

BUCKNELL UNIVERSITY DIGITAL SCHOLARSHIP CONFERENCE 2018

Graphicacy


How fluency in reading & making visualizations can
yield more inclusive reading experiences

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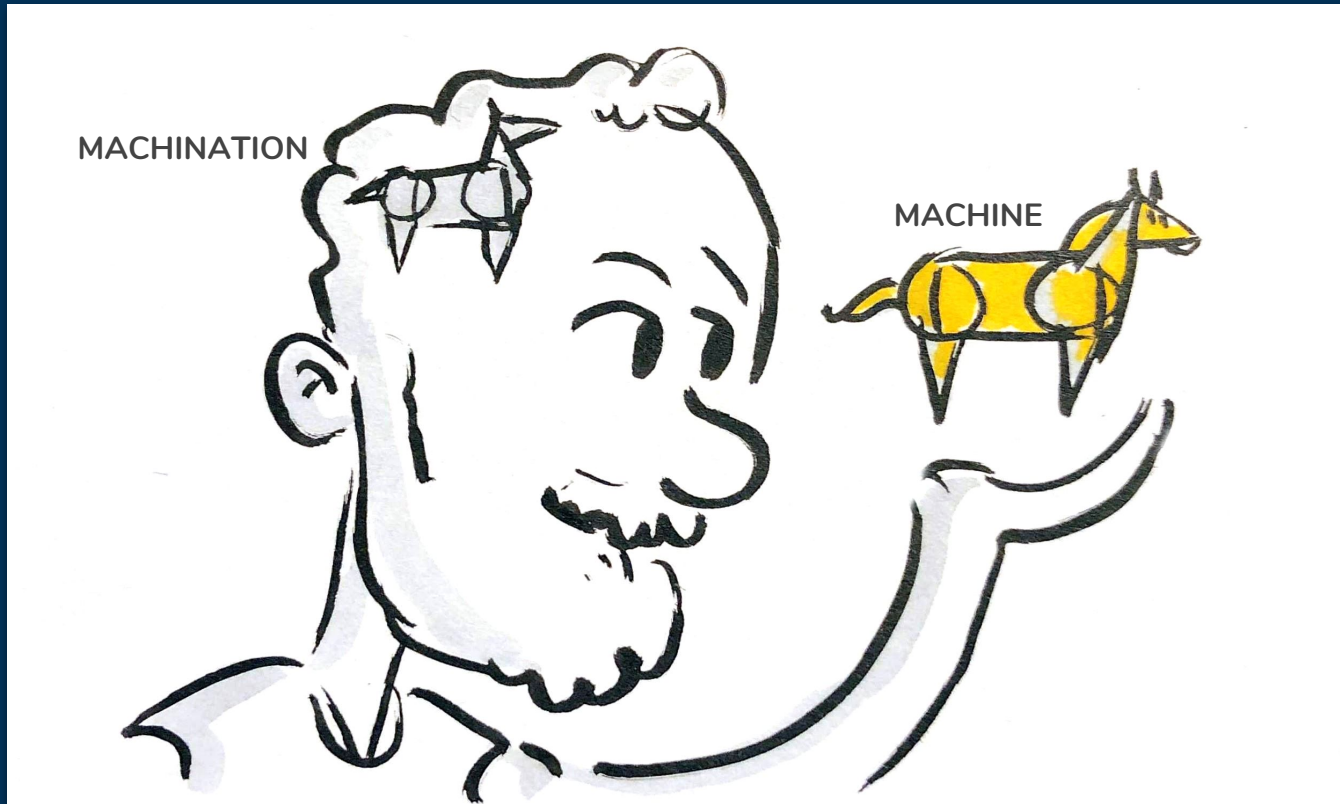
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Digital Arts, Sciences & Humanities Board



Scholars and students practice literacy, numeracy, and graphicacy in school. In this educational triumvirate, graphicacy remains the less familiar term. Graphicacy is an ability, a fluency in making and reading visualizations and charts. How might scholars working in digital media practice graphic literacy in the shaping and sharing of their work? By working with more awareness of graphic literacy, scholars can also become more inclusive. In this illustrated essay, I will describe how my work in visualizing survey data provides insight into graphic literacy. Survey data is a primary data source. These observations have the potential for meaning yet need a meaningful structure and shape. While structuring, exploring, and visualizing this survey data, diverse worldviews begin to emerge. Digital scholars can also identify when to draw upon data-driven or conceptual content. By creating interactive survey data visualizations, we can partake in more inclusive humanistic inquiries and reading experiences.



Technology had a twinned meaning in Ancient Greece.





© D. Finnin/AMNH

GEOGRAPHY

THE PEOPLE, PLACES, AND CREATURES

ANCIENT GREECE

They Might Not Be Giants

Reading the bones of a mythic race

Ancient Greeks believed in giants—mythic heroes and semihuman creatures many times bigger than ordinary folk. Atlas, the Cyclopes, and the Titans were among them, but possibly the greatest of them all was Pelops. Poets envisioned him as a handsome interloper from the east, with a shoulder blade made of ivory. After winning a rigged chariot race, Pelops was said to have founded the Olympic games as a way to honor the gods for his victory. He also reigned over Greece's southern peninsula—the Peloponnese, whose name means "Pelops's island." At the peninsula's northwest corner stood Olympia, a religious complex that was the site of the Olympic games and of a shrine that claimed a relic of the mighty giant himself—his massive, ivory-white shoulder blade. During the Trojan War, the relic was reportedly shipped to the walls of Troy, as a talisman to bring the Greeks victory.

Greek writers, from the fifth century B.C. historian Herodotus to the second-century A.D. travel writer Pausanias, chronicled sightings of other bizarre remains of giants. Immense, disarticulated skeletons appeared along

unstable shorelines, and huge, jumbled bones poked from weathered hills and cliffs.

Today most scholars shelve stories of giant bones under fiction. But Adrienne Mayor, a folklorist and historian of early science, takes the Greeks at their word. "Since the 19th century," Mayor says, "modern paleontologists have discovered rich bone beds of giant, extinct mammals in the same places the ancient Greeks reported finding the bones of heroes and giants." She thinks what the Greeks actually found were isolated fossil bones of creatures like the southern mammoth (facing page) and skeleton at middle right, a relative of the woolly mammoth. With no other way to explain the bones, the Greeks may have conceived them to be skeletal remains of giants (skeleton at near right).



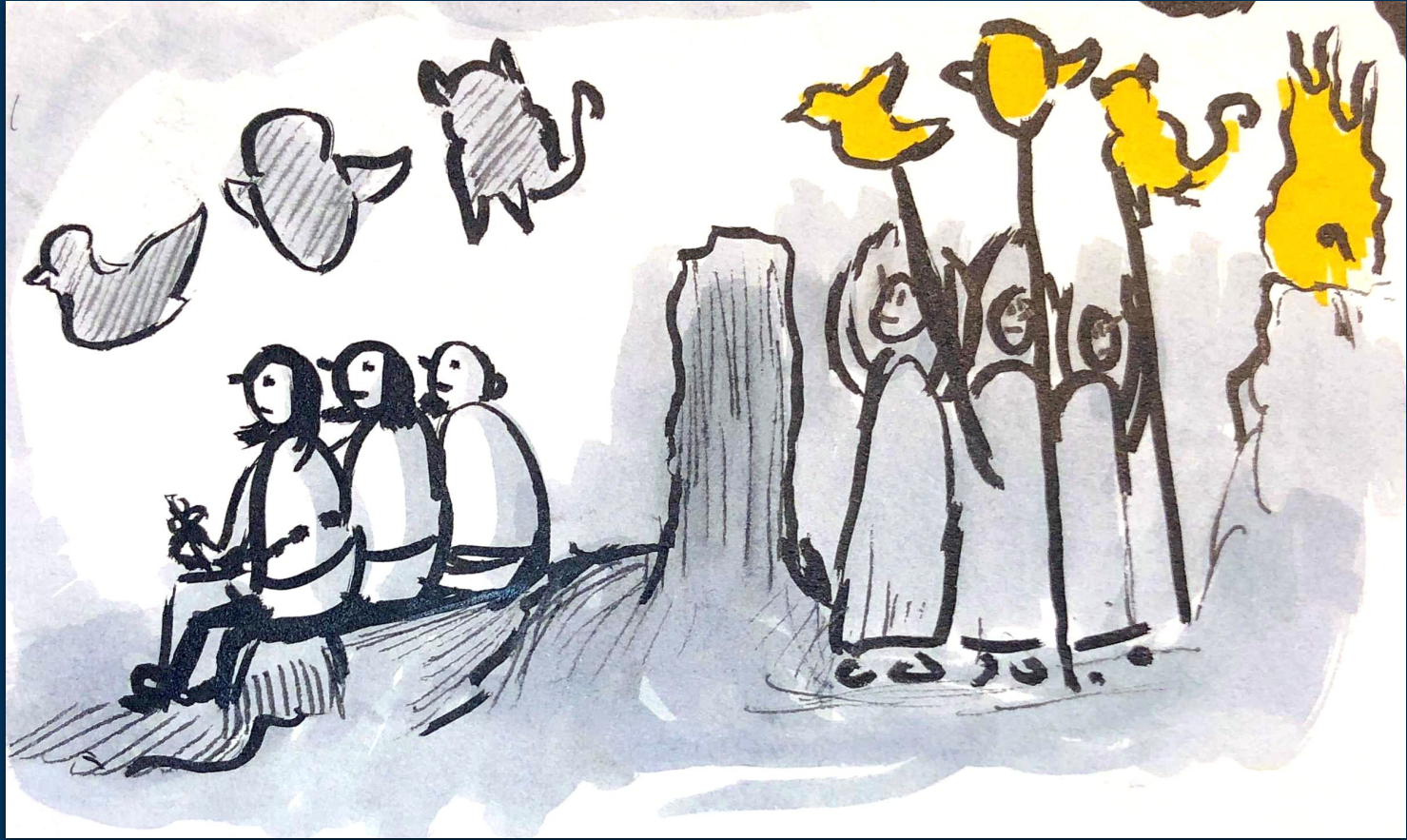
NATIONAL GEOGRAPHIC • AUGUST 2004

ART BY DENNIS HO HEINIS. SOURCE: JORDANUS WYCKE, THE FIRST Fossil Hunter

Joshua Korenblat; Kennis & Kennis







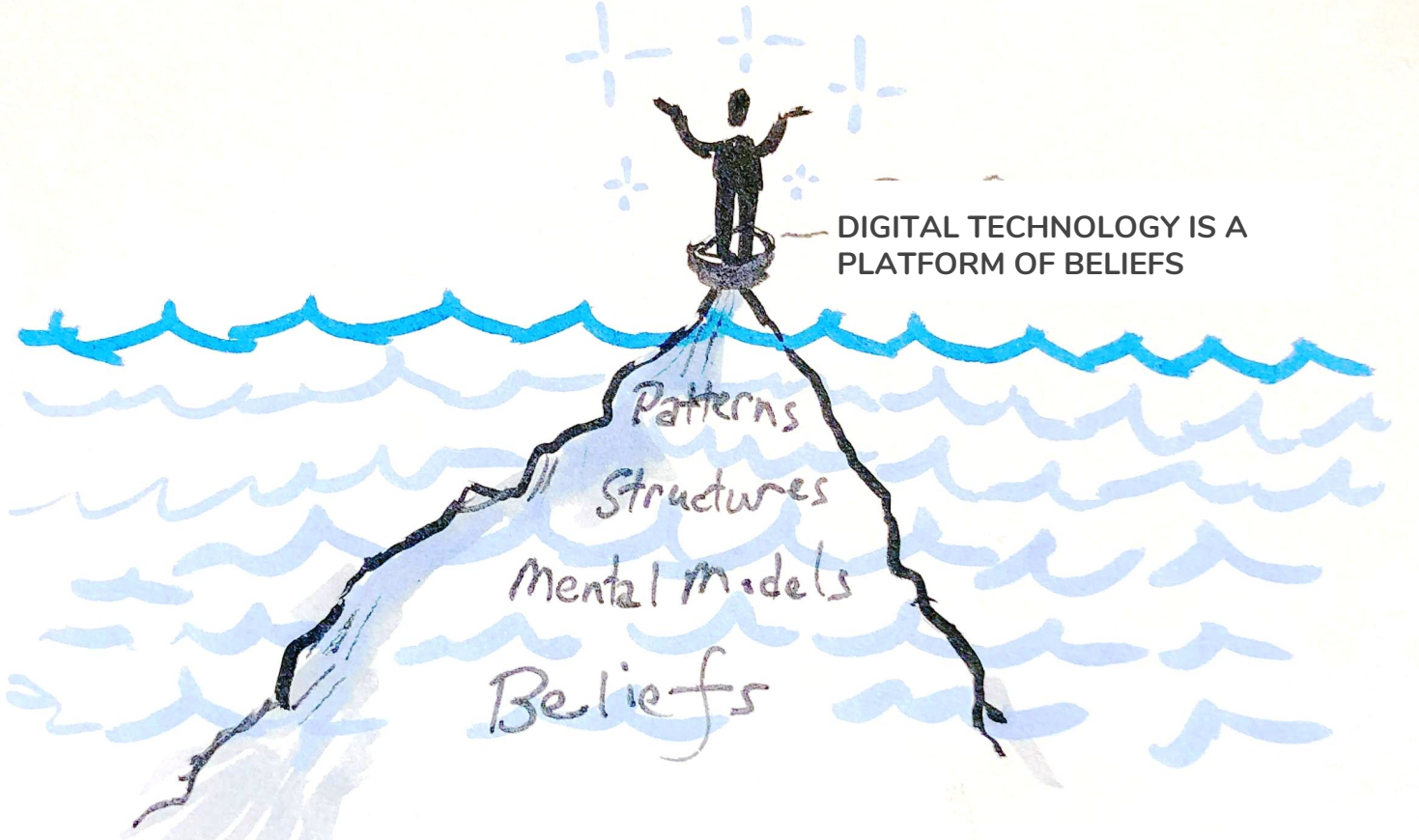


Where for the Greeks **techne** always had two complementary but never completely separable aspects—the increasingly self-aware inner originating and the outer result...We have forgotten the crafty inner origin and essence of the **techne** that once served our ancestors so well.

—Stephen Talbott, *In the Belly of the Beast*



Bend the beam of attention
back onto ourselves, the way
we devise our devices....



DIGITAL TECHNOLOGY IS A
PLATFORM OF BELIEFS

Patterns
Structures
Mental Models
Beliefs

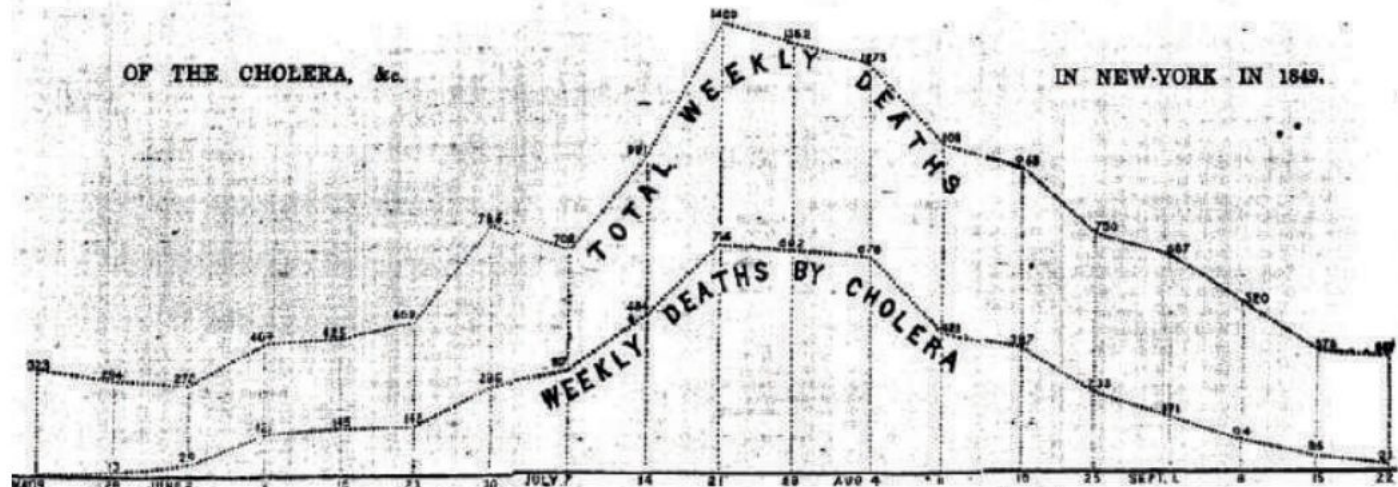


Expand the compass of
our compassion & create
onramps to ideas...



Graphicacy, the ability to read and make visualizations, data-driven and conceptual, is one practice digital humanists can use to help create more onramps to ideas.

DIAGRAM SHOWING THE RISE, PROGRESS AND DECLINE



DRAWN AND ENGRAVED EXPRESSLY FOR THE NEW-YORK TRIBUNE.

The above Diagram, or Graphic Table, (for which we are indebted to Professor BELLESMER of Union College,) represents to the eye, in a very striking manner, the rise, progress, and decline of the Cholera, and other diseases in our City, during the last four months.

Each half-inch along the bottom line represents a week. The dates are placed under each. At the end of each half-inch, or week, are upright dotted lines, whose various lengths indicate the number of deaths by Cholera, and other causes, during that week; each inch on these upright lines corresponding to 500 deaths. The numbers are placed at the top of each. The zig-zag lines, which join the ends of these lines, show, by their upward or downward slopes, whether the deaths during those weeks have increased or decreased, rapidly or slowly.

Some curious circumstances are apparent, on an inspection of this figure. We see that during the first two weeks of the Cholera, while it was increasing, as shown by

the line sloping upward, the total deaths were decreasing, as shown by the line sloping downward. This was probably caused by the great care in diet, &c. then practiced, on the first alarm. In the week ending July 7, while the Cholera line goes up the "Total deaths" line unaccountably goes down. Thence both lines go on ascending, and the corresponding number of deaths increasing, till in the week ending July 21, they reach their culminating point. Thence there is a constant and quite regular descent, excepting a sudden fall, from Aug. 4 to 11. This may have arisen from the diminution of population, consequent upon the custom of many persons to leave the city at the beginning of that month. The descent keeps on, till it brings up to our present normal condition.

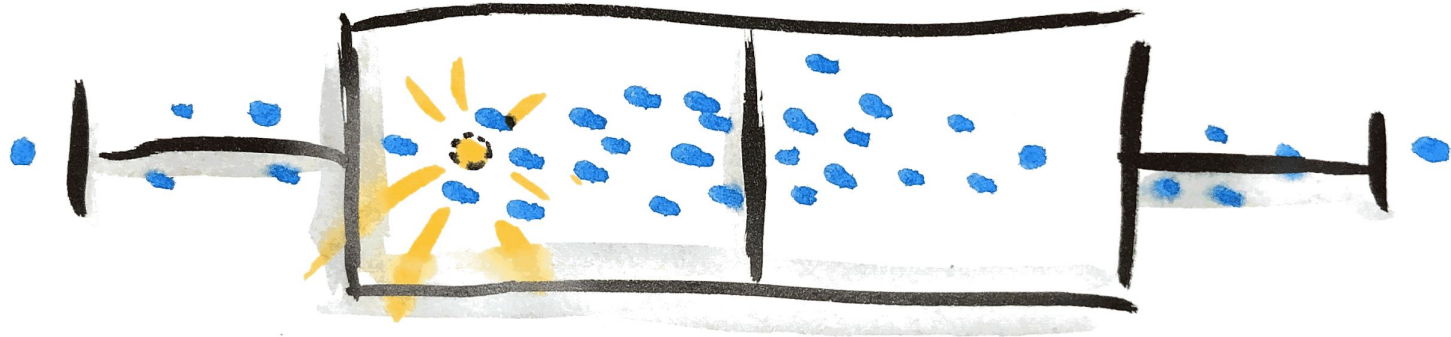
If the average temperature, moisture, electrical state, &c. during these weeks were represented in the same manner, and added to this diagram, their comparison would show at a glance whether there has been any connection between them.



BIRD				
FISH				
DONKEY				
OX				
SUN				
GRAIN				
ORCHARD				
PLOUGH				
BOOMERANG				
FOOT				

Figure 4.2

Pictorial origins of ten cuneiform signs. Note the rotation the forms underwent to accommodate production. From Gelb (1963, 70).



Numeracy began by studying patterns in nature. Over time, those observations became mathematical abstractions. Today, humanists can allow an individual data point to shine through the summarized data.

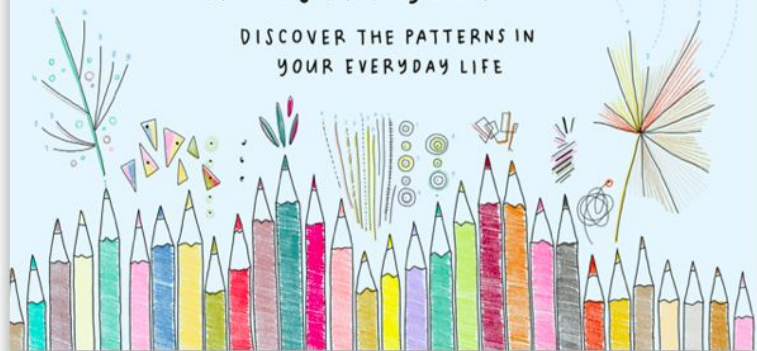
GIORGIA LUPI and STEFANIE POSAVEC

PHONES
CONVERSATIONS
GRATITUDE
TO-DO-LIST
SMILES
LOVE
DREAMS

OBSERVE, COLLECT, DRAW!

A VISUAL JOURNAL


DISCOVER THE PATTERNS IN
YOUR EVERYDAY LIFE



Getting in Sync With Me



Livi Carlen

A vertical yellow bar is positioned on the left side of the slide, extending from the top to the bottom of the text area.

Digital technology doesn't just expand our ability to access audiences because of an enhanced ease of distribution. It also allows us to imagine novel ways to engage readers. Some of the paradigms of print might carry over. Yet just as oracy, literacy, and numeracy offer diverse communicative possibilities, graphicacy affords new opportunities to create non-linear, layered reading experiences with many entry points into a story.

OCTOBER. X Month.

Wings distant Seats fo'er I may explore,
When frail Mortality shall be no more;
If aught of meek or contrite in thy Sight
Shall in me for the Realms of Bliss and Light,
Be this the Bliss of all my future Days,
To view thy Glories, and to sing thy Praise.
When the dread Hour, ordain'd of old, shall come,
Which brings on Iubborn Guilt its righteous Doom,

	Remark, days, &c.	Orif	of fet	of pl	Aspects, &c.
1	2 Moderate	6	12 5	48 1 10	If you have
2	3 and plea-	6	13 5	47 23	8 rise 3 45
3	4 Day 11 32 long.	6	14 5	46 25 5	3 with h no
4	5 fairs, but	6	15 5	45 17	Homer in your
5	6 foun turns	6	16 5	44 29 7	* rife 7 20
6	7 Days dec. 3 26	6	18 5	42 11	* M 0 3 9
7	8 16 part Trin.	6	19 5	41 23	□ h 8 Pot,
8	9 to rain,	6	20 5	40 35	Δ 3 8 have
9	10 with high	6	21 5	39 17	some in your
10	11 wind, and	6	22 5	38 29	Mouth.
11	12 cool,	6	23 5	37 11	A Pair of
12	13 6 Days dec. 3 40	6	25 5	35 23	h sets 9 33
13	14 7 then more	6	26 5	34 15	* 1 8 good
14	15 8 17 part Trin.	6	27 5	33 19 7	* rife 6 46
15	16 9 settled	6	29 5	31 11 2	3 with 8 Ea-
16	17 10 3 Day 11 h. long.	6	30 5	30 12	2 rises 12 42
17	18 4 and fair,	6	31 5	29 29	Sirius ri. 12 0
18	19 5 St. Luke.	6	32 5	28 13	3 rises 7 20
19	20 6 warm,	6	34 5	27 27	* rises 3 23
20	21 7 Days dec. 4 h.	6	35 5	25 11	□ with 11 will
21	22 8 18 part Trin.	6	37 5	23 25	drain dry an
22	23 9 K. Geo. II. cro.	6	38 5	22 39	6 0 ♀ bun-
23	24 10 and flying	6	39 5	21 24	□ in m 6 1 ♀
24	25 11 clouds,	6	40 5	20 29	* h 8 dved
25	26 12 Crispin.	6	41 5	19 23	* 0 h Tongues
26	27 13 then	6	43 5	17 37	D with 8
27	28 14 7 Days 10 32 long.	6	44 5	16 11	h, fet 8 40
28	29 15 8 Simon and Judo	6	45 5	15 2	4 Sirius ri. 11 20
29	30 16 cold rain,	6	45 5	14 17	Δ 3 8
30	31 17 and wind.	6	43 5	12 31	□ D h □ h ♀
31	32 18 4	6	49 5	11 14	11 rife 11 55

20 12

OCTOBER hath xxxi Days.

D. H.	Planets Places.	
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Full 12 4 mor.	☉ ☽ ☿ ♀ ♁ ♃ ♄ ♅ ♆ ♇ ♈ ♉ ♊ ♋ ♌ ♍ ♎ ♏ ♐ ♑ ♒ ♓ ♈ ♉ ♊ ♋ ♌ ♍ ♎ ♏ ♐ ♑ ♒ ♓	
Last Q 19 10 mor.	☉ ☽ ☿ ♀ ♁ ♃ ♄ ♅ ♆ ♇ ♈ ♉ ♊ ♋ ♌ ♍ ♎ ♏ ♐ ♑ ♒ ♓	
New 26 5 mor.	☉ ☽ ☿ ♀ ♁ ♃ ♄ ♅ ♆ ♇ ♈ ♉ ♊ ♋ ♌ ♍ ♎ ♏ ♐ ♑ ♒ ♓	
☽	12 28 Deg	12 19 1 14 4 10 11
	22 28	17 24 1 14 3 16 20 S.
	31 28	22 20 2 15 2 22 29 4
		27 14 2 15 1 28 17 N.



Of the Earth, the Sun, and the Moon, we see a small Part of her Body enlighten'd, and so on still more and more, till she comes to be in Opposition to the Sun, when we see for all that Side of her which she Sun shines upon, when we say she is full, though the Sun does not, in Reality, enlighten any more of her Body at Full than at new Moon; only her enlighten'd Side is turned towards us in the one Case, and from us in the other. This whole Matter may be made very plain to any Capacity in the same Manner as above directed with regard to the Revolution round the Sun, by carrying a small Apple or Ball to represent the Moon round the Earth, which represents the Earth, and observing how the Light of the Earth, and upon the little Ball must appear to a Fly or Beeher Insect placed upon the large one. Whenever the Moon happens to come exactly between the Earth and the Sun, she stops the Light of the Sun, and then we say, the Sun is eclips'd; and according as the Moon happens to cover a Part or the Whole of the Sun's Face, we call the Eclipse partial or total. Sometimes a total Eclipse of the Sun happens when the Moon is at her greatest Distance from the Earth (for she does not go round the Earth in an exact Circle, as neither do any of the other primary or secondary Planets round their Centers) and then, as all Objects appear smaller according to their Distance, she does not cover the whole Face of the Sun, but a Part

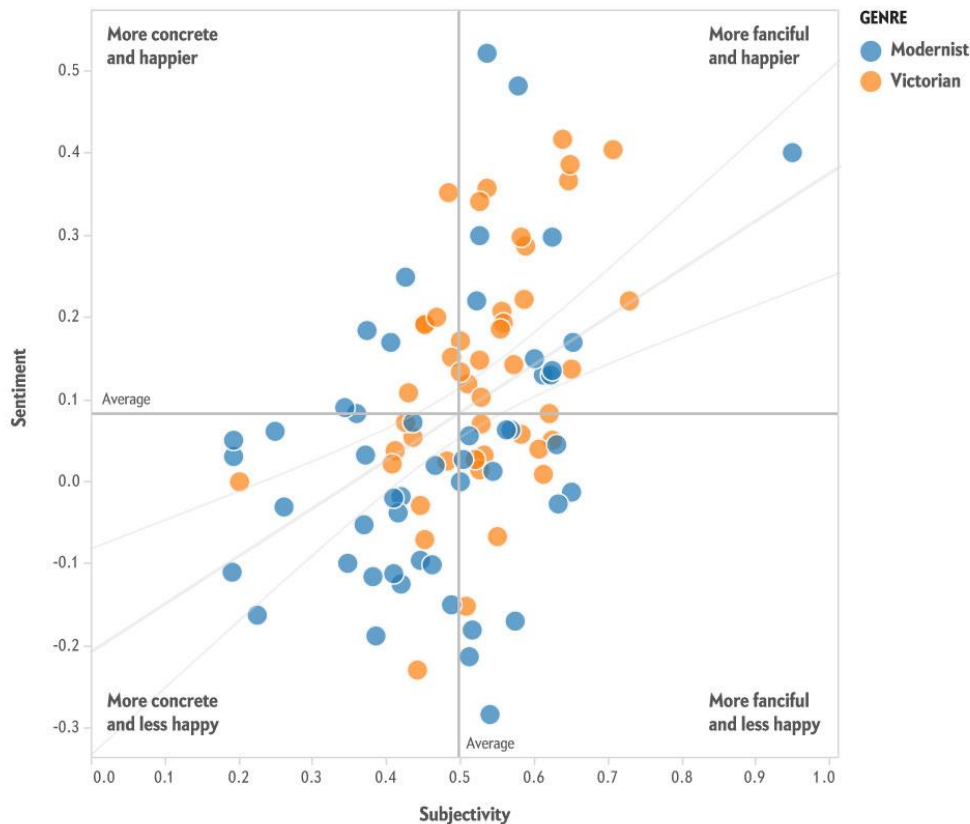
Ben Franklin's printing press exemplifies technology as a platform for the author's beliefs. Franklin experiments with novel ways of communicating.

—Scan of Poor Richard's Almanac from Gettysburg College.

How happy or sad, and how fanciful or concrete, are Victorian and Modernist poems?

This graphic shows two text files from Project Gutenberg, the **Oxford Book of English Verse** (published in 1914; using only the Victorian poets in the anthology), and **Some Imagist Poets** (1916; the Amy Lowell imagist anthology).

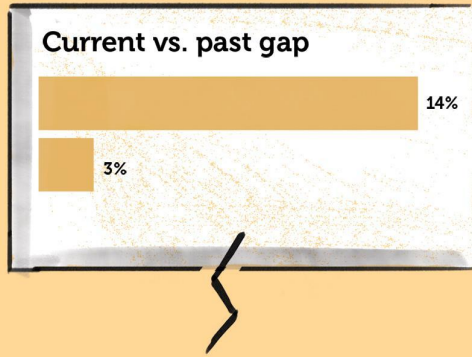
50 poems from each collection were analyzed by sentiment and subjectivity using the **Python NLTK Library**.



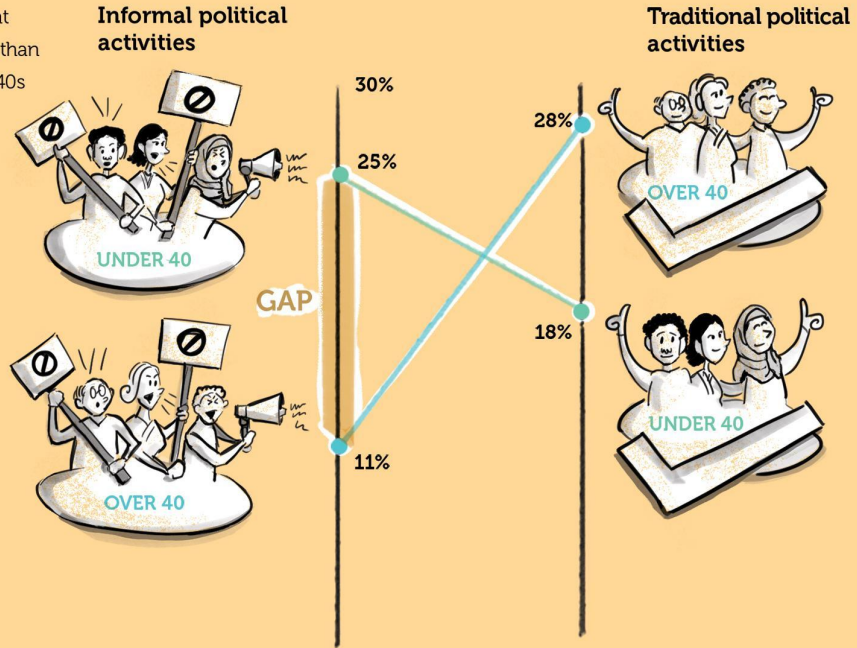
Graphicacy makes traditional scholarship more vivid & shareable. Data visualizations are more like guided conversations than stories told from the “top down.”

Growing **generation gap** in how we participate

According to the data, adults younger than 40 are 14% percent more likely to prefer informal political activity than those older than 40 – a significant increase from the early 2000s, when under-40s were only three percent more likely to protest.



SOURCE: ORB MEDIA DATA ANALYSIS, 2018



Graphicacy enhances long form reading experiences...

Design Incubation Census

A	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD
How old are you?	Publishing a book/monograph.	Journal article.	Encyclopedia entries and reviews.	Conference presentations or papers.	Fellowships.	Grant awards/funded activities.	Serving on an editorial board or advisory board.	Serving as a primary editor or as management of a scholarly publication.	Professional/contracted design work.	Interdisciplinary collaborative projects/research.	Art-based practice and exhibition.	Awards for design work.	Teaching performance.	Institutional service appointments.	Professional service appointments.
25-34	0	0	0	1	1	1	0	0	2	1	2	1	3	3	3
35-44	1	1	1	2	1	3	2	1	4	3	3	2	4		
45-54	1	1	1	1	0	2	3	0	1	1	1	1	4	3	2
55-64	2	2	1	2	3	3	1	3	1	2	3	3	2	2	2
65-74	0	0	0	0	2	2	2	2	2	2	2	2	3	3	2
75-84	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
85-94															
95-104															
105-114															
115-124															
125-134															
135-144															
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825-834															
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865-874															
875-884															
885-894															
895-904															
905-914															
915-924															
925-934															
935-944															
945-954															
955-964															
965-974															
975-984															
985-994															
995-1004															



What types of work does your institution value?

Public vs. Private: (All) | Carnegie Classifications: (Multiple values) | Track type: (All)

[What are Carnegie Classifications?](#)

Level of importance

Acceptable | Not Import... | Important | Very Impor... | Extremely I...

Responses from professors

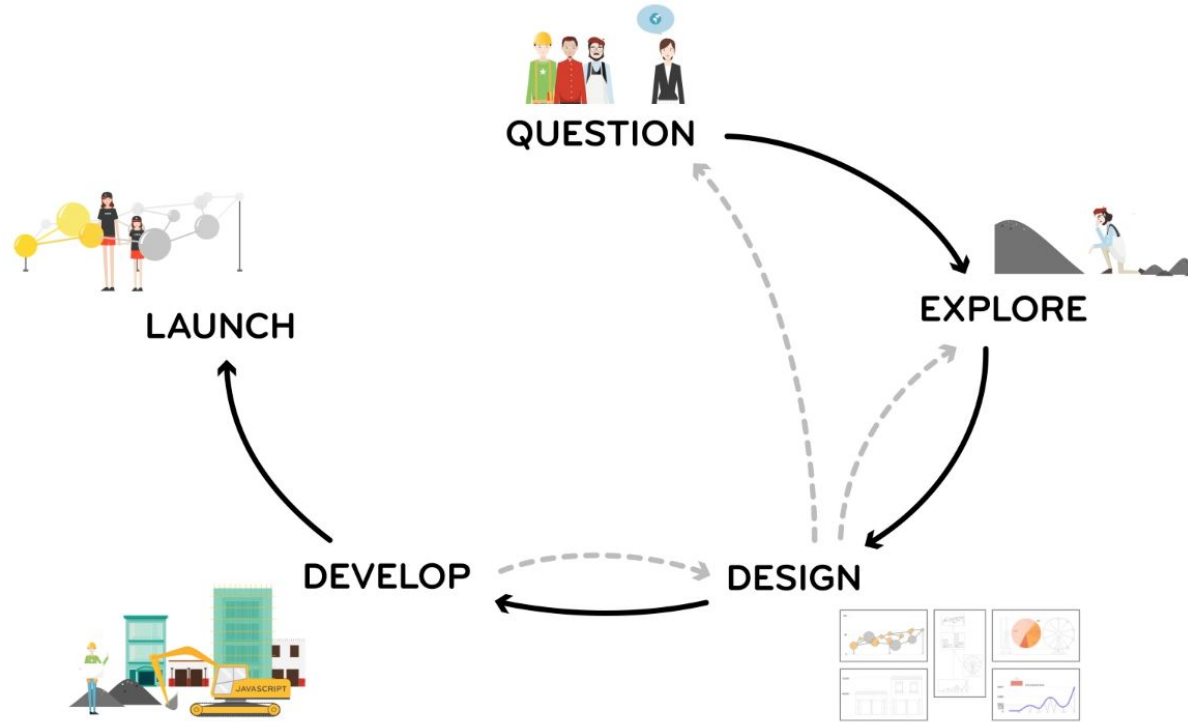
Percent who respond that this activity is important

Carnegie Classification: **Associates & Research Universities**
 Public vs Private: All
 Track type: All

Note: Tap on bars to see more information.

Teaching performance	94%	
Grant awards/funded ..	89%	
Interdisciplinary colla..	82%	
Conference presentat..	82%	
Journal article	81%	
Institutional service a..	75%	
Publishing a book/mo..	71%	
Awards for design wo..	71%	
Fellowships	68%	
Art-based practice an..	67%	
Professional service a..	63%	
Professional/contract..	62%	
Serving as a primary ..	61%	
Encyclopedia entries ..	39%	

-50% | 0% | 50% | 100%



Graphicacy as a process resembles a loop...

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Thank you!

Questions?

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