

Smoke and Mirrors and the real value of Visual Analytics

Creating compelling data visualization is indeed an art. Sometimes, this "art" character, this "coolness", this almost "magical engaging power" of data driven documents prevents business from setting the focus on what data analytics is meant to be doing: to enable the business optimal steering based on all the insights extracted from the data. In this post, we analyze this phenomenon and provide the right tools to separate "just-for-the-show" visualization vs. valuable insights aiming at solving a business issue.

Smoke and mirrors

Paris, December 1895. [Salon Indien du Grand Café](#). The Lumières brothers holding the first private screening with paid admission. Crowds quite thrilled not quite aware of this History making moment yet expecting to see another "Smoke and Mirrors" trick... Suddenly a train started speeding up towards their direction and it felt so real that the survival instinct took over and urged everybody to move away from the train's direction.

Everybody was astonished, petrified, enchanted away... For the first time, they were exposed to this new thing called cinema.

The fine art of visualizing data

A century and a half later, people who have never been exposed to data visualizations react the same way... "Wow... and if I click here I can filter by city!" or "Amazing! I can see in real time the location of our fleet"...

I've been seeing it all along my career... People "buy" interaction, people "buy" user experience and people "buy" playable dynamic visualizations.

There is a fascination on making "data" tangible... And there is something "artistic" in putting data in a colorful way...

The TED Talk series ["Art made from Data"](#) presents 5 different examples where all variety of data (meteorological, social media, etc) has been elevated to the category of "art".

But Internet is full of sites serving this romantic purpose, such as the [Teradata Art of Analytics Gallery](#), [Flowing Data](#), etc. Even in this blog [I created a post](#) on how to learn best practices from consecrated painters to make sure your insights are ready for decision making.

["The Earth without ART ist just Eh"](#) –I'm sure you have heard it before-... We need ART... but on the other hand, companies have *real problems waiting to be resolved with the insights gained through data analysis*... Also there has to be more than "ART".

"Desachanté"

The second time you see a movie is not that exciting, no matter how good the movie is... the third time, it becomes boring... the fourth time almost unbearable. The same apply to pieces of art... as much as I love Van Gogh, I couldn't and I wouldn't like to visit the museum each and every day to spend time looking at the Sunflowers.

If there's no *take away*, if there's no *engagement* to solve a real problem, if a visualization does not awake the *need on the user to know more*, to get more data, *to watch the entire movie, not just the trailer*... It is just a nice looking piece of art... worth putting on a pedestal, but useless from the business perspective.

The consequences of just having art-like charts *for-the-show* can be **fatal for your business**. As the "disenchantment" extends, employees stop believing in the real power of data-driven insights and gradually lower their engagement and

their proneness to work differently, to accept and adopt data insights as an essential part of decision making.

If it is happening in your company, you are in a really bad place and **you need to take action**:

- first **identify** where the **value** beyond the show in visual analytics is
- then put the right measures in place to **separate** the just-for-the-show from the business-value insights

The real value of Visual Analytics

The usage of visualization techniques is an *essential part* of the modern Business Data Science. The human brain works in a very visual way: to increase the number of cognitive resources assigned to the task of understanding insights, visual analytics add an unquestionable extra value in several ways :

- The information **summarizing** possibilities of visual assets go beyond any textual information (e.g.: a distribution can be defined by a mu, sigmas, etc, but plotting an histogram is much more efficient to make it understandable).
- The human eye is trained to **recognize** much quicker visual **patterns** based on color intensity and spatial distribution than just numbers. A heatmap depicts in a much more efficient way timely patterns than just a matrix, an excel table.
- It also applies to **discovering relationships** that otherwise would have remained hidden.
- The **scope of information** we are able to process in a visual way is much larger than what we just can read and figure out with figures and texts.

In order to maximize the cognitive assimilation of insights, as per my experience, adding **verbose** to the visuals works best. What the eye automatically recognizes is also described in words so that the information coming over different channels is consistent. This topic requires further discussion (for example, the usage of fuzzy information summarization techniques) and deserves a separate post.

Making the most of Visual Analytics

Putting the art creation part aside... The usage of visualization techniques is an essential part of the modern Business Data Science. Following picture -adapted from the inspiring paper [Advanced Visual Analytics Interfaces](#)- shows 2 usage scenarios for Data Visualization:

- The one above, where "*Visualization*" is *per se* an end.
- The one below, showing "Data Visualization" as an integral part of an *end-2-end data-driven problem solving schema*.

1. **Raison d'être:** your visualization's only purpose is to contribute solving a real problem –with business stakeholders behind-, which has been identified, defined and quantified. Charts, Infographics, etc... they all have to be relevant in the context of problem solving.
2. **Chicken and egg:** you start off with the problem and afterwards you proceed creating visual assets as the problem solving demands. You don't invent problems based on cool visuals and you don't pretend to be solving existing problems without proper understanding, definition and quantification.
3. **Show the movie, not just the „trailer“:** an isolated visualization is like a trailer... You don't know exactly how the story started and you don't have any detail about how the ending is going to be. With each and every visualization, you have to commit to solve a problem, to show the entire movie.
4. **Let the consumers assess the value, not their boss/bosses:** if you empower the people with the pain of solving a problem to assess whether a visualization adds value or not, the question of “just for the show” insights disappears. Nice charts don't solve real business problems. The further from the actual operative problem solving, the less critical about the relevance of the visual assets.
5. **A visualization is the starting point of a dialogue, not a deliverable:** after putting together a visualization, you are not done... you just started! If you don't have a follow-up plan you are working “just-for-the-show”... You need to prepare the modeling and knowledge generation part, develop a plan to take actions and measure the impact of these actions.
6. **Quality Assurance or just a fable:** visualization with tools like PowerBI or Tableau is becoming a **commodity**. Anybody can create with a few clicks their own one. It is responsibility from the visualization publisher to make sure the *sources are right, completed and documented*... and the visualization is delivered with the right level of sources documentation. Otherwise, the visualization might be telling a fable very far away from the reality.
7. **Action-A-bility:** never forget that no action means no valuable insights.
8. **The definition of value:** express the value in terms of contribution to the problem solving... Use the same KPIs the problem is trying to improve, quantify this improvement and attribute some credit back to your visualization.
9. **Users are not meant to be left alone:** assistance is required in terms of how to read the insights, how the insights relate to the problem, what else is required to formulate potential action scenarios and how this actions are going to be measured and represented... It is like going to the museum... you can get a lot by yourself, but if somebody explains to you the motivation and the meaning of a particular picture, it makes a huge difference. It is responsibility of the guy providing the visualizations to adapt upcoming users needs.
10. **Full coverage is required:** as we said, visualizing data is easy... sometimes, only available data get visualized and it awakes the vague impression of a done job. If we present the evolution of sales, you can't just skip a particular channel just because the data is not there. In this case, you just try to source the data and before that, there's no half-way highly-misleading visualization.

Takes away

- Companies can't take the risk of just producing good looking visuals without any concrete and measurable impact on the business.
- Data Visualizations are just means to end. Data Visualizations should be seen as an integral part of an insights generation process aimed at solving a well-defined business problem.
- Without the proper mechanism in place, your data might be framing pretty well in an art gallery but your decision making process is going to remain data-unaware. By sticking to the afore mentioned 10 check points, you have a pretty good chance of turning it around.
- Not taking prompt action might make your work force stop believing in the power of data driven decision making and start thinking that all these nice visualizations aren't more than just **SMOKE AND MIRRORS**.