



## The New Impact of Data Visualizations

**View-Chat-Engage**

FEBRUARY 2021



## Our new future – today

We now are TALKING about data visualizations, which will define our understanding of data more than ever before

As we move into a digital transformed future we are reorienting as people and communities. We know that our digital selves are changing as every bit of technology is brought to bear to make us “experience” more. Whether it’s 5G, the next-gen iPhone, another addictive social media app, or online shopping, our digital lives often feel more efficient, but empty. Good news, there’s hope.

We are also operating in a neo-data age, where what we once called “big data,” is just data after all, or when we “pivoted” an Excel spreadsheet, it was just to impress with a crafty chart at work. Our new data age, powered by machine learning against an over-arching Artificial Intelligence framework, sets up a world controlled by algorithms of a few

controlling the lives of many. There is no nefarious intent; it is what it is. What’s evolving, however, is very cool.

### There’s a new language in town: data.

Those that can speak, code, manage, and create images of data will be the winners. Forget learning a “second language” at University, data is the new parlance of enlightened people. Those that speak at an advanced level with images or “visualizations” created from data have universal relevance to this new digitally transformed landscape. A picture may be worth a thousand words, but a data visualization has no words. You see, we communicate using visualizations for speed of understanding and a deeper impact of an image, not just words.



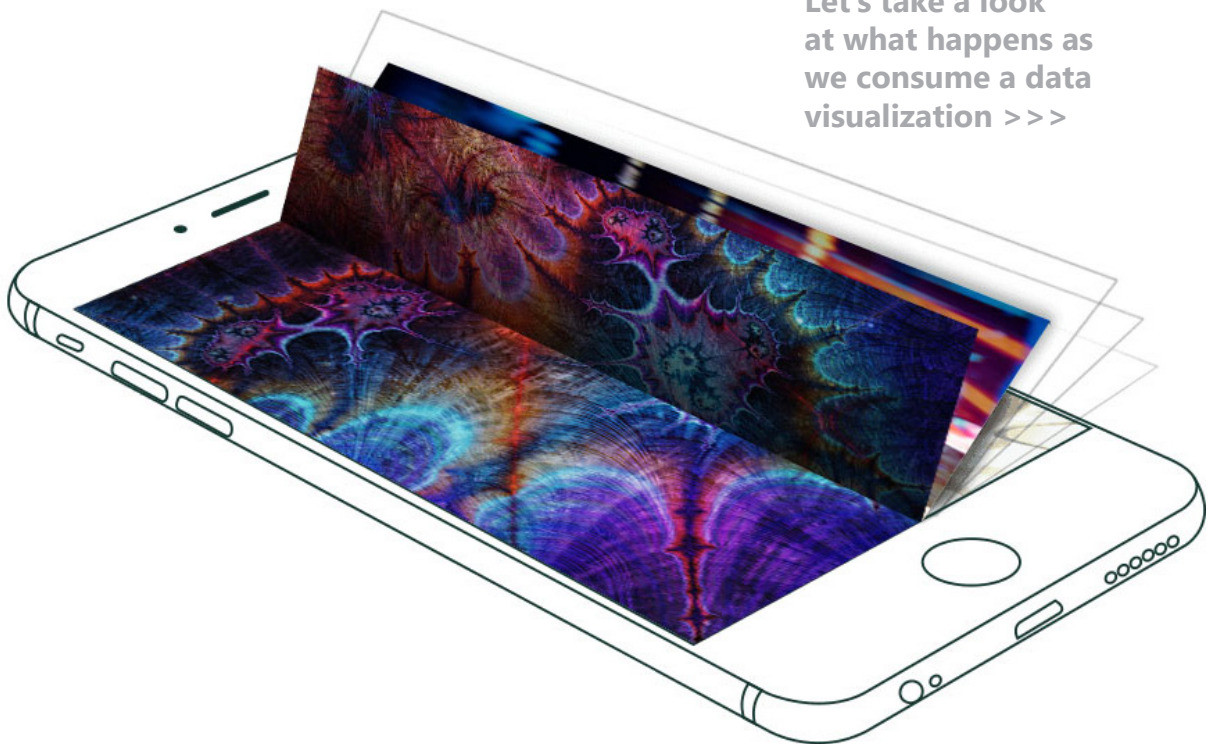
## Data troubadours

Thanks to pioneers like Tufte, Börner, Nussbaumer Knaflic, McCandless, and Yau, the field of data storytelling is well understood and continues to thrive. We are now seeing new data troubadours who are crafting the design of data stories in new ways that build on what has come before. We've left a linear world of x- and y-axis data and discovered that graphs did not really do very much; they always fell short on the context of the story. It's been said how you craft the art of the data story is where magic begins. Today, top visual designers compete with new lines, colors, and shapes to tell deeper stories and they use a beginning, middle, and ending

to create data stories by using edges and boundaries. We see new entrants as this generation's chivalry, where an understanding among data-driven humans, from all diverse perspectives, shows a new way forward. Honestly, this is our one best chance in the direction of data for good.

But as we honor this ongoing work, there is more in play and more at stake than ever before. If we believe that data storytelling is the future, then what stories will we tell and how can we listen better? Some say that we will now "listen" with our eyes, chat with our community, and engage with our hearts.

**Let's take a look  
at what happens as  
we consume a data  
visualization >>>**



## Humans are built to see



More than 80% of all the information we receive uses our visual senses. In fact, when we see an image, we process that up to 60,000 times faster than text-based information and can even make sense of things in a tenth of a second. Maybe it's because almost 40% of nerve fibers are linked to the retina. In addition, visual information is more persistent in long term memory. We have known this for years as we have studied the impact of visual information on design, learning, and meaning. Top designers also accentuate visual impact by creating clean edges, eliminating noise, and the judicious use of color – after all, we are creatures who manage edge for survival, so it pleases us to know we are still alive.

**As for data visualizations, the images we see generate a need that seeks understanding, not just information.**

That is the difference between false infographics (which are generally a disservice to real knowledge) and great data visualizations which bridge between data sets and the complex way we use our brains. For instance, the work done by the Visual Computing Group at Harvard University under Dr. Hanspeter Pfister's leadership, represents this field of study. Their studies on the information surrounding cognitive connection are leading our understanding on how to create better design and data visualizations – images that communicate under the terms of how our brains really work. Check out [VCG](#) for greater insight.

Data viz designers are schooled in these use practices and tools to create impactful data-driven imagery that bring data to life and move others to action. There is more, however, as we bring data stories into mainstream consumption and to our new decade of digital engagement.





## Data Visualizations kick-start a new process

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If a tree falls in the woods, does it make a sound? If a data visualization is unobserved, does it make an impact?

Let's deal with the tree first. A sound is a vibration perceived by the ear in the observed world. One answer to the question is no, the falling tree makes no sound if it's in the unobserved world, as the vibration moves out into the great unknown. For data visualizations, if no one is talking about or observing the image, then there is – like the unobserved tree – no impact. A data visualization needs a person and community to make a difference. This leads us to a new model, where the impact is based on how people view, chat, and engage a data visualization.

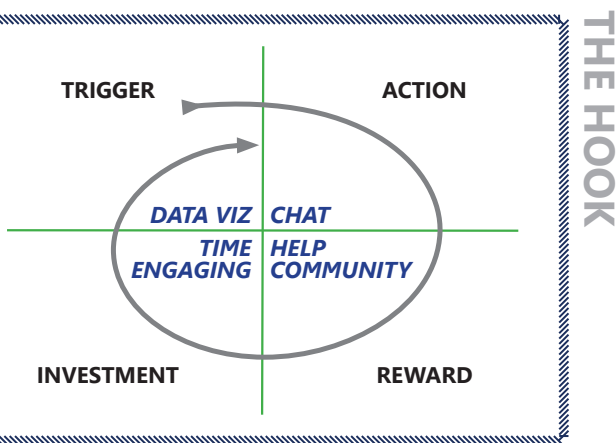
We understand that before a data viz is created, data sets need to be collected, curated, and read, as we feed them into a software toolset that creates images. In the past we used that skill to pivot data ala PowerBI or Tableau. Today, there are also great non-linear tools that can map data to just about any metaphor of a story or model. The famous Metoomentum data viz work using dandelions to represent tweets for the [Me-Too Movement by D'Efilippo and Kocincova](#) is both clever and impactful because it shows both data flows and approaches to important stories. It compels you to talk about things. That is the point – data visualizations should provoke and start the conversation.





## View – Chat – Engage

Under a new model, created by [Entropy Inc.](#), called View-Chat-Engage, a data viz makes a powerful impact when combined with chat. When we see something cool, we are compelled to talk about it; and when we combine a data visualizations with the medium of social media chat, a new model emerges for a great data viz. McLuhan's hackneyed phrase, "the medium is the message," might just work here, because the speed and access of social media is just what will bring data visualizations to a new frontier. Viz drives chat.



Social media experts have used something called the social media hook for a long time. This is a process where something compelling **triggers** an **action** to chat, provides a **reward** for doing so, and creates an **investment** into the cycle, because we are digitally human and care about issues dear to us. Provocative data visualizations dramatically trigger chat and energize the **View-Chat-Engage Model**.

### View.

When we access a data visualization, we search for edge and context at the same time. Because we know that data sets generate the visualization, we initially set out to prove whether the image is real or false. Viewers of the data viz will try to "get back to the data set" to mentally map the viz versus the data metaphor, because we are data truth seekers. We are simply looking for edges that correlate data.

We next look for context. Again, much has been written in this area, including the classic [seven ways to tell a data story](#) (such as zooming in, contrast, or outliers), but context often relates to the

pre-meaning of the title and explanation of the words that accompanies the data viz itself. In other words, bias is usually created with few words (think about the issues of the day and see if that does not affect the contextual view of the data).

When we view a data viz, it also has the impact of persistence – longer than words or text. We remember the first time we saw death vividly or the face of the first person we kissed, but words may fail us. A data viz provokes something forever if it's rich with meaning; there is a persistence to great art. What we do next is to connect with our community and we do so with chat.

For deeper understanding of the power of visual impact to the human experience, the book, "[Visual Intelligence](#)" by Amy E. Herman is the best explanation today of how we use our visual intelligence to discern, manage, and decide on what comes into our visual cortex. Data visualization designers often come from a data or graphic arts background and you can see it in their approach to storytelling with data. By adding the dimension of **learning how to see**, data designers learn how visualizations are perceived and begin to back off an approach of building data images from the data up to the image.

Amy's definition of visual intelligence as a noun works this way: "the ability to see what's there that others don't, to see what's not there that should be, to see the positives and the negatives, the opportunity, the invention, the upside, the warning signs, the quickest way, the way out, the win."

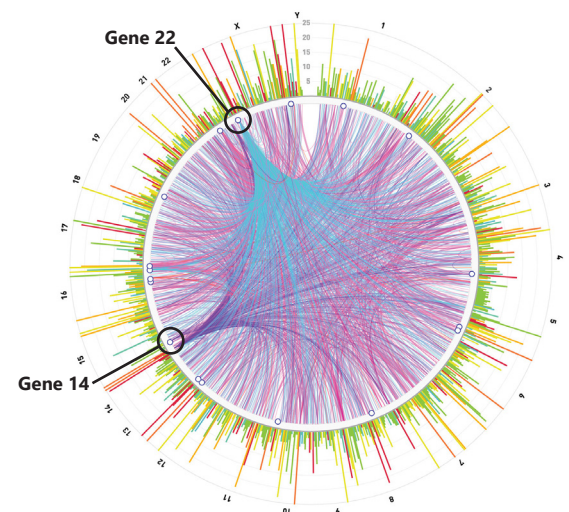
## Chat.

When we use social media chat after viewing a data visualization, we often start questioning the verity of the data or approach to the data viz itself. It is a way to seek truth and take almost a data scientist's mentality to accept both the visualization and the data set (with its commensurate algorithm, if any) all together. However, exceptional data visualizations somehow transcend this need and provoke instant dialogue around an issue. [This data viz from the Simons Foundation](#) published online immediately drives the question: Is there an autism correlation for RNA or DNA specific binding? Is there an autism gene?

The community now chats among themselves, and unlike many politically charged dialogues, there can be a spirit of collaboration, information sharing, and understanding. Entropy Inc. has created a project called "Autism Data Speaks" where, in 2021, we will test this in greater

detail. The gold from the chat is not only the chat log itself. What can be gleaned is deeper semantic analysis on what people are talking about, broken down by topic and category. We are at the beginning of this new field; but driven by social media engines and a need to understand brand effectiveness, we can use chat to see the impact of what a community is really saying.

DATA VIZ  
THE HUNT FOR AUTISM GENES



## Engage.

The data viz is out there – broadcast to the masses as well as to small groups of people chatting away on the verity of the viz or on a snippet of something that says they really grasp the image. However, that's not complete engagement. Under the view-chat-engage model, there must be a loop back to a new story to a new question... and that's where good data storytelling begins.

When we create a story, be it word-driven or data-driven, it stands as a

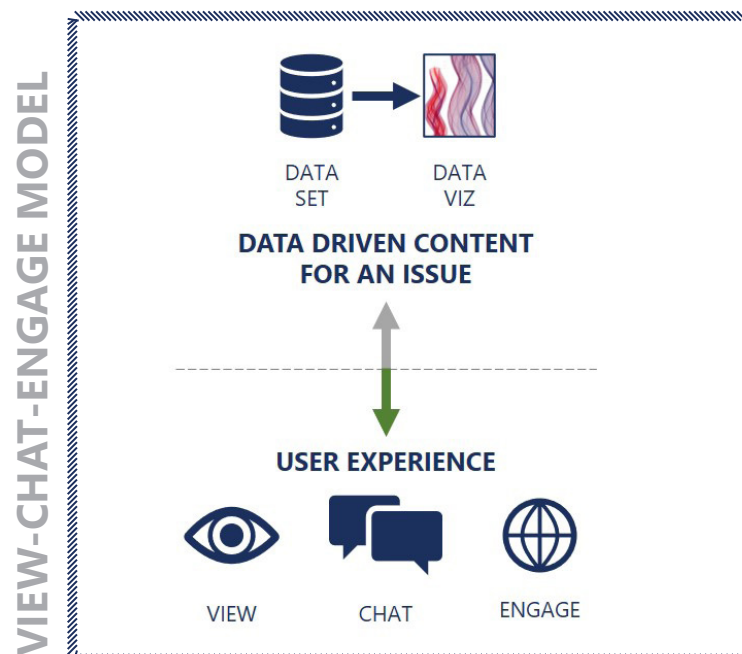
single tome of a subject or issue, right? It actually does not have to, if the chat or the need of the community demands more. We are not talking about movie sequels, we are talking about how stories become legacies and legacies become legends. Under deep engagement, we seek to create dialogue from a story and generate queries or questions that create new stories. In data stories we are looking for dependent and independent variables that challenge the data set with questions such as "what if."

**We know engaging stories provoke questions.  
Successful data visualizations do the same.**

We also can be moved to think that if true data is correctly depicted there may be a greater truth beyond editorial words from any author. Once this stickiness is created in the chat, true engagement begins to form as wisdom and becomes a legend. A good story can be as trivial as, was a power hitter in baseball really clutch, or as important as, what is the impact of masks on a worldwide pandemic. Both stories create additional stories that become legends and end up as legacy truths.

At the end of the day, better engagement represents user experience joy and commercial success. The longer users spend viewing, cogitating, chatting, and engaging with one another, the more successful the data viz becomes.

In short, the view-chat-engage model represents the future of data visualizations. It is now up to the designer and storyteller to make the flow and experience even more engaging.







## Journalists like data truth

So much has been written about truth in media today, but it continues to confound us with hyper claims of fact-checked or no-spin news. **Can data visualizations become a sanctuary, where there is a better direction of truth told from a data sets**, honestly portrayed with fair algorithms and story perspectives? Yes, because of our ability to systematically check the data collection and scrutinize which data are fed into the visualization toolset. The biggest threats will surround the verity of collection and data sampling, as well as how the data is shaped to support pre-determined conclusions. We look to the academic and medical communities as cauldrons where these issues often boil over. We can do better.

There are centers for public data, Autism data, values data, scientific data, sports data, and so on. In fact, data assets define the very nature of an organization's values, and hence their inherent truths. One example is [Public Democracy](#), an organization that sees its

**"Influence is great for good, according to its truthfulness; for evil, according to its disregard of truth. The promulgation of truth in discreet and prudent language never can do evil, but good, and the influence ... which makes truth its aim and object, is in proportion to its circulation."**

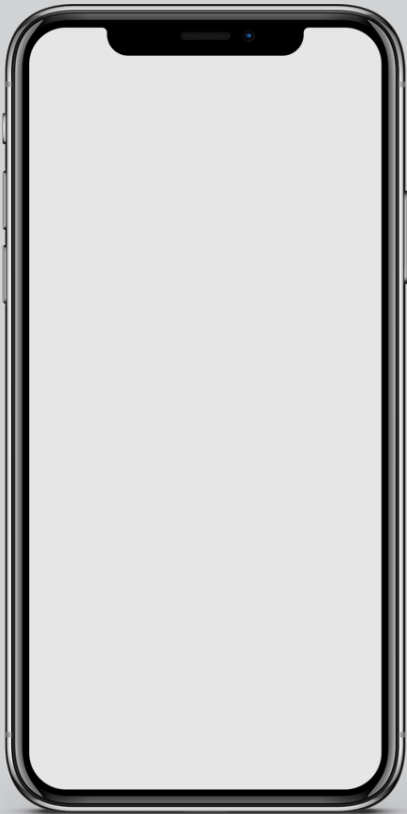
*Scientific American, July 1853*

database as a repository of moments of belief and hope. The question is how to derive a greater truth from all this data. One answer: start with data visualizations. The process to create a data image forces curation and discipline; otherwise you end up with data mapped onto false metaphors or anamorphic infographics. Qualitative data design can challenge truth if there is significant bias. Truth-telling in journalism therefore starts with stringent data design.

Another aspect is checking the data viz against a wider chat audience; where there is direct feedback about the viz; it's the next step in understanding how well data fits truth. If you trust the community and it's free from trolls and vandals, then you can harvest group semantic insights. For example, many actors and directors in Hollywood sit in a cinema to hear the truth of real engagement with their movie. Like good directors, journalists must get their truth, not just from the creation of a cool data, but from the audience that consumes it.



# Data Visualization Stories



**NO WORDS.** Only the title, topic, and category of the data visualization is represented. This removes editorial bias and forces chat to form the story.

**DATA DRIVEN.** Data visualizations, not simple infographics, must be engaging and tell a story from true data. Data sets must be identified.

**DIVERSE. NO RED, NO BLUE.** Balanced storytelling with diverse views, EntropyVX represents a trusted brand and relief from contentious media.

**COOL.** Data visualization creators bring new perspectives. EntropyVX captures data troubadour stories and honors the best of data visualizations.

## entropy



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## EntropyVX

Coming in 2021 will be EntropyVX, a social media application that combines great data visualizations with an NLP insight chat engine for engagement and true insights.