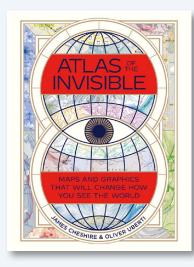# ATLAS OF THE INVISIBLE

By James Cheshire and Oliver Uberti

W. W. Norton & Company, 2021

216 pages, 63 maps and graphics

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Review by: Rosemary P. Wardley, National Geographic

Atlas of the Invisible is the latest publication from James Cheshire and Oliver Uberti, who have previously collaborated on atlases focused on the city of London and on animal migration. Despite its mysterious title, *Atlas of the Invisible* is typical , in both its layout and content, to other contemporary collections of maps and graphics. There are more than sixty maps and graphics on various topics spread throughout the atlas, each with a distinctive style, scale, and approach to subject matter. The individual topics are collected into four, loosely thematic sections: "Where We've Been," "Who We Are," "How We're Doing," and "What We Face." These are combined with an introduction, an epilogue, and an additional technical section.

In their "Preface," the authors recount the impact of the COVID-19 pandemic on both their professional and personal lives and, in doing so, set the tone for the entire book. Over two years of pandemic monitoring have shown the increasing importance of maps and graphics, and led to an onslaught of statistical data. Like many of us, the authors initially viewed this as a teaching opportunity. Cheshire—a Professor of Geographic Information and Cartography at University College London—writes of assigning his cartography students an exercise to map the growing case counts early in the pandemic, while the threat still seemed abstract and distant. However, as the months rolled on, and these maps, graphics, and visualizations of the COVID-19 situation brought home the scale and seriousness of the looming danger, they also helped clarify the purpose for *Atlas of the Invisible*: "today, we

need graphics to reveal the invisible patterns that shape our lives" (13).

What are these "invisible patterns ?" It is stated in the "Introduction" that: "sometimes we miss what we can't step back to see. Sometimes the invisible only appears with the creep of time. And sometimes, in the case of historical events, the visible becomes invisible with the loss of a generation" (17), so it seems that Cheshire and Uberti see visibility as a function of context, and particularly as understandable context. They illustrate this with a brief history of cartography and data visualization, and of the scientists who, they maintain, first made invisible data visible. Most *CP* readers won't be surprised to see well known examples from Alexander von Humboldt, Florence Nightingale, and John Snow referenced, but there are also lesser known histories shared, such as the SYMAP system, a precursor to our current GIS software. To learn about a rudimentary tool that was developed fewer than 50 years ago really helps to put into perspective how far this field has grown in such a short time! The authors finish up the "Introduction" with more modern examples of the trials and tribulations that come with visualizing big data, and with a short "How to Use this Book" section.

Each of the book's four sections consists of an introductory essay, followed by full-page maps or graphics, with every entry accompanied by a brief commentary from the authors. The first of these sections, "Where We've Been," aims to "challenge the stories we've been told about our

past" (32) by utilizing the wealth of digitized historical data that we now have at our disposal. Even just one single primary source, shipping logs, enables the authors to generate maps about the slave trade, the whaling industry, and changes in global shipping patterns over time. While these maps are built on concrete data, other visualizations in this section are more speculative in nature—for example, the attempt to map the areas once occupied by various aboriginal peoples of Australia (42). The very idea of mapping a space of ownership is quite foreign to the way the indigenous peoples themselves understood their relationship to the landscape—so much so that it renders the application of ownership boundaries to a map extremely problematic. Another map in this chapter visualizes some of the most personal data any reader has, the origin and ubiquity of their last names by country (54).

Section two, "Who We Are," focuses on telling stories about people and societies through new lenses, and the authors assemble an impressive array of graphics to illustrate their points. Societal patterns that could once only be gleaned from extensive censuses or research studies can now be pulled from data from mobile phones and satellites. Among the most arresting of the maps shown are those that generate new, imagined state borders based on drivers' commute hubs and routes. Another illustrates underwater fiber-optic cables—physical lines that carry the internet and which, in turn, literally connect us all (or at least the two-thirds of the population with internet access!). I found this example most interesting as I reviewed it soon after the eruption of the Hunga Tonga–Hunga Ha'apai volcano snapped Tonga's lone undersea cable! The thin lines stretching across the map really put the fragility of those connections into perspective!

Section three, "How We're Doing," provides examples of how maps and graphics can be used as tools to shed light on truth and democratize the power that a map can hold. The introductory essay references the wrongs many past cartographers dealt out at the stroke of a pen: dividing Africa into colonial territories and redlining neighborhoods along racial lines, each decision leading to decades of inequality. But today some of those wrongs can be undone by taking a closer look at *who* is doing the mapmaking and for *what* purpose. Analysis of declassified bombing target maps from the Vietnam War has helped humanitarian groups locate unexploded ordinance (and perhaps help us to rethink the weapons of war we use today). Similarly,

a graphic comparing hours of both paid and unpaid work by gender succinctly displays just how unequal the workload truly is!

Section four, "What We Face," contains visualizations focused on data about our changing planet. This section's introduction proclaims that "data has always had doubters and deniers" (156), and discusses how early meteorological forecasting faced much the same incredulity that climate change forecasting faces today. In this section you will find maps on topics that have become familiar in this age of climate change—such as the global extent of active wildfires and the increasing speed of glacial melt—but you'll also see innovative new designs, such as a calendar forecasting heat stress risk for every hajj over the next century shaped in the form of an intricate Islamic flower. The most impactful graph, though, comes from utilizing the classic population pyramid. A comparison of population pyramids for the years 2020 and 2100 demonstrates just how dramatically the global population is projected to shift in this century. The stark contrast between the familiar 2020 pyramid and the oblong shape of the 2100 projection—when longer lifespans stretch the top of the figure—reinforces the image of a looming future.

This *Atlas* is designed, according to the book's subtitle, to contain "maps and graphics that will change how you see the world." While that is quite a lofty goal, it is one I believe they live up to. With Uberti's background as an artist and Chesire's as an academic, the pair provide a good combination of unique visualizations explained in straightforward, fact-based terms. I was personally delighted to see many open-source datasets I had thought about mapping myself—such as Native Land Digital (**native-land.ca**) —displayed in new and interesting formats. I was also, when first skimming the pages, surprised to see so much text in an atlas, but the introductory essays were so entertaining and easily digestible that the free-flowing text ended up being one of my favorite parts of the book. The essays not only helped to give structure to the rather abstruse titling of the sections, but I found some interesting and useful historical facts woven in. The atlas is well paced, with approximately ten maps or graphics in each section, along with one or two in-depth topics given a gatefold or two-page spread treatment. While those of us immersed in the field of cartography and visual graphics might see a couple of familiar visualizations that are often found on "best of" lists, there are just as many that were unfamiliar to me.

As a cartographer who has been creating atlases for over fifteen years, I was delighted and thrilled with this new offering from Cheshire and Uberti. *Atlas of the Invisible* gives a refreshing look at some common datasets—for example, global temperature anomalies over the past century—while also presenting new or lesser-known data in insightful ways, such as street vulnerability to ice being used as a proxy for where to salt roads. One thing I found most useful were the thumbnails of each visualization that feature in the table of contents. Listing the maps by title and topic is useful, but I find that many times my strongest recollection is of how the map looked, and the little pictures give just the right prompt for recognition.

The *Atlas of the Invisible* offers ample inspiration in design, layout, color, style, and theme, and I believe that people from many fields will find it a useful and inspiring addition to their collection. Altogether, the *Atlas of the Invisible* is a handy book to have on your shelf.