Science Communication
A Visual Perspective

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Why?
Why think about design?
Why think about design?

Design matters.
**OFFICIAL BALLOT, GENERAL ELECTION**
**Palm Beach County, Florida**
**November 7, 2000**

<table>
<thead>
<tr>
<th>(REPUBLICAN)</th>
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</thead>
<tbody>
<tr>
<td>George W. Bush - President</td>
<td>3</td>
</tr>
<tr>
<td>Dick Cheney - Vice President</td>
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<table>
<thead>
<tr>
<th>(DEMOCRATIC)</th>
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<tbody>
<tr>
<td>Al Gore - President</td>
<td>5</td>
</tr>
<tr>
<td>Joe Lieberman - Vice President</td>
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<table>
<thead>
<tr>
<th>(LIBERTARIAN)</th>
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<tbody>
<tr>
<td>Harry Browne - President</td>
<td>7</td>
</tr>
<tr>
<td>Art Olivier - Vice President</td>
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<table>
<thead>
<tr>
<th>(GREEN)</th>
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<tbody>
<tr>
<td>Ralph Nader - President</td>
<td>9</td>
</tr>
<tr>
<td>Winona LaDuke - Vice President</td>
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<table>
<thead>
<tr>
<th>(SOCIALIST WORKERS)</th>
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<tbody>
<tr>
<td>James Harris - President</td>
<td>11</td>
</tr>
<tr>
<td>Margaret Trowe - Vice President</td>
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<table>
<thead>
<tr>
<th>(NATURAL LAW)</th>
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<tbody>
<tr>
<td>John Hagelin - President</td>
<td>13</td>
</tr>
<tr>
<td>Nat Goldhaber - Vice President</td>
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<table>
<thead>
<tr>
<th>(REFORM)</th>
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</thead>
<tbody>
<tr>
<td>Pat Buchanan - President</td>
<td>4</td>
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<tr>
<td>Ezola Foster - Vice President</td>
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<table>
<thead>
<tr>
<th>(SOCIALIST)</th>
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</thead>
<tbody>
<tr>
<td>David McReynolds - President</td>
<td>6</td>
</tr>
<tr>
<td>Mary Cal Hollis - Vice President</td>
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<table>
<thead>
<tr>
<th>(CONSTITUTION)</th>
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</thead>
<tbody>
<tr>
<td>Howard Phillips - President</td>
<td>8</td>
</tr>
<tr>
<td>J. Curtis Frazier - Vice President</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>(WORKERS WORLD)</th>
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<tbody>
<tr>
<td>Monica Moorehead - President</td>
<td>10</td>
</tr>
<tr>
<td>Gloria LaRiva - Vice President</td>
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</tbody>
</table>

**Write-in Candidate**
To vote for a write-in candidate, follow the directions on the long stub of your ballot card.
Why think about design?
Design communicates.
Why think about design?
Design communicates.
Design engages.
The paradox of effective design
The paradox of effective design

“Pay no attention to that man behind the curtain!”
Okay, where to begin?
Okay, where to begin?

“What is my message?”

“Who is my audience?”
A far from comprehensive look at nuts-and-bolts best practices
A far from comprehensive look at nuts-and-bolts best practices or

Just because you can, doesn’t mean you should.
CLEVELAND HEIGHTS, OH—The aesthetic judgment of Paul Gaskill, a graphic designer working on a brochure for Valley View Apartments, was "severely clouded" by a desire to use a new Adobe Photoshop plug-in, coworkers at Blue Moon Design said Monday.

"Looking at this brochure, it's obvious Paul just wanted to use the 'wave' frame effect from that new PhotoFrame 2.0 software package we got last week," fellow Blue Moon graphic designer Jared Mahaffey said. "There's whacked-out, psychedelic edges all over the place—on the photos, on the floor-plan charts, even on the text boxes, for God's sake."

Photoshop plug-in enthusiast Paul Gaskill.
Typography

Don’t outline text or use Comic Sans or Papyrus.

And limit your typefaces.
Typography

One or two spaces after a period?
Typography

This is an example of monospaced type.

This is an example of variable-width type.
Once upon a time, most text was typed on typewriters with monospaced characters. It made sense then to have double spaces after a period. It was necessary for readability.

Modern word processing has changed matters. A single space after a period is now correct and appropriate. Double spaces are too much, and actually hinder readability.
Yael shakes her fist at NSF and machine readers.
If possible, a good rule of thumb is **65 characters per line** (including spaces).

Science communication is part of a scientist’s everyday life, and in order to be an effective scientist, one must be an effective communicator. Scientists must give talks, write papers and proposals, communicate with a variety of audiences, and educate others. In this session, we will explore the goals and objectives of effective scientific communication. Lines of text that are excessively long are difficult for the eye to follow, negatively impacting readability. How can we as funders do our part to equip our grantees with the tools and resources to become effective communicators and ambassadors for their important work?
Strive for visual cohesion.

typography
color palette
style of imagery
Introduce visual hierarchy.

READ THIS FIRST

It’s the initial bit of narrative that you’ll absorb. The eye is drawn to it by its placement, but also by the use of a prominent heading that precedes the text.

This becomes secondary, but is still emphasized. It’s not unimportant. Visual hierarchy allows for much more content to be communicated and comprehended. There are lots of ways of introducing and exploring this approach to the visual communication of any type of content.
Be conscious of rights and permissions.

Don’t be this person.

“Oh, it’s fine to use. I found it on Google.”
Word clouds
Word clouds (usually, don’t.)
Okay, what next?
Audience engagement

“This matters to me, personally!”
Consider storytelling.
Why storytelling?  
Storytelling humanizes.

And the human element is where research all begins, and where it all ends.
Can you make a connection?
Can you make a connection?
Then make a connection.
Make a connection.
Make a connection.
Make a connection.
Make a connection.
Make a connection.
Make a connection.

Science 328, 393 (2010); Nina Leen/Time Life Pictures/Getty Images
Metaphors: approachable and memorable.
Explore visual metaphor.
Explore visual metaphor.
And yes, YOU CAN.
Embrace simplicity.
Embrace simplicity.
And humor.
Embrace simplicity.
And humor.
Sometimes together.
Embrace simplicity.
And humor.
Sometimes together.

http://xkcd.com/1133/
Lots of fire comes out here.

This end should point toward the ground if you want to go to space.

If it starts pointing toward space you are having a bad problem and you will not go to space today.
Simplicity is powerful.
Simplicity is powerful. Simplify the jargon to tell the story.
Resist the urge to collage.
More is not more!
A. ramidus
A. ramidus
Apply these concepts to graphical abstracts.
Normal cell (UBB\textsuperscript{WT}) → Viable →

Ubiquitin depletion
UBC mRNA downregulation
Proteasome inhibition? DUB inhibition?

Cancer cell (UBB\textsuperscript{0}) → Synthetic lethal →

Viability threshold
High Ubiquitin levels Low
Consider the tone.
HUMAN CONFLICT

Science 336, 818 (2012); Thinkstock
Hal Mayforth
Can you create a story arc?
Or have a picture replace 1,000 words?
“Limitations” aren’t limiting.
necessary to take into consideration each peasant's individual position rather than the interests of the peasant community." Many governors of the southern provinces made the same recommendations and suggestions. In 1906, the governor of Kherson calculated that local peasants needed a minimum of 10 dekhas for each household to survive. This governor suggested granting all land as private property to the peasants. Without private land, in his opinion, the peasants had no motivation to work, and as a result they waited constantly for redistribution of communal land." The institutions of the village community that were based on peasants by the central authorities by the Emancipation undermined the traditional work ethic of the southern Russian peasants and generated social conflicts. The communal peasants on the southern frontier lived side by side with prosperous private landowners and foreign colonists. Facing dispossession, these peasants envied their prosperous neighbors. The governor of Kherson noted this dangerous trend among the local peasants. "Holding their land as public property," he wrote, "the communal peasants are dangerous neighbors for private owners, especially small landowners, because in all conflicting situations the former peasants are inclined to solve these conflicts by appealing to their communal law. In general, communal landholding weakens the nation [chavros] of property in a peasant society with each new generation." These negative results of the agrarian reforms in the southern provinces were aggravated by geographical mobility and confusion in social relations among migrant peasants. These uprooted peasants from central Russian and Ukrainian provinces with their "displaced" identities had problems adjusting to the cultural rules of the rural rural groups in the South. Southern rural society had lost the traditional symbolic code that had been understandable to these "displaced" peasants.

By the end of the nineteenth century, impoverished and culturally disoriented peasants living on the brink of physical survival were ready to react violently against any "cultural alien" who looked threatening—whether a prosperous landlord, a colonist, or a Jew. The governor of Eletskirensis reported to the tsar in 1901. "The peasants’ landlessness has become a common phenomenon in the province. When there was a landlord's property close to a village, the worsening of social relations did not reach a critical point; but when that property moved from a legitimate heir to either a kasak or a colonist, then the hostility between them and the peasants often became very dangerous." The desperate peasants tried to restore traditional justice in the southern countryside among all rural inhabitants. They considered unequal land distribution the main reason for their sufferings. Eventually, the peasants directed their hostility against anyone who had more land and lived better than they did._sym:* more text for show more text for show.

Revolutionary transitions from one phase of social development to another often lead to the dispossession and impoverishment of the masses. Such transitions have always resulted in social and cultural confusion, an identity crisis, and cultural disintegration. The sufferings of the transitional period also led to a search for religious meanings. The "afterlife" among the dispossessed classes. This "chiliasm of the oppressed" (according to Karl Mannheim), or "chiliasm of the defeated and hopeless" (according to E. P. Thompson) led to the organization of a religious community that could serve as a substitute for the older social patterns of living destroyed by the revolutionary changes. The peasants of southern Russia underwent such revolutionary changes. In their disappointment with the social conditions and the Russian Orthodox Church, they turned to dissident religious movements. According to a priest, Isaac Nederbilskis, the Russian Orthodox Church regarded dissent as a social protest. In Kherson province, the first peasant disturbances after the reform of 1861 occurred in the village of Lisomorki, where the future Strainsk movement would originate. The provincial administration sent troops to suppress the peasant riots in Lisomorki in 1862. During debates with such Orthodox missionaries as Nederbilskis, the sectarians always stressed the injustice in land distribution and the clergy’s defense of the large landlords' interests. The peasant Strains from Lisomorki, F. Greca, publicly expressed his indignation at the local landlord, the nobleman Nikolai

Chapter One

Gelektism, Emancipation, and Religious Radicafism
Consider color.
Controversy leads to a better understanding of carbon cycling through a massive pool of organic matter dissolved in Earth’s oceans.
Consider color.
And consider those who can’t.
Consider color.
And consider those who can’t.
Design accordingly, and always employ color vision deficiency simulation tools.
Adobe Creative Suite
www.colororacle.org
www.color-blindness.com/coblis-color-blindness-simulator
A parting thought: Collaborate.
Thank you!

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