

# Visualizing the Evolution of Individual Scientific Impact

Critique of a Data Visualization Work

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## Project Link

<http://scienceofsuccess.barabasilab.com/>

## General

Once you open the website, an interactive animation shows the principle of visualizing the data. The designer use treat each scientific paper into one point and classify them into different topics and fields. By inserting a two-dimensional coordination, the x-axis represents time line and y-axis represents the number of citations. Then, the complete dataset is visualized by the curves and audience can have interaction by clicking each curve to check detail information of each scientific field's evolutionary history. Audiences can switch the classes of dataset and choose different scientific fields to compare their tension horizontally.

The method of visualizing gives audience a general feeling of each scientific field's evolutionary tendency. Combing with the color code, audience can also get the relation between each influential finding and their birth time through the whole science developing timeline.

## Information Layers

- **S:** The information of each paper, including publishing time, author, subtitle and its scientific field.
- **M:** For one curve, audience can feel each topic's evolutionary history and the impact of each paper.
- **L:** For all the curves in one scientific field, the vertical comparison gives a sense of the activeness of evolutionary findings in this field.
- **XL:** By switching among different scientific fields, the variety of color and fluctuations of weaves explains the identify of researching in different subjects.
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## Design

- **Geometry Choose:** Each curve is one time line with two-dimensional coordinator, using vertical difference to show the impact. Basically, each curve showing two information.

Using curves to show each topic on its own timeline is reasonable. Like electrocardiogram showing a person's heart beat record, this visualization arranging all the topics in one subject to give audience the sense of the vibrancy of each topic in its subject.

- The fluctuation of each curve can show each topic's evolutionary situation. If a curve looks more stable, it means this topic rarely have new findings. If a curve is more active, it means this topic always have new findings.
- Due to each topic's general impact of its subject, the topic has more impact is arranged higher. All the topics have limited impact at their subject will be laid at the bottom of audience's view.
- Color choose: purple always give viewers a feeling of mysterious and magical. Each curve use a gradient of color. Purple represents normal findings. Light blue shows the critical impact in each topic. At the transition from purple to blue, the curves turn slightly into white to symbolize the appearing of inspiration.
- Also, the percentage of light blue and purple explains the general status of each topics. For example, if there is one topic hardly having any huge impact findings, the curve looks more like blue.
- When comparing among different subjects, audience can find most of the topics in ECONOMICS rarely have huge impact. On the other end, CHEMISTRY is the subjects that scientists always have new findings and each of them usually has an amount of impact on this field.

## Comments

The project is successful at using an accurate geometry to show the evolutionary process of scientific fields. Based on simple raw data, the designer classified it into two-dimensional line chart. Combining a list of curves with gradient color code, the project delivers a hybridized information clearly and accurately. Instead of telling audience the information, it uses graphic tension illustrated the information silently. Also, by interaction with each curve, audiences can have a multi-layer information from their visual comparison.