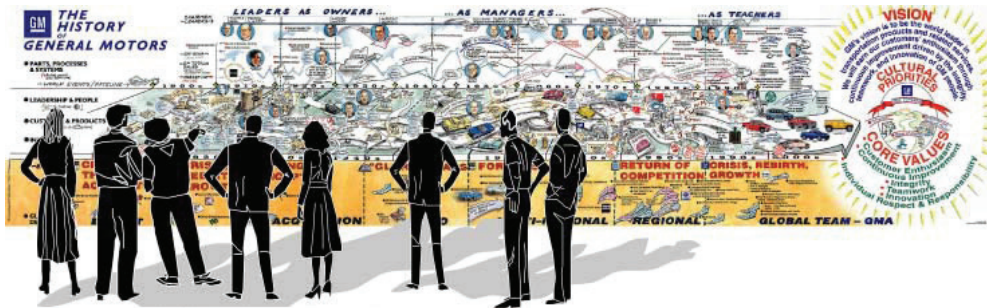


15. Sibbet and Rivera: Contrasting Views of Corporate History

In the 1930s, the chairman of Ford Motor Company commissioned Diego Rivera to create a magnificent group of murals for the Detroit Art Museum. In the 1930s times were simpler and issues were simpler. Work in factories was paramount. One sees the muscles and tremendous coordinated effort of the worker.

“Info-murals are not just another kind of “painting” but the next step beyond that category in the world of art.”

To contrast with the well-known Diego Rivera murals for Ford, David Sibbet was commissioned, seven decades later, to create an info-mural of the history of General Motors by its then Chairman. Today, our info-murals are radically different stylistically from those of Rivera. They require more words and sentences, because of the complexity and systems dynamics, and of globalization and technology. The principal difference between Rivera and Sibbet addressing some of the same issues is the incorporation of many more concepts and nuances in Sibbet’s contemporary info-mural. This is necessary because of the abstractness, complexity, and need to show intricate multi-level dynamics and interconnections in the systems of the modern world.



16. Rather Expensive and Research-intensive

The information murals have emerged in part because of the immense size of the problems and phenomena they represent. For individual artists or groups of scientists, policymakers, strategists, and artists to create them takes quite a bit of time. All this coming together makes their commissions relatively expensive and difficult. It involves putting together a committee, the project.

17. Too large for Zoom and Laptop Screens

In an era of Zoom meetings, the information murals must be layered for smaller screen

sizes and, thus, lose some of their effectiveness when their sizes are reduced. I believe, however, we will emerge from this pandemic and the use of murals in decision rooms will become routine. Participation by groups in person is more effective for these mega-masses.

18. Computer-based Murals Necessary for Revisions

As one might expect nearly all of the scientists-artists do their murals work on the computer. Indeed the computer is essential for updating because, in the activity of researching and creating them, many successive drafts are required. Some of the projects described in this article took months to research and coordinate committee work. One took over a year as part of a larger strategic process.

19. What is the Future of Computer Housed Info-murals?

We can look forward to decision rooms and seminar rooms that might look like the one that is pictured below at the University of Illinois, Chicago, where I gave a lecture in 2013 to a group using a computer-driven screen that was 26 feet long and 6 feet high. I stored 20 or more of my murals as small-size icons on the left side of the screen and clicked to enlarge them instantaneously across the entire screen. And the students could modify the murals on the screen from their laptops.



20. The Future of bringing Art, Policy, and Science Together

Where is this headed? The use of info-murals will continue to grow as we try to address the messes and wicked problems I alluded to at the beginning of this article.

And they are beginning to reach into the larger art world. Hans Ulrich Obrist, Director of the Serpentine Galleries, a major London museum for contemporary art, says we need artists to: “develop radical new strategies... to address ... the most important issues of our time... such as the “disappearances of species, languages, whole cultures.”” Obrist calls these issues as “urgent.”

Artists have been doing this for a long time. Egyptian murals depict the geopolitical battles of the era. Picasso’s magnificent *Guernica* portrays the horror of the Spanish civil war. “Painting has always served as a kind of laboratory for innovative ways of looking at the

world, from the perspectival experiments of Alberti all the way to Impressionism, cubism, Surrealism, abstraction, Minimalism, et cetera. Painters often saw themselves as an advance guard, pushing a kind of investigation forward in new terrain,” says Obrist. As we have seen, info-murals are not just another kind of “painting” but the next step beyond that category in the world of art.

“We need artists to “develop radical new strategies” for knowledge pooling. Info-murals are a step in that direction, combining as they do, complex image and text integrations within new aesthetic sensibilities.”

21. Will these Info-murals reach Museum Status?

Obrist has stated, “Art is also a means of pooling knowledge, and it is, like literature, news that stays news...If we are to develop new strategies to address one of the most important issues of our time, then it is urgent now that we go beyond the fear of pooling knowledge between disciplines. If we do not pool knowledge, then the news is just news: each new year will bring reports of another dead language, another species lost.” In many ways, info-murals meet these criteria.

22. Info-mural in the Museum of Contemporary Art in New York

Info-murals do not replace any of the many delightful neighborhoods of the art world. Rather, different times demand different innovations from art if it is to continue to provide immense energy and impact to the contemporary art lover.

The first major commission of the new info-murals genre came in 2007 when architect Jeffrey Inaba was asked to transform a long hallway in the New Museum of Contemporary Art in New York City. The museum website described his use of “a radical approach to research and design to make opaque information come alive... a graphic environment that identifies and quantifies public and private philanthropy around the world. The presentation is based on research on dozens of organizations—from sports, media, politics, education, religion, finance, paramilitary, and non-governmental organizations—and tracks the amounts of money various organizations donate to culture.”

23. Art must Engage with the World

Neal Benezra, director of the San Francisco Museum of Modern Art, when asked by a local media, if museums were to provide a respite from the uncertainty and anxiety associated with today’s world, replied: “It is a fraught time, there’s no question about it. On the one hand, we want to provide a respite. But on the other hand, we also want to be engaged in the world. If we are just a respite, then we’re absenting ourselves from the debate out there. I

think when we're really good, we've got to engage with the issues that are concerning people today. If we can achieve that, I think we have done something pretty special."

Already there are many different approaches and styles to the creation of information murals. As Obrist says, we need artists to "develop radical new strategies" for knowledge pooling. Info-murals are a step in that direction, combining as they do, complex image and text integrations within new aesthetic sensibilities.

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Notes

1. I want to emphasize that I think of information murals as just one of the many kinds of artistic expression. They have specific purposes that are quite different from many of the kinds of artistic expression we find in museum galleries and shows that it will not replace.
2. **Graphic notes in real-time.** I also note that there are several hundred artists who will create visual recordings on the wall that have the same large dimensions information murals. They do it in real-time as groups are discussing problems. This "graphic recording" (or scribing) is a different kind of use of visual tools in mural-like size. These graphic notes done on-the-fly in real-time help groups see the patterns that they are discussing and preserve the meaning in ways that are different from normal note-taking with words on paper. These graphic notes usually do not contain the depth of data or careful patterning that appear in the info-murals based on offline research and analysis but are a clearly related artistic activity.
3. **History of sources and influences.** The sources and influences of previous visual, graphic, and information design art upon the individual info-muralists are a bit murky, but each of these fields undoubtedly contributed to the context in which these information murals developed. I do not have sufficient detailed information about many of the information muralists to attribute direct influence. I was certainly influenced by the information design field (McKim, 1972; Wurman 1997; Horn, 1999; Jacobson, 1999) and most strongly by Sibbet (Sibbet. 1980).
4. **Acknowledgements.** I thank Michael Marien for important suggestions for this article and David Sibbet and Floor Kist for our many discussions over the years.
5. **PDFs available.** Nearly all of the info-murals presented in this article and others are available as PDFs from www.bobhorn.us

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