Science Communication: A Visual Perspective

Yael Fitzpatrick

Monday September 30th, 2019 @ 3 PM
Why?
Why think about design?
Why think about design?

Design matters.
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!”
Accuracy matters, especially for scientific communication.
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.
Graphic Designer's Judgment Clouded By Desire To Use New Photoshop Plug-In

9/27/00 3:00pm • SEE MORE: WORKPLACE

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.
Line length

or

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.

size
font
weight
capping
color
spacing
visual texture
white space

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.
Pull quotes can be AWESOME!

(Really!)
Consideration of file types

CMYK or RGB?
JPEG? PNG? TIFF? EPS?
resolution?
Consideration of imagery

Snapshots vs. photographs
Consideration of imagery

Snapshots vs. photographs
“Where can I get great images for free?”
Be conscious of rights and permissions.

Don’t be this person.

“Oh, it’s fine to use. I found it on Google.”
And always always **ALWAYS** give credit where it is due.
Word clouds (usually, don’t.)
Okay, what next?
Audience engagement

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

The human element is where all science 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.

Eos 96, 10 (2015); EPA/Diego Azubel
Make a connection.
Make a connection.

Science 328, 777 (2010); Adam Nadel
Make a connection.
Embrace simplicity.
Embrace simplicity.
And humor.
Embrace simplicity.
And humor.
Sometimes together.
Embrace simplicity. 
And humor. 
Sometimes together.
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
Consider the tone.
HUMAN CONFLICT
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 peasants of the southern provinces made the same recommendations and suggestions. In 1908, the governor of Kherson calculated that local peasants needed a maximum of 30 deciares 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 wasted con-
siderably for redistribution of communal land."

The traditions of the village community that were based on peasants as the central authority 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 competition, 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 appeals to their communal law. In general, communal/landholding violates the notion of ownership of property to a peasant society with each new generation.”

These negative results of the agrarian reforms in the southern provinces were magnified by geographical mobility and contact in social relations among migrant peasants. These uprooted peasants from central Russian and Ukrainian provinces with their “dislocated” identities had problems adjusting to the cultural norms of the various rural groups in the South. Southern rural society had lost the traditional symbolic codes that had been understandable to those “displaced” peasants.

By the end of the nineteenth century, improvised and culturally disori-
ented peasants living on the brink of physical survival were ready to react vio-
lately against any “cultural alien” who looked threatening—whether a pros-
perous landowner, a colonist, or a Jew. The governor of Ekaterinoslav report-
ed in the fall of 1890: “The peasants’ landlessness has become a common phe-

omenon in the province. When there was a landlord’s property close to a vil-

age, the worsening of social relations did not lead to a critical point; but when that property moved from a landlord’s heir to either a kishel or a colonist, then the hostility between them and the peasants often became very danger-
ous.” 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. Occasionally, the peasants directed their hostility against anyone who had more land and lived better than they did.

Revolutionary transitions from one phase of social development to another often lead to the disintegration and impermanence of the masses. Such tran-
sitions have always resided in social and cultural confusion, an identity cri-
sis, and cultural disorientation. The sufferings of the transitional period also tend to provoke religious hopes about compensation in the "afterlife" among the dispossessed classes. This "philistine optimism of the oppressed" (accord-
ing to Karl Mannheim, a "philistine of the defeated and hopeless" (accord-
ing to E. P. Thompson) led to the establishment 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 disagreement with the social conditions and the Russian Orthodox Church, they turned to dissident religious movements. According to a priest, Ivan Nesteren’ko, the Russian Orthodox Church regarded defection as social protest. In Kherson province, the first peasant dissolutions after the reform of 1861 occurred in the village of Liakhovica, where the future Socialist movement would originate. The provincial administration sent troops to suppress the peasant riots in Liakhovica in 1862. During debates with such Orthodox missionaries as Nesteren’ko, the sectarians always stressed the injustice in land distribution and the clergy’s defense of the large landlord’s interests. The peasant Nesteren from Liakhovica, P. Gerasi, pub-
licity expressed his indignation at the local landowner, the nobleman Nikolai

Citation, Emancipation, and Religious Radicalism

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Consider color.
Dissolved Organic Matter in the Ocean Carbon Cycle

By D. A. Hansell and C. A. Carlson

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.
Design accordingly, and always employ color vision deficiency simulation tools and contrast testing to improve accessibility.

Adobe Creative Suite
www.colororacle.org
www.color-blindness.com/coblis-color-blindness-simulator
https://webaim.org-resources/contrastchecker/
Apply all of these concepts to graphical abstracts.
Metaphors: approachable and memorable.
Explore visual metaphor.
Explore visual metaphor.
And yes, YOU CAN.
Typography

How many 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 create too much space, and actually hinder readability.
A parting thought:

Collaborate.
Thank you!
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