

## Visualising science: a thorough guide for designing and using science graphics

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**Reviewed Book**

CHRISTIANSEN, J. (2023).  
BUILDING SCIENCE GRAPHICS: AN ILLUSTRATED GUIDE TO COMMUNICATING  
SCIENCE THROUGH DIAGRAMS AND VISUALIZATIONS.  
BOCA RATON & OXON: CRC PRESS

**Reviewed by**

**Marnell Kirsten**

**Abstract**

'Building Science Graphics' guides scientists and science communicators on how their communication of science knowledge can benefit from the visual aid of science graphics. This can be an intimidating task to someone unfamiliar with visual design, but the book demystifies this entire process, giving a simple and straightforward account of a complex topic.

**Keywords**

Public engagement with science and technology; Science and technology, art and literature; Visual communication

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In some circles, W.E.B. Du Bois is perhaps better known as a Pan-African civil rights activist than a prolific sociologist or visual communicator. However, in 1900, the work of Du Bois and other Black sociology colleagues from Atlanta University, USA, was on display at the Paris World Fair. Along with 500 photographs, this collection of work also included about 60 handmade custom visualisations of empirical data that Du Bois and his students and alumni at Atlanta University collected [Mansky, 2018]. The visualisations helped to provide context and balance to the static stories that the accompanying photographs told and helped to communicate, to an international audience, a nuanced account of the realities of harsh Black American life 30 years after emancipation. This work by Du Bois and colleagues is still lauded as one of the great historical examples of using visualisations to communicate complex social and systemic conditions to diverse and international audiences [Muwwakkil, 2021]. The work of contemporary scholars, like Jen Christiansen, who work in the field of visualising intricate information to diverse publics, builds on the foundation laid by visualisation pioneers like W.E.B. Du Bois, John Snow [Callejón, 2022] and Florence Nightingale [Andrews, 2022].

In *Building Science Graphics*, Christiansen draws on her background in scientific illustration and her experience as art director and designer at *National Geographic* and senior graphics editor at *Scientific American*, to explain how to use visual elements, what Christiansen calls 'science graphics', in communicating science information. The book is targeted at scientists and science communicators — at both student and researcher level — to show how “science graphics are uniquely positioned as visual aids that have the power to both beckon folks in, and to provide concrete information to influence conversations that follow” [Christiansen, 2023, p. 38]. Christiansen shows the reader how to 'beckon folks in' and 'influence conversations' with science graphics in a practical and straightforward manner, providing two comprehensive worksheets as part of this applied approach. The first of these worksheets guides the reader through the process of building science graphics from scratch, and the other helps the reader adjust existing science graphics for a different audience. Resultantly, *Building Science Graphics* is a very clear and accessible guide to visual science communication that still honours the complexity of this field. Christiansen reminds the reader that they too are a “translator” and a “guide”: “The focus shifts away from watering the information down, and turns toward knocking down barriers of entry, and beckoning the reader in. The goal is to make complex information accessible to your audience” [Christiansen, 2023, p. 174]. This is exactly what Christiansen also manages to do with this book.

*Building Science Graphics* consists of four parts. The first is a thorough, albeit elementary, introduction into some of the most important concepts and aspects that underpin science graphics. These include some fundamentals of science communication and graphic design, composition and visual hierarchy, using colour in science graphics, and storytelling strategies. The second part of the book delves into specific considerations for science graphics, focussing on how to honour complexity of science information and ways to acknowledge uncertainty in science graphics. The third very practical part of the book provides an overview of the process of building science graphics and gives the reader interesting case studies to consider, before outlining the step-by-step guides of the aforementioned worksheets. Finally, *Building Science Graphics* explores how to work collaboratively, as the work of the visual science communicator is most likely part of a larger team. The fourth and final part of the book includes question and answer sessions with designers, a scientist and a medical illustrator, maintaining the conversational and storytelling tone of the entire book.

The greatest strength of Christiansen's book is the wealth of experience she is able to draw on and convey in this “textbook and practical reference” [Christiansen, 2023, p. xvii]. She has been producing science graphics for the last 27 years, after majoring in Geology and Studio Art at college. The confidence she has in her craft is reflected in the ease with which she imparts the content of *Building Science Graphics*, allowing a scholar of any level to follow her writing and be drawn in by the conversational tone. Furthermore, Christiansen is a self-aware author who claims her own positionality and acknowledges what this means for the book, stating that “this book is meant to be a benchmark. Not an endpoint” [Christiansen, 2023, p. xix]. With this self-awareness, Christiansen is the first to claim the book's shortcomings or omissions, highlighting that it does not touch on interactive or animated graphics, it does not focus on tool- or software specific design solutions, it does not teach its reader how to draw [Christiansen, 2023,

pp. xxii–xxiii], and it does not focus on data visualisations [Christiansen, 2023, p. 19]. An ironic, but non-consequential mistake in the book can be found in the section on ‘Strategies for Using Color’. Christiansen makes use of colour-coded highlighting (pink, yellow and green) in the text to explain the use of colour when storyboarding science graphics, using an example of the Ebola virus, but the highlighting does not match the use of colour in the accompanying illustrations.

US statistician Edward Tufte is perhaps one of the best-known commentators on and scholars of visualising complex data. Already in 1983, Tufte writes: “What is to be sought in designs for the display of information is the clear portrayal of complexity. Not the complication of the simple; rather the task of the designer is to give visual access to the subtle and the difficult — that is, the revelation of the complex” [Tufte, 1983, p. 91]. With *Building Science Graphics*, Christiansen succeeds in such a ‘revelation of the complex’, showing scientists and science communicators alike how their communication of science knowledge can benefit from the visual aid of science graphics. This can be an intimidating task to someone unfamiliar with visual design, but Christiansen demystifies this entire process, not making the simple complicated, but giving a simple and straightforward account of a complex topic.

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