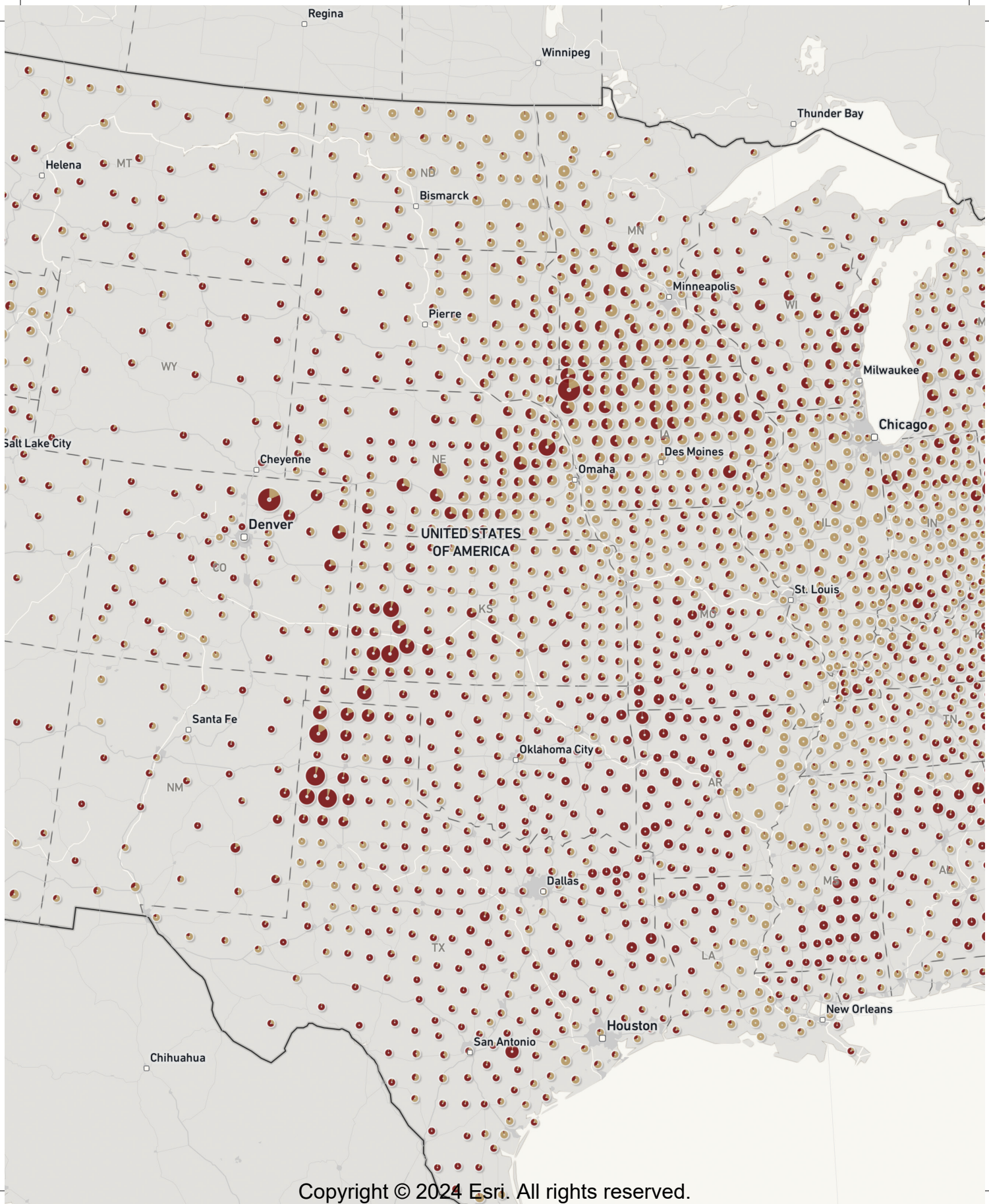
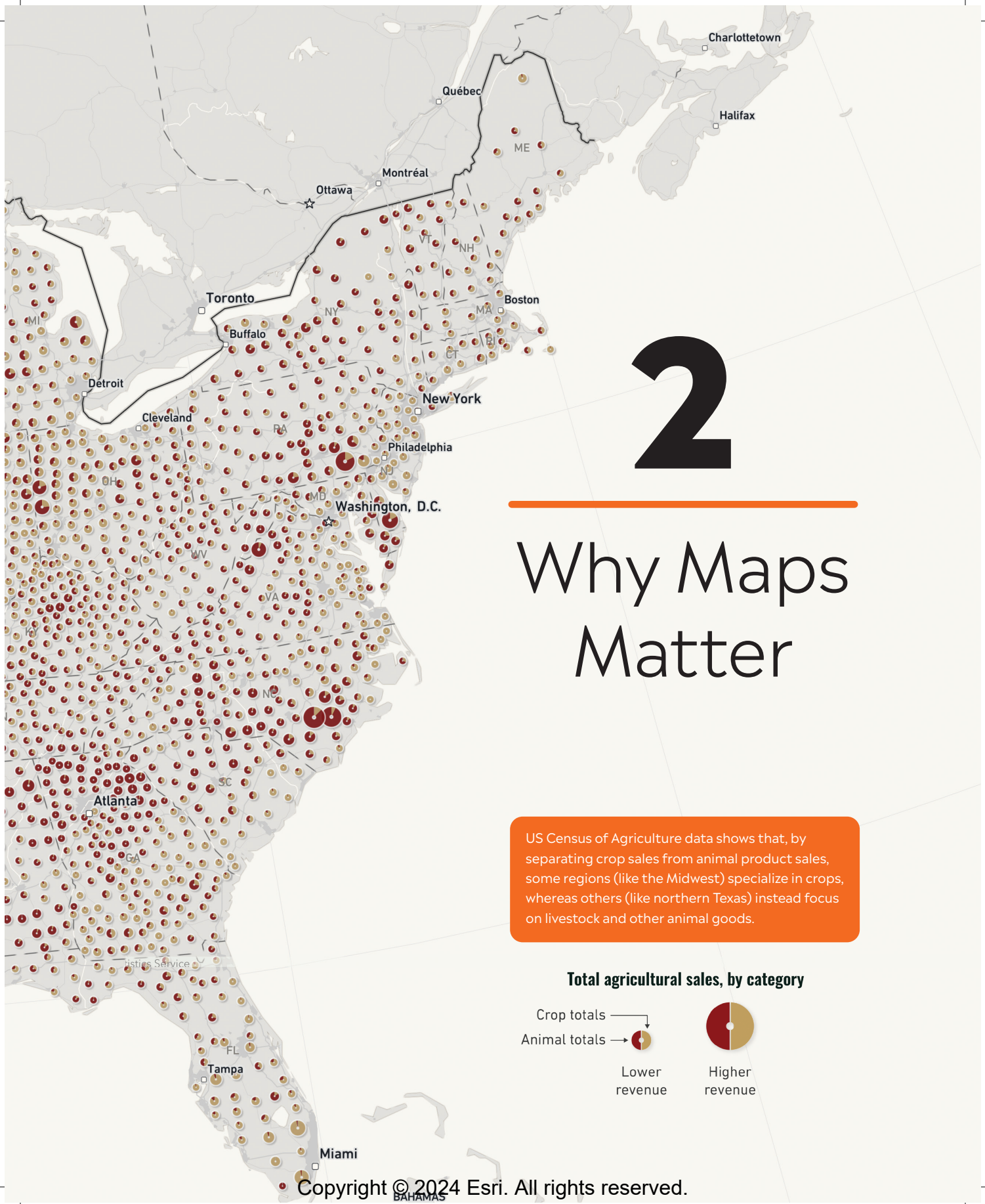




2

Why Maps Matter

US Census of Agriculture data shows that, by separating crop sales from animal product sales, some regions (like the Midwest) specialize in crops, whereas others (like northern Texas) instead focus on livestock and other animal goods.

Total agricultural sales, by category

Organizing information

All of us, as individuals and as groups, spend time and energy trying to organize and categorize information in one way or another—to discern relationships, prioritize tasks, update to-do lists, remember what to buy at the supermarket, and gain insights, both trivial and profound.

Designer, author, and TED Talks founder Richard Saul Wurman reminded us in his book *Information Anxiety* that there are essentially only five ways to organize information. He cleverly organized the ways information can be organized into this mnemonic:

LATCH

- **L**ocation
- **A**lphabet
- **T**ime
- **C**ategory
- **H**ierarchy

We'll come back to **location**, but meanwhile let's start with **alphabet**. Alphabetizing can be a convenient tool for arranging and accessing things. But ordering items by their initial letters provides few insights and seldom indicates true relationships. **Time** helps us compare things and link events, but it's one-dimensional. **Category** can include elaborate and useful taxonomies, but categorization can be a subjective exercise. Although **hierarchy** helps us sort things, such as biggest to smallest and most expensive to cheapest, it feels simplistic and can also be subjective.

Location is unique in that nearly everything that's tangible has a location or geographic extent. As geographer Waldo Tobler stated in his First Law of Geography, though everything is related, the closer things are to each other, the more related they are. Location reveals commonalities and interrelationships. And **location** comes with its own visual language: maps. The language of maps is eloquent—even poetic—in translating, on paper and screens, the varied and tangled textures of our world into visual representations that reveal hidden patterns. Maps can also be the connecting tissue between **location** and **time**, using the vocabulary of cartography to represent temporal data with color fields, arrows, symbols, and animations.

The power of maps in narratives

Maps add extra dimensions to multimedia stories. They pin narratives to place, situate a story within a larger context, and provide additional insights. In interactive form, they can enhance the viewing experience; whether interactive or static, they add to the variety and visual impact of stories.

Maps in narrative contexts help answer these and other important questions:

- Where am I?
- How do I get from here to there?
- What should I know about this place?
- Who lives here?
- What's near me?
- What used to be here?
- What will this place be like in the future?
- What's happening here?
- What might happen here?
- What's this place like compared with other places?
- Why should I care about this place?
- How can I help make this place better?

Maps play roles that other multimedia content just can't perform. They enrich the multimedia mix, and they provide an additional means of connecting to audiences. Maps can convey an immense amount of information with unparalleled efficiency, revealing patterns and interdependencies that photographs, video, and text are largely incapable of portraying.

Maps perform a variety of functions within a story. Their simplest task is to provide a single location, and thereby anchor a narrative to a place. Example: The simple globe locator at right pinpoints Palm Springs, California. In this case, the story within which it appears provides the context, negating the need for even a place-name label.

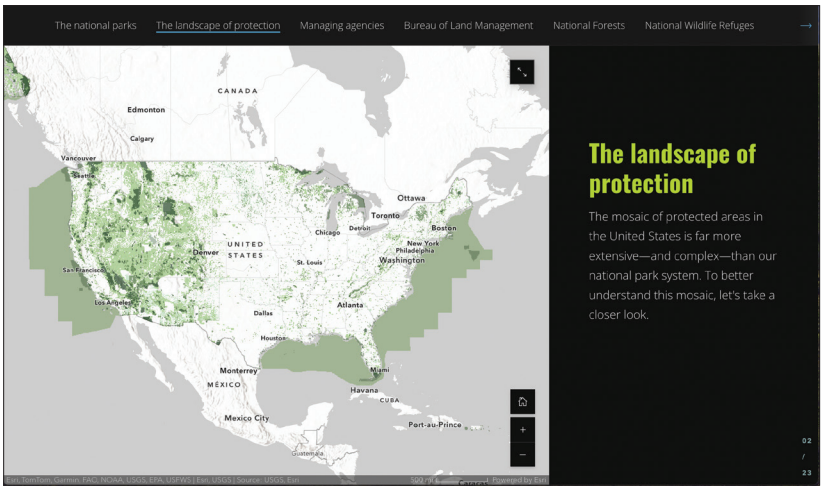
The next level is to depict a series or collection of locations. The map tour function within ArcGIS StoryMaps, like this panel from **Welcome to Palm Springs** 🔗, locates a series of points of interest on a single map.

A globe locator of Palm Springs, California, in North America (*top*) and a map tour of the city (*left*).

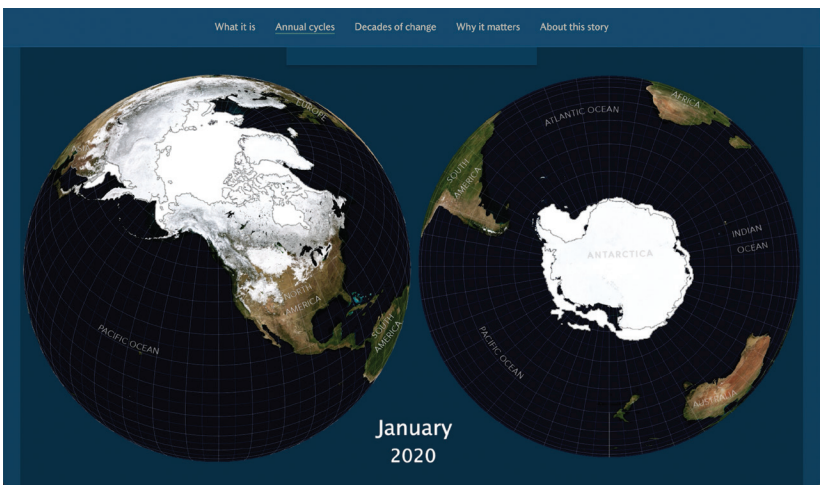
Understanding the distance and orientation of one point to others in the narrative provides additional richness and context. It's more than just dots on a map—it's a cartographic tour guide.

Thematic maps—singly, and especially in series—can parse a complex tapestry of categories and relationships. Example: **The Lands We Share** story (*below*) presents and interprets maps of protected lands and waters in the United States, depicting levels of protection and patterns of land management.

Maps in series or presented as an animation can vividly depict change over time. **An Introduction to Sea Ice** (*bottom*) uses both devices to show seasonal change in ice extent and long-term reduction in sea ice caused by climate change.



The Lands We Share.



An Introduction to Sea Ice.

Maps provide context within stories. In many cases, maps form the heart of a multimedia story. Many story ideas *begin* with a map, or a series of maps and layers, often as a result of a GIS analysis, that reveals patterns, depicts trends, or otherwise demands interpretation. Just as maps can provide context to stories, stories can provide context for maps.

We'll further explore how maps *perform* within stories in chapter 6.

Three storytelling biases: Word, picture, map

All of us, I suspect, have biases, whether conscious or unconscious. We drag them along with us, like business travelers wearily rolling suitcases through airports. Biases are often a consequence of the way we've trained our minds to work—and that, in turn, often has to do with our social and cultural backgrounds, our academic training, and our professional lives.

Some of us consider ourselves word people; some are picture people. Others of us think spatially. These predilections affect the way we learn. They also influence how we communicate and how we approach storytelling. A comedian, a tax attorney, and a sculptor will almost inevitably have strikingly different storytelling styles.

Multimedia narratives, because they combine text, visuals, and maps, pose special challenges—and opportunities—for us as storytellers. Our deeply ingrained habits can severely limit how we approach telling stories. A word person might consider visuals as an afterthought; a cartographer might give text and pictures short shrift. Transcending our natural biases and embracing diverse forms of storytelling can be liberating, mind-expanding—and fun. So let's examine three biases that, if consciously and effectively transcended, can ensure captivating and beautiful multimedia storytelling.

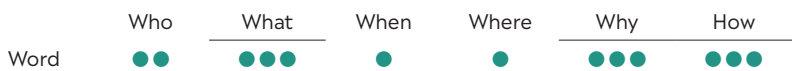
The *word* bias

Traditional newspaper reporters (admittedly an endangered species these days) conduct research and do interviews with an end in mind: a text piece of a few hundred words that they hope will make the front page. All the reporter's energy is poured into gathering the five *W*'s and one *H*—who, what, when, where, why, and how—that will make for an impactful, informative story. In traditional, print-media storytelling, a photographer might occasionally accompany a reporter in the field, or a photo editor might

acquire an image after the fact and as deadlines loom. But words overwhelmingly bear the storytelling burden.

Regardless of the circumstances, a writer will most likely conceive, research, report, and deliver a story with an unconscious bias in favor of things that can be easily described in text. Skilled writers can, with words alone, paint a detailed picture of a scene or environment. They can describe individuals and interactions; they can even move us to tears. But all too often, reporters minimize—or perhaps omit altogether—elements of the story that don't lend themselves to text descriptions.

As a mental exercise, let's consider how effective words, images, and maps are at tackling the five *W*'s and one *H* of reporting. I'll use dots to roughly measure effectiveness: more dots indicate more effectiveness. This is a somewhat subjective exercise; you'll probably assign things differently than I. My feeling, though, is that text is particularly good at *what*, *why*, and *how*. *When* and *where* can be simply described with a place-name and a date, but that doesn't provide much insight. Sure, a good writer can, with effort, vividly describe a personality, but text's great strength is in exposition, which is defined by the *Oxford English Dictionary* (*OED Online*) as "a comprehensive description and explanation of an idea or theory."



An example of a word-driven story: **University Libraries as Providers of GIS Services: A Guide** 🔗, by David Cowen, distinguished professor emeritus of geography at the University of South Carolina, is a digital book in the form of a collection of ArcGIS StoryMaps stories. Its case studies and best practices are aimed at a professional audience of librarians, scholars, and administrators. Thus, the length and larger proportion of text seems appropriate.

But the collection also includes visuals. It's advisable to break up text now and then with section headers, callout quotations, and other elements, such as tables and infographics. Readers of even the most technical story will be grateful for occasional images or other visual breaks in a long narrative. That said, visuals shouldn't simply be cosmetic; they should support and complement the narrative.

Story collection: *University Libraries as Providers of GIS Services.*

What is special about data libraries?

Starting with the GIS Literacy Project in 1992, academic libraries have been viewed as a potential setting for cross-campus GIS support. Initially, census files on CD-ROM provided a basis for free nationwide GIS data. As a stand-alone system, this data was well suited to a library's government documents department. As we moved from fixed media to web-based data portals, we found new ways to discover data and create customized GIS applications. The ability to scan existing paper maps in a map library offered a new opportunity to convert map collections to digital data repositories. When Ann Holstein conducted a major survey in 2015, she optimistically concluded:

> *Receiving more funding will mean more staff, better-trained staff, a more in-depth collection, better hardware and software, and the ability to offer multiple types of GIS services.*
>
> *Holstein*

van Brakel and Pienaar (1997) recognized the important role that libraries could play in the future of GIS:

> *Libraries are the primary organizations for processing, organizing, and disseminating information and as dynamic organizations they must evolve through the adoption of new services such as GIS that will enable them to provide their users with innovative services to meet ever-increasing needs.*
>
> *Van Brakel and Pienaar*

J. Benner and E. Slayton (2020) also provide a rationale for an expanding role for libraries. They suggest that "At their core, all libraries are cultural heritage institutions that support education, research, and civic life within a community." Libraries act as a stronghold for education on spatial literacy and critical engagement with geographic concepts.

The literature on the development of academic GIS support programs highlights the advantages of providing GIS these services in libraries. These advantages can be divided into three categories:

1. Location/mission

- Libraries as a place for accessing knowledge—including maps and spatial data
- A common space on campuses to foster this knowledge, and the central position of academic libraries as a campus unit that serves everyone,
- A central location on the campus and succeeds with collaboration—in the library and across campus
- An engaged, neutral service provider
- A communal resource for people on campus needing GIS and data services
- A unique position as a place of learning that exists outside individual departments and engages in instruction across the university
- A learning space for building skills in research and critical thinking
- Supports intellectual freedom for individuals to have free and open access to resources and services for undertaking a new information pursuit (Boxall)
- Consults with and supports individuals in their existing and emerging projects
- Connects people in meaningful ways using their thorough understanding of users' skills and needs gathered through intensive research consultations
- Works continually to improve service models and devises strategies that integrate evolving technology and accommodate growing demand for geospatial resources

2. Resources

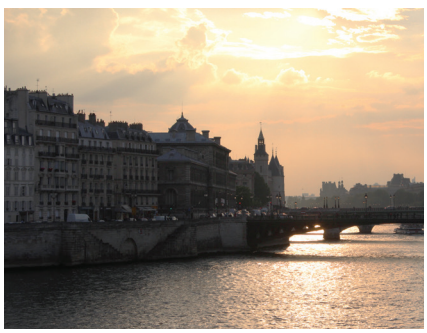
- Develops collections of GIS-related materials and provides access to geospatial data and software tools
- Provides effective workspaces, software, hardware, data sets, technological expertise, and training
- Assembles GIS services, including training, in a common space on campus
- Provides an ideal place for those whose disciplines do not have a large focus on data or GIS

3. Supports spatial literacy

- Serves numerous roles in providing GIS services through analysis and response to a nontraditional set of user needs
- Uniquely situated to act as a springboard for teaching spatial literacy and critical engagement with geographic concepts
- Connection points to help community members and students learn about each other, spatial concepts, and geospatial tools
- Supports instruction on GIS and spatial literacy
- Draws on the experience of GIS and data services librarians
- Provides outreach to a variety of communities about geographic concepts and the role of geography in society (Benner and Slayton)

The *image* bias

Photographers and videographers, in contrast to writers, will typically take different approaches to the same story. Depending on deadlines, budgets, and the constraints of the publishing format, they may be seeking to make a single image that symbolizes or encapsulates a story. Or they may have the luxury of publishing a series of images or videos that together form a visual narrative.



Images of Paris: tourist snapshot (*top*) versus storytelling (*bottom*).

There are many approaches to image-making. One is the traditional photojournalist's and street photographer's mantra that I learned at National Geographic: "F/8 and be there." In other words, fret less about the technical aspects of photography (just put it on a standard F-stop), concentrate on being in the right place at the right time, and have an alert and perceptive frame of mind.

Another photographers' dictum: "The decisive moment." Capture a fleeting instant where elements come together in a perfect composition. The French photographer Henri Cartier-Bresson famously captured decisive moments, such as a man frozen in midair as he leapt across a puddle, or a cyclist as he raced down a cobbled street.

A captured instant rarely tells a complete story. But a series of images can tell a story, and can enrich a multimedia story in at least three ways:

- It can provide a vivid sense of place. Text, too, can evoke a sense of place, but images do so with greater efficiency. A glance at an image of a desert or rain forest thrusts us instantly into an exotic environment.
- It can introduce us to people. Human brains are wired to respond powerfully to human faces. Seeing a story's hero depicted in a photograph makes us more likely to empathize with that person.
- It can elicit emotional responses. An image of a dead elephant with its tusks sawed off by poachers can affect us much more powerfully than a written description of a threatened species or illegal wildlife trade.

Most of us snap pictures with our smartphones when we're on vacation. But the resulting collection of images rarely tells a story beyond a mere visual checklist of selfies, scenic views, and family portraits. The challenge for a visual storyteller is to go beyond the superficial pretty pictures to attempt to capture the spirit and essence of a place. What tells you more about Paris: a snapshot of the kids in front of the Eiffel Tower or vignettes at sidewalk cafes and an atmospheric shot of the Seine coursing through the City of Light? Veteran photographer Jim Richardson, who has

photographed dozens of stories for *National Geographic Magazine*, describes how, early in his career, he came to realize that his job wasn't to photograph things; it was to photograph *ideas*. He would work with a picture editor to thoroughly research a story concept, and then distill the key elements of the story into a series of topics. The challenge was to turn those topics into original, memorable images.

What are the storytelling strengths of images? In a single image, a skilled portraitist can convey a vivid sense of *who*; and, of course, a street or landscape photo can transport us to *where*. But photographs can often fall short when it comes to the important elements of *what*, *why*, and *how*.

	Who	What	When	Where	Why	How
Image	●●●	●	●●	●●●	●	●

For examples of effective image-based stories, you need go no further than the International League of Conservation Photographers, a group I've long admired. Their members have created many multimedia stories with compelling images. An example is **Choking on Convenience** 🔗, which vividly depicts the devastating impact of plastics on the natural world.

Choking on Convenience from the International League of Conservation Photographers.