

# Cartographic Perspectives

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# Cartographic Perspectives

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## LETTER FROM THE EDITOR

Each time I visit the *Cartographic Perspectives* website ([cartographicperspectives.org](http://cartographicperspectives.org)), I can't help but think about the content, both new and old, that can found there, and the virtual army of volunteers working behind the scenes to make it all a reality.

The new content—available to everyone—is the articles that are published to our website as soon as they have undergone the rigors of review and the scrutiny of editing. This simple-sounding statement encompasses the efforts of scores of individuals volunteering their ideas, knowledge, talents, opinions, and time to make entries as informative, correct, and readable as possible. Let me attempt to break this down a bit and recognize some of the people behind the publication during the last year.

I'll start with the authors of articles, for without them there would be no CP. Authors published in the "Peer-Reviewed Article" section should take great pride in their work, as only about 35% of articles submitted to this section are accepted for publication. CP also encourages the research of student scholars with its Peer-Reviewed Student Paper Competition, and was pleased to announce Bin (Owen) Mo as its first winner in 2012. For students interested in vying for the \$1,350 award, full details on the competition can be found at the back of this issue, or at [bit.ly/1bia1O7](http://bit.ly/1bia1O7). In addition to peer-reviewed articles, numerous other contributors have found the other sections of our journal a welcoming venue for everything from their maps to their tutorials to their reviews.

I'll move on to my editors, who ensure the quality of the great variety of issues and pieces we publish. The last of the 2012 issues was a Special Issue on "Aesthetics in Cartography" with Bernie Jenny and Aileen Buckley serving as Guest Editors. They did an outstanding job of putting together content for this issue, much inspired by a Special Session at the 2012 NACIS Annual Meeting. This issue was enthusiastically received by our readership, and I welcome suggestions for other Special Issues in the future.

The Assistant Editors of CP make the entire publication process hum like a well-oiled machine, so I was dismayed at first to hear of Laura McCormick's plans to step down as Assistant Editor in 2013. Laura served for 2 ½ years as the lynchpin of the publication, volunteering innumerable hours of the highest quality work above and beyond those required for her role. Our readership will be glad to hear that this potential loss to the journal was turned into a win-win situation,

when Daniel Huffman accepted an offer to become the new Assistant Editor, and Laura McCormick replaced him as Section Editor of “Visual Fields.” Laura is happy to stay involved in a more limited role, and one need look no further than Daniel’s previous layout and copy editing work with the *Atlas of Design* ([atlasofdesign.org](http://atlasofdesign.org)) to see the artistry and talent he brings to this position. I’d also like to thank Elaine Guidero, who has done a substantial amount of copyediting alongside Laura and Daniel, and congratulate her on being elected as the Student Member of the NACIS Board of Directors!

Section Editors seek engaging content outside of traditional academic peer-reviewed articles, and make CP the most unique and inclusive journal of the cartographic community. I encourage you to contact these individuals directly if you would like to write an article germane to their sections. In addition to Laura heading “Visual Fields,” Terri Robar gathers materials for “Cartographic Collections,” Alex Tait scouts out content for the “Practical Cartographer’s Corner,” Andy Woodruff reveals what is “On the Horizon,” and Lisa Sutton keeps the readership updated on recent publications with “Reviews.”

I’ll also recognize those who contribute to the review process, especially for peer-reviewed content. The Editorial Board listed on the “About” page assists review efforts in so many ways. In addition to an Editorial Board member serving as a reviewer for each submission, I often make inquiries to Board members, including suggestions for reviewers for submissions outside of my ken. I sincerely thank each of them for their expertise and guidance. I would also like to take this opportunity to welcome Bernie Jenny to the Editorial Board, replacing outgoing member Jon Kimerling, who has decided to step down.

Being an anonymous reviewer, as you may imagine, can be a thankless job. Although acknowledging reviewers for each issue might compromise their anonymity, we feel comfortable publishing a list compiled over a year’s worth of issues. The following reviewers have chosen to continue to support CP with their expertise and effort in a time when many academics feel besieged by such requests.

Tom Auer	Amy Griffin	Mark Monmonier
David Barnes	Dennis Haskell	Ian Muehlenhaus
Scott Bell	Anja Hopfstock	Judy Olson
Babs Buttenfield	Daniel Huffman	Tom Patterson
Sébastien Caquard	Bernie Jenny	Michael Peterson
William Cartwright	Alexander Kent	Andrey Petrov
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Amy Cutler	Jon Kimerling	Jean-Paul Rodrigue
Mathew Dooley	Alex Klippel	Rob Roth
Matthew Edney	Jim Meacham	daan Strebe
Sara Fabrikant	Philip Mead	Denis White
Philippe Forêt	Jeremy Mennis	Katharine Willis

The timely reviews from these subject-matter experts, generally within four weeks, helps to ensure that newly published articles on our web site are valuable news to the cartographic community.

Our web site may seem focused on delivering the newest content in the timeliest manner possible, but let’s not forget what is old. Rob Roth, CP’s other Assistant Editor, in addition to

all of his regular duties (including posting content in HTML format to enhance searching and discovery), has also spearheaded an effort to bring the CP archives into the Open Journal System that powers our web site. Rob has worked with student volunteers Rudy Omri and Grace White, to whom I'm very grateful, to include **all** past issues and articles of CP in a searchable format. Current efforts have already gotten us back to issue number 20 from 1995, and I look forward to having all CP content in one web spot soon.

Finally, one last thing old and new: my editorship. The Board of Directors of NACIS asked me to consider a second three-year term as Editor of CP, beginning in January 2014. I greatly appreciated their strong support and was pleased to accept their offer. I look forward to continuing the transition of CP into the open-access journal of cartography.

*Patrick Kennelly*



**RESPONSE TO DAN COLE'S REVIEW**

David Imus

Dan Cole's review of *The Essential Geography of the United States of America*, which appeared in issue 72 of this journal, raises a number of interesting issues worthy of lengthy discussion. Five of them, however, I can address comprehensively with just a few words.

1. A folded map often requires a reversed cover panel, standing it on its head in relation to the rest of the printed image so that it is right-reading in the sales rack. If the flat sheets had been published with a panel standing on its head, that indeed would have been indefensible. But the flat sheets are published without the cover panel, and the same basic information appears in a separate sheet of "liner notes."
2. In keeping with the use of Spanish spellings in Mexico and French spellings in Québec, I used the reservation nomenclature adopted by the Indian Land Working Group for its map titled "Native American Reservations."
3. I specifically decided to represent the Umatilla Reservation as a point symbol after first comparing polygon vs. point representations. Due to its small size and the high percentage of its boundary line that would have been obscured by overprinting type, this reservation's geographic extent would not have been easy for the user to see when represented as a polygon. It also would have been misleading to show the Umatilla Reservation as a polygon, since much of the area inside the congressional boundary is non-reservation land.
4. While it is true that the Yakama, Jicarilla Apache, and Tohono O'odham people identify themselves as "nations," the websites of these three nations identify their associated lands as "reservations."
5. The reviewer correctly notes the omission of two reservations in Nebraska, which will be corrected in the next edition.

More generally, I appreciate the reviewer's many positive observations and his generous summing up. Many of his

substantive criticisms, however, seem to me to reference the press release more than the map. Criticizing the press release may be valid, but it doesn't address the reasoned cartographic judgments behind virtually every detail on this map, and a more comprehensive explanation of those judgments is appropriate. I'm working on that now and plan to submit it as an article to *Cartographic Perspectives* in the near future.

**RESPONSE TO DAVID IMUS**

Dan Cole

I have no argument with the concerns David Imus raised in issues #1 and #2 in his letter, although the index tri-lingual title reads "Native American Reservations – Reservas de Indios Americanos – Réserves d'Indiens d'Amérique." So obviously, some consistency is warranted since the Spanish and French translate as "American Indian Reservations."

Regarding issue #3, given space constraints, I assume that Mr. Imus had a square mile figure below which he would symbolize the polygons as points; as well as a lower square mile figure below which he would not symbolize tiny reservations at all. A note should be included in his index for Native American Reservations indicating what these areal cutoffs are. And due to the effects of allotment and alienation, his last sentence is not unique to Umatilla Reservation; rather, it is actually applicable to many other reservations (especially in the Great Plains) that are depicted as polygons.

Concerning Native American lands, a quick overview of the map revealed the following additional problems:

1. The Havasupai point should be moved to the northwest since it borders the Hualapai Reservation and the Colorado River.
2. Portions of the Uintah and Ouray Reservation are labeled as "U O I R." Since I R is not defined in the abbreviations, I suggest replacing it with "U O Res."
3. The Ute Mountain Reservation does not appear as a polygon or a point but instead is included in the



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Southern Ute Reservation, which is too large, so those boundaries need to be corrected.

4. The polygon for the Wind River Reservation needs to be corrected: the gap on the east side should be closed since the reservation has not been legally diminished by the courts. That gap area in the east is jointly administered by the tribes and the Bureau of Reclamation. Check the National Map viewer at [viewer.national-map.gov/viewer/](http://viewer.national-map.gov/viewer/).
5. The Lake Traverse Reservation is incorrectly labeled as the Sisseton-Wahpeton Reservation. See [www.swnsn.gov](http://www.swnsn.gov).
6. The shapes of the Rocky Boys and Zuni reservations do not look correct when compared to those seen at the National Map Viewer.

Concerning the fourth issue that Mr. Imus raised in his letter, when I went to the Yakama Nation website, their map legend provided the name “Yakama Nation Reservation” ([www.yakamanation-nsn.gov/docs/CededMap0001.pdf](http://www.yakamanation-nsn.gov/docs/CededMap0001.pdf)).

As for issue #5, I think that Mr. Imus is on the right track to include the addition of the two missing reservations in Nebraska. Given that, he may decide to add more such as the Oneida in Wisconsin and the Big Cypress and Miccosukee reservations in Florida.

Lastly, I cited the press release only in the first three of nine paragraphs of my review. And as I stated in the last paragraph, *The Essential Geography* is an excellent map and I recommend its use in classrooms and elsewhere, but its use should be in conjunction with other single-theme maps.



recognition does exist of the differences between spatial patterns of population density and the human experience of crowdedness, the two terms are often confused in geographic literature and cartographic applications. As Yi-Fu Tuan states, “space and spaciousness are closely related terms, as are population density and crowding; but ample space is not always experienced as spaciousness, and high-density does not necessarily mean crowding” (1977, 51). Although the confusion between population density and crowdedness may be the unintended consequence of conceptual misuse and map design, a critical examination of the conventional population density metric itself illustrates how it is fundamentally flawed for contemporary urban population analytics and visualizations.

While conventional population density (e.g., persons per square mile) effectively characterizes the number of people residing within a given geographic extent, it is limited in its ability to capture settlement patterns within contemporary vertical urban environments. Applied to urban spaces, it assumes both the uniform distribution of individuals as well the uniform distribution of vertical residential structures across the bounded spatial unit. A common visualization of conventional population density, the choropleth map, represents these data as zones of unique values abruptly ending at defined borders. Consequently, conventional population density metrics and subsequent cartographies fall short in illustrating a contemporary urban pattern of individuals distributed within the vertical landscape of buildings. To understand the spatial occupancy within this vertical landscape and, thus, to begin to shed light on the lived experiences of crowdedness in cities, a new visualization technique is needed.

The need for alternative techniques to analyze and represent populations in cities is essential, as over half of the world’s population now lives in urbanized spaces (United Nations 2012). Furthermore, the manner in which people are settling within the urban landscape is changing; in many urbanized areas, residential patterns are rapidly transforming away from sprawling suburban developments towards centralized, revitalized, and integrated residential spaces accommodating institutional pressures on resources and infrastructure (Kern 2007). Increasingly, a higher proportion of urban residents are living in stratified vertical landscapes unevenly distributed across the city. With this growing urban verticality, conceptualizations of urban design, social interaction, political power, and human experiences of space must also mature in order to overcome the unintended consequences arising from the flatness of conventional metrics (Jones et al. 2007; Graham and Hewitt 2013).

Additionally, societal functions such as environmental risk planning, crime analysis, public health resources, emergency response, and spatial interaction modeling will benefit considerably from increased insight into both where and how people live in the urban space (Chen 2002; Langford 2006; Mennis 2009). Visualizations that move beyond conventional population density are essential in these rapidly growing, recentralizing, vertical urban spaces. Current cartographic approaches capture a picture of the urban space that excludes this verticality, and as a result, the ubiquitous choropleth population maps of cities show little about how populations actually live in cities.

Conventional visualizations of population within the vertical landscapes of contemporary cities produce unintended confusion between population rates and individual experiences. Moving forward, I will refer to this confusion as the vertical space problem. The primary goal of this paper is to develop a straightforward and accessible methodology to reduce the prominence of the vertical space problem in visualizations of urban populations. Chicago, with a large population and an abundance of vertical residential environments across an expansive geographic area, serves as the study area to explore the relationship between people, built environments, and perceptions of space.

By exploring the vertical space problem across the landscape of Chicago, I develop herein the Personal Space Metric (PSM), an extension of dasymetric techniques to conceptualize and represent living spaces across the extent of a contemporary city. The PSM works to minimize the confusion of the vertical space problem and to facilitate a more nuanced understanding of the complex residential urban landscape. This alternative technique characterizes how urban verticality produces unmeasured population space and provides insight into the primary question of this paper: how does the flatness of conventional population density visualizations confuse our understanding of contemporary urban settlements? To answer this question, this paper first explores the limitations of conventional population density and the choropleth map in the context of the contemporary vertical city. Drawing from dasymetric techniques, I demonstrate a straightforward technique to measure, visualize, and understand how people vertically inhabit the city of Chicago. The resulting metric, when visually juxtaposed with conventional population metrics, reveals a more refined picture of the contemporary urban residential landscape. I conclude by arguing how new techniques to represent the increasingly prominent verticality of cities facilitate a greater understanding of the political, social, and institutional landscape of the contemporary city, which is masked by the flat discourse of conventional population density approaches.

## THE LIMITATIONS OF POPULATION DENSITY AND ALTERNATIVE APPROACHES

Before illustrating an alternative approach, it is important to consider how visualizations of conventional population density influence and limit understandings of population distributions. Population density is the number of people per unit of ground space and is most commonly visualized with a choropleth map. Standardizing total population by ground area helps to eliminate misrepresentative comparisons of populations across differently-sized geographies (Openshaw 1983). A well-designed choropleth map assigns each polygon a different lightness, illustrating population density in a sequential visualization across administrative geographic space (Slocum et al. 2009). Though populations are more appropriately conceptualized as a continuous phenomenon, the choropleth design breaks populations into discrete classes with differences defined abruptly at administrative boundaries (Holt et al. 2004). Though administrative boundaries rarely reflect natural breaks, and changes in population are typically more gradual, choropleth maps give the impression of abrupt changes at the boundaries of geographic units (Eicher and Brewer 2001). Additionally, choropleth maps imply a homogenous

distribution of population across the extent of each unit (Maantay et al. 2007). In reality, urban populations are often clustered and stacked in buildings, not distributed uniformly across administrative spaces. A well-designed choropleth map, though useful for many applications, is not suited to detailed urban population mapping.

Langford and Unwin (1994), recognizing the limitations of choropleth maps and striving to refine the accuracy of population visualizations, “developed a novel mapping method based on remote sensing, dasymetric mapping, and generalization” (Slocum et al. 2009, 278). A dasymetric approach is an alternative population mapping technique utilizing ancillary data to allocate populations into smaller more appropriate spatial units. Though dasymetric techniques are over a hundred years old (Petrov 2008) and were utilized in early population research (Wright 1936), they had yet to be comprehensively developed and standardized prior to Langford and Unwin’s study (Eicher and Brewer 2001). By utilizing modern remotely-sensed data, raster-based GIS data structures, and raw census populations, Langford and Unwin were able to illustrate how “representation of spatial discontinuities in the data is divorced from the boundaries of the collection unit” (1994, 23).

As Maantay et al. (2007) note, contemporary developments in dasymetric technique have been expansive and diverse in approach and scale. These approaches include: a binary method (Eicher and Brewer 2001; Poulsen and Kennedy 2004), an areal interpolation method (Langford et al. 1991; Goodchild et al. 1993; Eicher and Brewer 2001; Holt et al. 2004), a three class and limiting variable method (Eicher and Brewer 2001; Liu et al. 2006), a land use/land cover as ancillary data approach (Langford and Unwin 1994; Mennis 2003; Sleeter 2004), an image texture method (Liu et al. 2006), regression and kernel density-based approaches (Flowerdew and Green 1994; Goodchild et al. 1993; Martin et al. 2000; Langford 2006), a heuristic sampling method (Mennis 2003), and a street-weighted interpolation method (Reibel and Bufalino 2005). As demonstrated by the extent of methodological development in the past twenty years, a dasymetric approach clearly has advantages in painting a more precise picture of where people actually live within administrative spaces, by allowing the reconfiguration and segmentation of bounded administrative units into smaller zones of population suitability (Maantay et al. 2007).

Recently, scholars have recognized the need to disaggregate census data into the smallest residential units possible: the individual buildings (Lwin and Murayama 2009; Lwin and Murayama 2011; Ural et al. 2011). Recent volumetric dasymetric methods illustrating the importance of micro-scale urban analysis have significantly contributed to ideas of urban verticality, residential density, and mapping crowdedness. These studies, however, are limited to the scale of neighborhoods or campuses, employ expensive geocomputational processes, and often rely on lidar and Object-Based Image Analysis (OBIA) derived datasets. Consequently, though urban volumetric analysis is conceptually impressive, the methods are not suitable for large scale projects at this time. To map the residential distribution and the personal spaces of individuals in a city the size of Chicago, a conceptually equivalent but computationally less demanding dasymetric technique is needed. Building

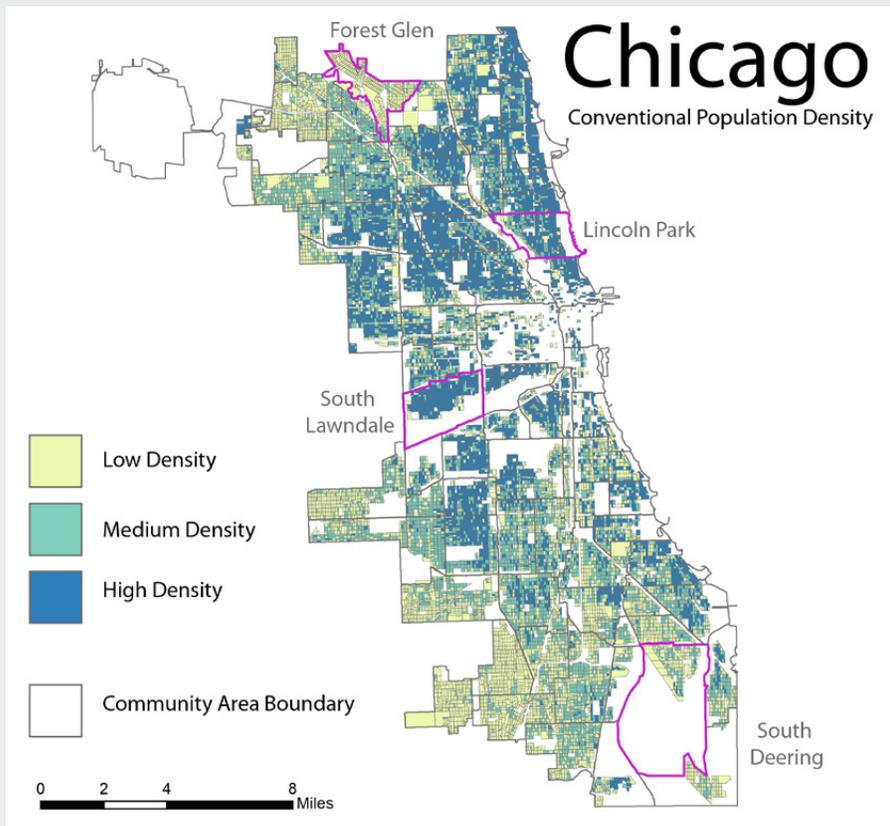


Figure 1: A choropleth map of conventional population density in Chicago at the census block geographic unit. Data provided by United States Census Bureau, Chicago Metro Agency of Planning, and the City of Chicago GIS Department.

on volumetric cartographies (Lwin and Murayama 2009), this paper introduces an alternative dasymetric approach called the building footprint technique.

## THE VERTICAL CITY

Many previous micro-scale dasymetric map projects, especially those utilizing residential buildings to map detailed residential patterns, have been relatively small in scope. Chicago, with 2.7 million residents distributed across 17,665 census blocks residing in over 500,000 structures, is too large and complex for many of the established volumetric techniques. To understand the micro-scale human patterns over such a large spatial extent, a visualization technique is needed that is straightforward in approach but as conceptually robust as existing methods. Before delving into specific data and methodology, however, it is important to consider the ways in which Chicago illustrates the larger need for tools that expand our understanding of the verticality of contemporary cities.

First consider Figure 1, a choropleth population density map of Chicago. Four community areas are highlighted, two with predominately high-density census blocks (Lincoln Park and South Lawndale) and two with predominately low-density (Forest Glen and South Deering). This map suggests the community areas of Lincoln Park and South Lawndale, both consisting of primarily high-density census blocks, are similar or related to each other. Representing two places with the same symbol for one attribute suggests that they are similar in additional attributes not explicitly represented in the map (Crampton 2004). For example, two spaces shown as having equal rates of population density may also be assumed by readers to be similar in other community features, including social mobility, cultural identity, political affiliation, racial and ethnic distribution, and power structures (Lamont and Molnar 2002).

The fundamental limitation of the conventional population density metric is that it restricts populations to a flat two-dimensional space, neglecting the built verticality ubiquitous in contemporary cities. Figure 2, a photograph looking north along the lakeshore of Chicago, illustrates the vertical residential environment of the city and clearly demonstrates why new cartographies of population spaces are needed: disregarding the vertical spaces in visualizations of residential environments is

quite problematic. Conversely, a photograph of the residential environment of South Lawndale (Figure 3) shows a residential environment with the same conventional density but a vastly different built environment and type of residential space. The contrast between the two images is striking; it is clear these two parts of Chicago have drastically different residential environments, yet conventional metrics imply that they are similar and likely related to each other. Jones et al. recognize the “widespread confusion over the relationship between vertically stratified scales and horizontally extensive spaces” (2007, 265) and how this asymmetrical relationship between the two axes influences conceptualizations of space. Simplifying the complex vertical spaces of contemporary cities down to the flatness of conventional techniques leads to incomplete comprehensions of urban spaces and inaccurate discernments between crowdedness and density. Verticality—how people occupy the built spaces above the ground—is an essential component in the host of ways materiality, imaginaries, experiences, and power intersect across the horizontal expanses of contemporary urban space (Graham and Hewitt 2012). The cartographic technique introduced in this paper contributes an alternative visualization to the growing theoretical conceptualizations of verticality in cities.

Chicago, in addition to geographic size, serves as the study area for this project due to the strong architectural tradition of vertical structures (Kaufman 1969), drastic socioeconomic delineations between neighborhoods (Rankin 2010), and widespread redevelopment initiatives geared at the recentralization of artistic, culturally-vibrant, upper middle class neighborhoods pervasive to many American



*Figure 2: The view from the John Hancock Tower looking north along the Lake Michigan coast, including the community areas of Lakeview, Lincoln Park, and Uptown. The vertical residential structure of the city is evident in the apartment and condominium structures of this part of the city. Photo by author, 2011.*



*Figure 3: Row houses in South Lawndale, typical of many of the high-density community areas on the South Side and West Side of the city. The flat residential structures of this community area have similar population density rates to the vertical residential environments of the Near North, though the built environment is vastly different. Photo by author, 2011.*

cities (Solnit and Schwartzberg 2000; Ley 2003; Lees 2003; Lees et al. 2008; Slater et al. 2012). This verticality, neighborhood divisions, and changing urban spaces in Chicago allow for the drawing out of the distinct differences between density and crowdedness across the city.

The exclusion of vertical space in conventional techniques produces confusion between the metric of density and the experience of crowdedness. Altman (1975) describes crowdedness as an individual perception of higher social contact than desired. Gifford (2007) connects increasing population density rates with heightened negative social feelings of individual crowdedness. Social science literature has persistently confused density and crowdedness, equating increased population density with the loss of individual control (Jain 1987; Kaya and Erkip 2001; Yeh and Yuen 2011), feelings of aggression (Freedman et al. 1972; Novelli et al. 2010; Watve 2013), and social withdrawal (Sundstrom 1978; Winkel et al. 2009). Boyko and Cooper (2011) point out that the measurement of density is a nebulous spatial concept with various combinations of units, calculations, and metrics, depending on professional discipline and intended use. In contemporary cities, density should be conceptualized as external space density and personal space density (Yeh and Yuen 2011). People experience crowdedness through increases in personal space density, not through the increased vertical stratifications of individuals within an external unit. But much of the social science literature increasingly treats conventional conceptions of external space density and personal space crowdedness as synonymous and interchangeable terms.

The confusion of density and crowdedness has additional unintended consequences in the understanding of urban spaces. Research has shown that the contrast between spaciousness and crowdedness serves as a demarcation between radically different experiences of place (Tuan 1977), quality of life (Schmidt et al. 1979), and levels of personal satisfaction (Kearney 2006). The persistence of this confusion and the potential for misleading representations of people in space clearly illustrates an overarching need to parse out the different types of personal spaces that are included within greater conventional high-density or low-density zones. Conventional population density is not the same as crowdedness; rather crowdedness is the amount of personal space an individual has within the residential environment of a place relative to others within a similar socially-constructed boundary. For this project, I consider crowdedness in Chicago to be the amount of personal space an individual has within the home compared to people in the rest of Chicago.

## THE PERSONAL SPACE METRIC

As illustrated above, the vertical residential environment of Chicago creates a spatial dimension not characterized by the flatness of conventional population density metrics. Residential buildings are both horizontally arranged and vertically stratified across the surface of the city, creating three-dimensional living spaces. The building footprint dasymetric technique presented in this research requires three inputs—census data, zoning codes, and building footprints with number of floors—to calculate the Personal Space Metric (PSM). This extension of

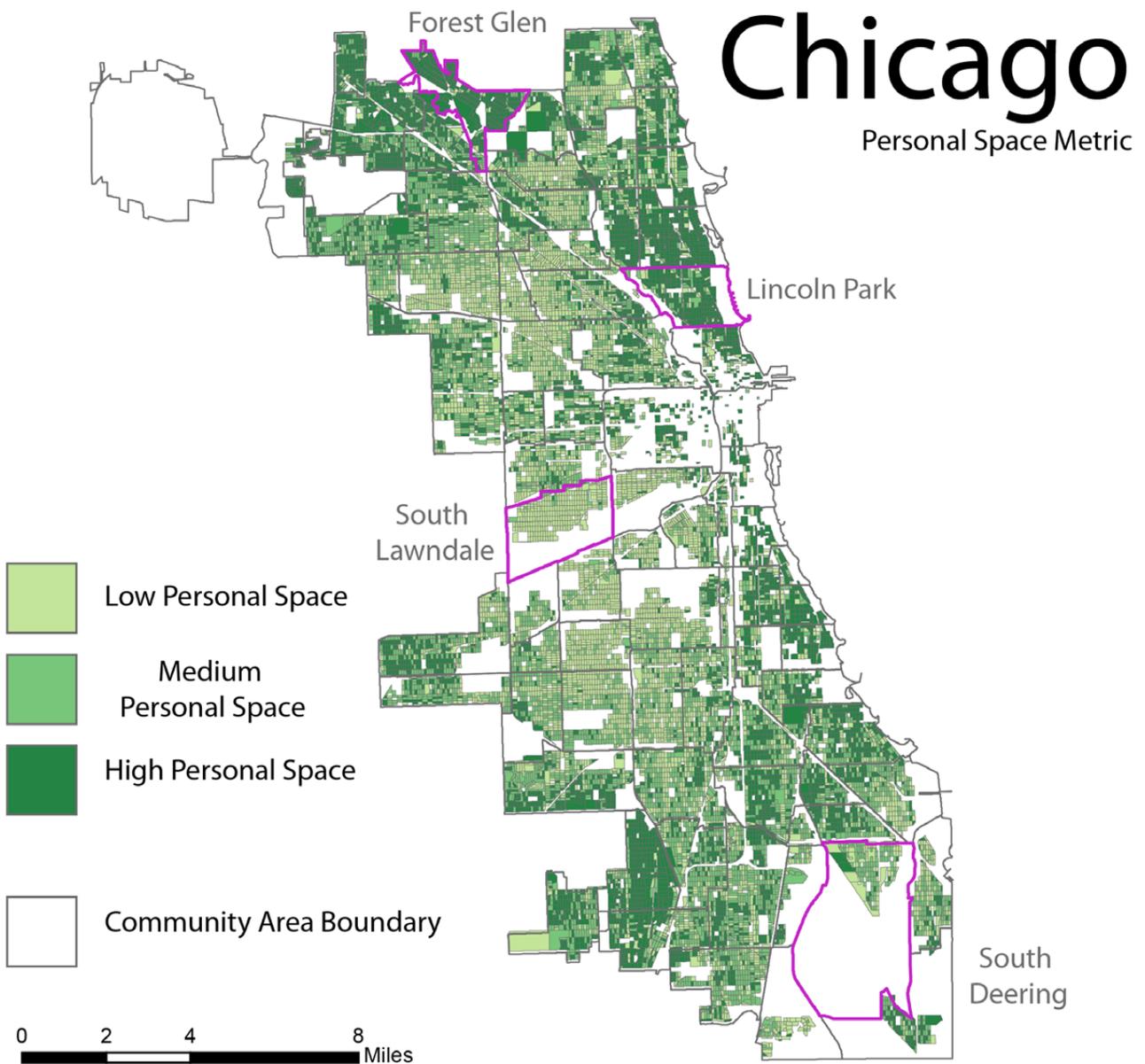


Figure 4: The PSM, a calculation of how much space each person has within the vertical residential environment of the city, shown at the census block level. Data source: United States Census Bureau, Chicago Metro Agency of Planning, and the City of Chicago GIS Department.

volumetric dasymetric cartographies provides a new technique for visualizing the amount of space each resident of Chicago has within the built residential environment of the city.

The first step in the building footprint technique is to separate residential from nonresidential structures throughout the city using a binary dasymetric approach. This method masks out all of the buildings in the city in which people do not live (Maantay et al. 2007) and allocates all residential buildings in the city as the places of residential suitability. Certainly it will miss a small percentage of the

population living in non-residential buildings (residential motels, homeless, squatters, etc.), though it is unlikely this sector of the population was tabulated by the 2010 Census. Mixed-use buildings, with both commercial and residential zoning designations, add an additional layer of complexity to a traditional binary analysis. During this first step of the analysis, all mixed-use buildings are assigned as suitable residential living spaces. The limitations imposed by administrative demarcations are offset by assigning only specific buildings within the larger boundary areas as suitable living spaces.

The second step is to calculate the total available living space for each residential building using the product of the square footage of the building footprint and the number of stories of that building. While building datasets with this level of detail—provided for this research by the Chicago Metro Agency of Planning—are not universal, similar official datasets were easily found for the cities of Boston, New York, Washington, Portland, Denver, Seattle, San Francisco, Los Angeles and Minneapolis. As mentioned, mixed-use buildings add additional complexity to this approach. To this point, mixed-use and residential have been treated equally. To parse out the portion of a mixed-use building dedicated to residential housing, I utilized a model based on urban development simulation experiments, assigning 60% of the total space to residential and 40% to non-residential (Waddell et al. 2003; Waddell et al. 2007). Due to the degree of variation in the zoning of mixed-use and the fluidity of occupancy and ownership, the 60/40 estimator is appropriate for delineations between residential and non-residential (Talen 2006). As only 4.81% of the buildings in Chicago are zoned mixed-use, potential misrepresentations from this estimator are minimal over the extent of the city. At this point in the building footprint technique, each building in the city has a designation of residential suitability and a total available living space.

The final step is to populate the buildings with census data using a simple areal interpolation approach, which allows for the transformation of a source data set into a target data set (Langford et al. 1991; Goodchild et al. 1993; Mennis 2003). Though studies utilizing this approach are often criticized for assuming that population is homogeneously distributed across the target zone (Maantay et al. 2007), this limitation is overcome by the scale of our target data. The PSM technique does not delineate interior building spaces, treating each individual residential building in Chicago as a small homogeneous zone. The interpolation is straightforward: each building receives the percentage of the census block population equal to its percentage of total residential space within that same block. For example, if one building accounts for 25% of the total living space of a census block, 25% of the population is allocated to that specific building. Simple areal interpolation is a straightforward, computationally light approach that is suitable for this project based on the scale of the data and the extent of the study area.

The initial uncertainty in the development of the PSM was the inclusion of common spaces inherent to multi-family residential structures that vary by the design of each individual building. Step two in the building footprint technique calculates the total amount of floor space in each building. This total includes all common areas inside the building: hallways, laundry facilities, storage rooms, foyers, etc. During the third step, census totals are allocated to a total including

this not-quite-residential space. As a result, a varying percentage of the PSM, depending on architectural design, is not explicitly individual space. With this approach, a boundary is effectively drawn separating personal and public spaces. Common spaces inside the building are a part of the PSM, common space outside the building is not, and is classified as public. This organization reveals a conceptual taxonomy of spaces in contemporary cities. In the urban environment, there are private, semi-private, semi-public, and public spaces. Private and semi-private are spaces within the residential structures. They are places removed from the public entanglements of social interaction (Blunt 2005), and are instead places of security (Tuan 1977), and of companionship (Tuan 2004a). Though much work done has been done on the ways the state intrudes into private spaces (Hyndman 2008; Dittmer and Dodds 2008), the emergence of technological surveillance (Chun 2006; Goodchild 2007; Elwood 2010), the redefining of privacy (Elwood and Leszczynski 2011), and the prominence of exclusionary architectural designs that work to blur the boundary between public and private life (Fincher 2004; Gandy 2005), there is a materiality to the idea that the inside/outside worlds drive fundamentally different social experiences. The private or home space “is a place that offers security, familiarity, and nurture” (Tuan 2004b, 164). By entering the interior of a multi-unit residential building—whether one is checking the mail, locking up a bike, or casually chatting with a neighbor on the way to the individual unit—a vital transformation in movements, experiences, and security between the exterior public and the interior personal occurs. Personal space is thus the coupling of private and semi-private spaces; while the semi-private spaces may not be explicitly residential, they are personal in nature.

The PSM provides an effective new visualization for overcoming the flatness of conventional population density and understanding the vertically-produced residential spaces in contemporary cities. The PSM classifies all public, semi-public, commercial, industrial, natural, and infrastructural spaces as non-residential and then allocates the entire city population into the personal spaces of the three-dimensional residential environment. This dasymetric approach moves beyond the planar cartographic imagination inherited from conventional political spatialities (Elden 2013) and builds upon the verticality of existing dasymetric techniques. The PSM facilitates new ways of rendering and understanding the dimensionality of the building space and population concentrations. Referring back to Figure 1, the community areas of Lincoln Park and South Lawndale appear to be similar, as both are high-density spaces. Accounting for the vertical residential environment, however, illustrates the fact that these two areas of Chicago have drastically different amounts of personal space (Figure 3). Similarly, the community areas of Forest Glen and South Deering, in the far north and south of the city respectively, have similar conventional population density rates but very different levels of personal space. With this map, questions begin to emerge of what socioeconomic and political factors produce personal spaces asymmetrically across a landscape.

The building footprint dasymetric technique calculates the amount of personal space each individual in the city has within each residential structure, recognizing the verticality of the urban landscape and circumventing the vertical space problem. It assigns every residential structure in the city an amount of personal space using three inputs: census data, zoning codes, building footprints. This approach is

designed to be easily repeatable with accessible data and minimal computational expense across different geographies and scales.

## A BIVARIATE POPULATION MAP OF CHICAGO

The primary goal of this research is to better understand how the flatness of conventional population density confuses visualizations of human settlement patterns in contemporary, vertical urban space. A bivariate classification with conventional population density on the y-axis and PSM on the x-axis was used to compare the two metrics. Each was classified into three quantiles, creating an index of high, medium, and low values across the extent of Chicago.

A quantile classification has three clear advantages for this project. First, census block units are roughly the same size and thus, each of the nine classifications in the bivariate population map will have roughly the same map area (Slocum et al. 2009). Similarly-sized population units allow for more insightful comparisons across the spaces of the city. Secondly, quantile classification is naturally suited for ordinal level data. The ranges of the data are easily separated into rankings of high, medium, and low density or personal space and juxtaposed with each other on a three by three bivariate grid. Finally, a quantile data classification allows for the

range of the data in both variables to determine the class breakpoints. There is not an absolute threshold in which a place becomes crowded or spacious; crowdedness is deeply embedded in the individual experience of a person and the geographic context of the space (Tuan 1977). The ranges of population densities and personal spaces will vary drastically depending on place; perceptions of space in Chicago will certainly be different than those in other cities. What may be average in Chicago could be incredibly crowded in Denver or incredibly spacious in New York. A quantile data classification recognizes the fluidity of socially-constructed perceptions of crowdedness and allows for the range of the data within the analyzed city to drive the classification. High personal space in Chicago, for example, is classified as such by being in the upper third of the range of personal spaces available across the entire residential environment of Chicago.

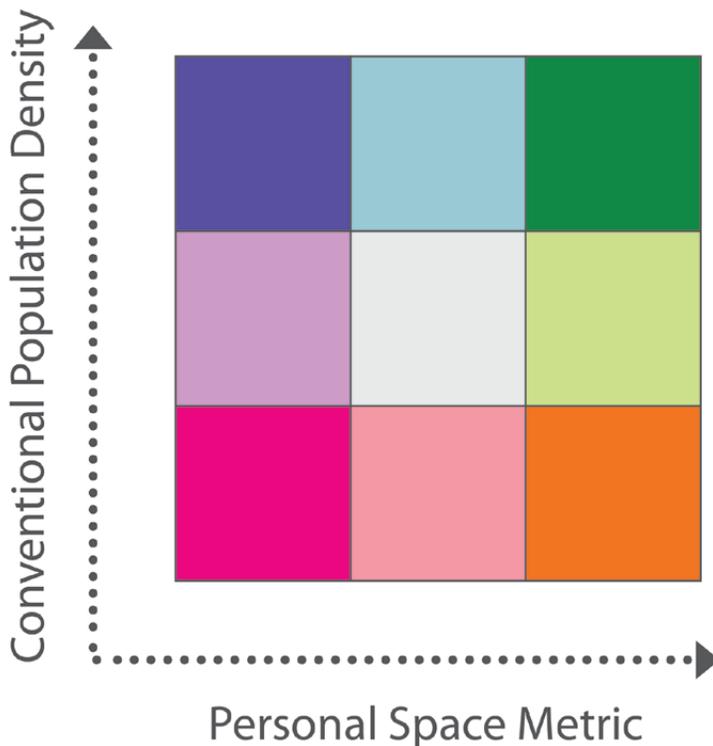


Figure 5: The bivariate legend illustrates the spaces where population density inaccurately characterizes the spaciousness or crowdedness of the residential environment. It uses a diverging color scheme on both axes to emphasize the corner classifications.

Combining the PSM and conventional population density on a three by three grid, symbolized with a diverging color scheme, highlights how the relationship of the two metrics unfolds over space (Brewer 1994). The diverging color scheme enables the high/low interactions of the two measurements to be emphasized in the four corners of the bivariate legend (Figure 5). The census blocks of Chicago with a low conventional population density and a low PSM are highlighted in pink, while those areas with a high conventional population density and a high PSM are shown in green. Illustrating the frequent confusion of high-density as crowded and low-density as spacious, the pink and the green classifications clearly highlight the places in Chicago where conventional population density does not capture an experience of crowded personal space.

Conversely, the other two corners of the legend, the purple upper left and the orange lower right, indicate the spaces where a conventional population density approach is a relatively accurate descriptor of personal spaces. Unfortunately, due to the overall complexity of urban housing environments, there is no clean taxonomy of neighborhood environments discretely falling into each of the nine classifications.

The four corners of the bivariate classification grid, however, illustrate strikingly different urban landscapes and significant spatial variations across the city of Chicago (Figure 6). The green classification, dominating the northeastern spaces of the city, is characterized by a vertical urban landscape with high-rise buildings and tightly-packed, redeveloped vertical living spaces. The purple classification indicates short, tightly-packed small urban homes and apartments on small properties, primarily in western Chicago. The orange classification denotes two distinctly different types of landscapes. The first is a suburban form with large houses on large plots of land along the northern and western edges of city; the second is one of emerging gentrification, unused commercial and industrial infrastructure being redeveloped into residential spaces in the center and near south of the city. Both types of spaces in the orange classification have relatively few people per census block and high personal space, but are drastically different types of built environments. The pink classification signifies a fragmented landscape,

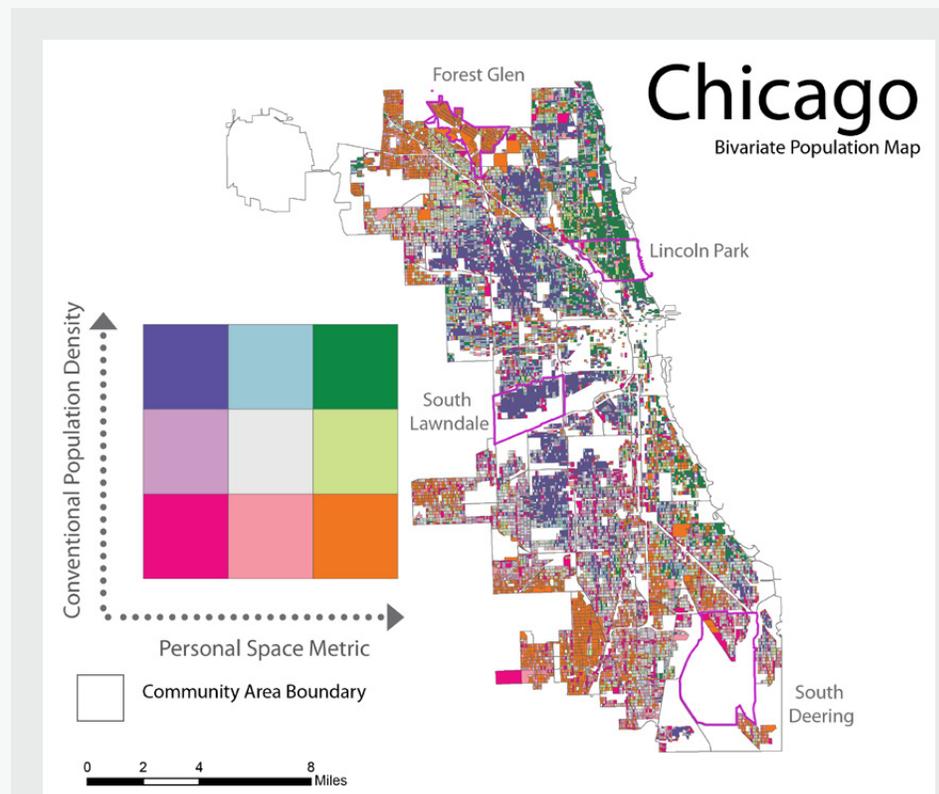


Figure 6: The bivariate map, at the census block geography, compares conventional population density and the PSM. The four corners of the legend employ higher saturation to highlight where the highs and lows of the two metrics intersect. Data source: United States Census Bureau, Chicago Metro Agency of Planning, and the City of Chicago GIS Department.

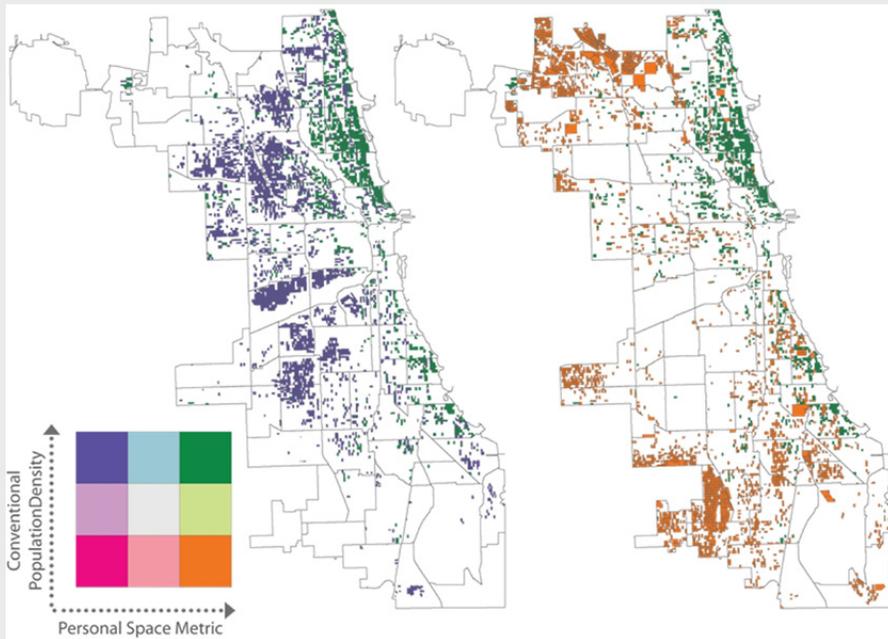


Figure 7: These maps show the green classification (high-density, high PSM) compared to the purple classification (high-density low PSM) on the left and the orange classification (low-density, high PSM) on the right. They clearly show the spatial variations in census blocks that share one of the two variables on the bivariate grid. Data source: United States Census Bureau, Chicago Metro Agency of Planning, and the City of Chicago GIS Department.

with small housing complexes surrounded by mostly industrial land uses. These four types of spaces illustrate the unique social, structural, and spatial residential patterns that are masked by the flatness of conventional population density.

Visualizing both the PSM and conventional population density in a single map highlights the regions of comparable value combinations (Olson 1981), and reveals the geographic variations of places which share of the two attributes (Monmonier 2006). In Figure 7, the green class (high PSM, high conventional population density) is the constant variable. In the left map, it is contrasted with the purple class. Both classes share the same conventional population density but are on opposite sides of the PSM spectrum. In the map on the right, the green class is contrasted with the orange class. Both share similar PSM values but are on opposite ends of the conventional population density range. Clearly there are significant spatial variations in census blocks sharing one of the two measures.

In theorizing about the production of urban spaces, Maciones and Parrillo argue that “people organize their daily lives and actions—whether cultural, economic, educational, or social—within constraints or opportunities of the built environment” (2004, 250). Indeed, the patterned relationship between the built environment, human experience, and representation is unevenly distributed across the city (McFarlane and Rutherford 2008). Emerging research on urban socioeconomic variability, governmentality, infrastructure, and human experience needs reimagined visualizations of population space to more carefully characterize human interaction with the urban environment. The approach outlined in this research calls to attention the verticality of cities and provides a unique visual alternative to move beyond the limitations and unintended consequences of conventional population density.

## CONCLUSION

The flatness of conventional population density standardizes and characterizes space with metrics which facilitate comparative analysis between different

geographies. Conventional cartographic approaches, however, fail to address confusions associated with the vertical space problem. Contemporary cities produce volumetric space in the form of discrete structures built vertically across the horizontal extent. The flatness of conventional methods propagates the vertical space problem through cartographic projects and affects representations in unpredictable ways. The building footprint dasymetric technique recognizes this verticality and provides an alternative approach and visualization technique which transcends the limitations of conventional population imaginaries and facilitates new vertical urban inquiry. The PSM, when juxtaposed with conventional population density, produces new cartographies of Chicago that illustrate the limitations of conventional population density for urban analytics and stressing the importance of developments in three-dimensional methods. Crowdedness is a socially-constructed experience that cannot be indiscriminately substituted with conventional geographic population density metrics. A personal space metric allows for greater insight into both where and how people live in the urban space. Recognizing the verticality of contemporary cities and visualizing unexplored residential spaces will lead to greater insights into the asymmetrical geopolitical, social, structural, and personal geographies of contemporary cities.

Both conventional population density and PSM tell a story about the geographic variations and similarities of spaces and places across the contemporary city. Neither metric can tell the whole story by itself; rather it is through the relationship of the metrics that we can begin to understand the interplay of spaciousness and crowdedness both inside and outside the home and its effect on the urban experience. Visualizing PSM and conventional population density simultaneously establishes a powerful distinction between crowdedness and density in the city space. Assumptions of crowdedness inferred solely from conventional population density are partial; there is a larger narrative of urban living spaces that can only be understood by shifting our fixation from the surface of the Earth upwards to the vertical structures that tower over us.

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**KEYWORDS:** Kenneth Slessor (1901–1971); *Cuckooz Contrey* (1932); *The Atlas* sequence (ca. 1930); “Dutch Seacoast”; poetry—twentieth-century; poetry—Australian; poetry and maps; Joan Blaeu (1598–1673); cartography—seventeenth-century; Amsterdam—seventeenth-century.

## INTRODUCTION

Kenneth Slessor—“one of Australia’s all-time great poets and journalists” (Blaikie 1966, 49)—grew up with the twentieth century to become his country’s first modernist poet. For map lovers, Slessor is a kindred spirit. He not only collected maps, but also won acclaim for his sea-faring poems that portray the exploration and mapping of Australia (see “Captain Dobbin” and “Five Visions of Captain Cook”: Slessor 1932, 19–23, 31–40). Moreover, his five-poem sequence *The Atlas* is one of the most original interpretations of cartography described in poetry. Opening and debuting in his important collection *Cuckooz Contrey* (11–18), *The Atlas* celebrates mapmakers: every poem in this sequence begins with an epigraph—or introductory quotation—that is also the title of a map or an atlas by a cartographer prominent during Europe’s “golden age of cartography,” and then alludes to that particular work throughout the poem.

Slessor had high hopes for *The Atlas*. The notebook in which he drafted all five poems (NLA MS 3020/19/1)<sup>1</sup> reveals the enormous effort that the poet—then at the height of his artistry and productivity—lavished on *The Atlas* and on mastering the period in which it is set. Not only does the sequence encompass nearly half of the 282 pages in that notebook, now considered a “National Treasure” (Elizabeth Caplice, email to author: May 28, 2010), but, as the notebook makes clear, Slessor considered naming his entire collection *The Atlas* (September 13, -s242).<sup>2</sup> Yet *The Atlas* sequence has not received the attention it deserves. Its 180-line length is less problematic than how esoteric it seems to be. Some of the seventeenth-century cartographers named in its epigraphs may be luminaries in their field, but they are little known even to the editors of Slessor’s *Collected Poems* (Slessor et al. 1994). Furthermore, Slessor was an intensely visual poet, and though all his collections were illustrated prior to 1944, not one of the maps referred to in *The Atlas* appears in his often-reprinted work. Until recently, scholars hadn’t even found the maps, let alone compared them to the poems that are their analogues. Nor have Slessor’s poems and the maps been compared to the ephemeral catalogue whose unusually lyrical *descriptions* of maps provided Slessor not only with his introductory quotations but also with “much of the information concerning the subjects [of *The Atlas*]” (Slessor 1932, 75). Except for the brief notes appended to *Cuckooz Contrey*, Slessor himself never explained his collection’s remarkable opening sequence. Meanwhile,

*Slessor’s five-poem sequence The Atlas is one of the most original interpretations of cartography described in poetry.*

1. “NLA” refers to the National Library of Australia, which holds the Papers of Kenneth Adolf Slessor (1901–1971) under the designation MS 3020.

2. For brevity, subsequent references to items in the poetry notebook that contains Slessor’s drafts of *The Atlas*—MS 3020/19/1—will be abbreviated “s#”. For example, “-s242” represents both “NLA MS 3020/19/1/242” (for the paper version) and <http://nla.gov.au/nla.ms-ms3020-19-1-s242-v> (for the online scan). As explained in my Introduction, Slessor drafted *The Atlas* (ca. 1930) in a 1927 desk calendar: neither 1927 nor the date accompanying each entry has anything to do with the actual year, month, or day in which the poet created the various parts of his sequence. Nevertheless, I’ve included the notebook’s “month” and “day” (“September 13”) along with its “page” number (e.g., -s242) to aid identification.

*The Atlas* has posed a challenge to its predominantly Australian audience: for the sequence is set in a world still extricating Australia's coastlines from "Terra Australis Incognita," the mythical super-continent known as "The Unknown Southern Land."

In three papers previously published in *Cartographic Perspectives*, I have attempted to remedy these gaps. My "Introduction to Maps and Mapping in Kenneth Slessor's Poetic Sequence *The Atlas*" provides an overview of the cartographic elements within Slessor's *oeuvre* before turning to the relationship between *The Atlas* and his poetry generally (Haft 2011). "Who's 'The King of Cuckooz?'" compares the first poem of the sequence to Robert Norton's military plan of Algiers (1620) and to a couple of catalogue entries describing that map; then explains the mysterious name "Cuckooz" (Haft 2012a). "John Ogilby, Post-Roads, and the 'Unmapped Savanna of Dumb Shades'" demonstrates how Slessor's familiarity with the English cartographer/publisher John Ogilby—and, in particular, with Ogilby's *Britannia* (1675) and *Traveller's Guide* (1699, 1712)—helped the poet turn a historic figure into an ecstatic Sisyphus as well as the central character of his sequence's second poem, "Post-roads" (Haft 2012b).

This paper, the fourth to tackle *The Atlas*, will tell the story of "Dutch Seacoast" and why Slessor made this poem the centerpiece of his sequence.

## KENNETH SLESSOR'S "DUTCH SEACOAST"

Let's begin with the poem itself:<sup>3</sup>

*The Atlas*, Poem 3: "Dutch Seacoast" (ca. 1930)

*"Toonneel der Steden van de vereenighde Nederlanden met hare Beschrijvingen uytgegeven by Joan. Blaeu."* ["Theater of the Towns of the United Netherlands, with their Descriptions, published by Joan Blaeu."]

No wind of Life may strike within  
This little country's crystal bin,  
Nor calendar compute the days  
Tubed in their capsule of soft glaze.

Naked and rinsed, the bubble-clear  
Canals of Amsterdam appear,  
The blue-tiled turrets, china clocks  
And glittering beaks of weathercocks.

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3. "Dutch Seacoast" is reprinted from the Haskell and Dutton edition *Kenneth Slessor: Collected Poems* (Slessor et al. 1994, 73–74), whose version removes the parentheses around the epigraph in the original *Cuckooz Contrey* version (Slessor 1932, 15), but is otherwise identical to it. The bracketed translation is my addition, as is the "de" prior to "vereenighde Nederlanden" throughout my article, since both Slessor and his source—from which the poet carefully copied his epigraph—accidentally omitted the word. The correct title is *Toonneel der Steden van de vereenighde Nederlanden*.

A gulf of sweet and winking hoops  
Whereon there ride 500 poops  
With flying mouths and fleeting hair  
Of saints hung up like candles there—

Fox-coloured mansions, lean and tall,  
That burst in air but never fall,  
Whose bolted shadows, row by row,  
Float changeless on the stones below—

Sky full of ships, bay full of town,  
A port of waters jellied brown:  
Such is the world no tide may stir,  
Sealed by the great cartographer.

O, could he but clap up like this  
My decomposed metropolis,  
Those other countries of the mind,  
So tousled, dark and undefined!

Brief and ordered, the third poem of *The Atlas* eschews the flights of fantasy, exotic words, and strange locales that characterized both “The King of Cuckooz” (*The Atlas*, poem 1) and “Post-roads” (*The Atlas*, poem 2). By contrast, “Dutch Seacoast” is almost Vermeer-like in its intimacy and in the clarity with which it suggests seventeenth-century Amsterdam. Yet it’s not a Dutch landscape that Slessor’s poem emulates, but a Dutch map. And this “old map,” as A. D. Hope once wrote, is “presented with a sort of ecstasy of perception . . . [that has] the power of illuminating the miracle of naked existence” (Hope 1963, 38; rpt. Thomson 1968, 129–130).

“Dutch Seacoast” is almost Vermeer-like in its intimacy and in the clarity with which it suggests seventeenth-century Amsterdam

“Dutch Seacoast” anchors *The Atlas*. To the end of his life, it remained one of Slessor’s favorites; or, as he himself put it, one of his eight “least unsuccessful” (letter to Professor M. B. Yoken, 14 March 1971: NLA MS 3020 1/12/973; rpt. in Mead 1997, 212, 285n1). Douglas Stewart considered it to be the first of Slessor’s “fine and watery poems” (Stewart 1977, 46), and in 1964, he included “Dutch Seacoast” in his influential anthology *Modern Australian Verse* (Stewart 1964, 6), just as Dennis Haskell would do later in the posthumous *The Sea Poems of Kenneth Slessor* (Slessor et al. 1990, 19). In Slessor’s ironic critique “To Myself,” first published as “Sentimental Soliloquy” in *Cuckooz Contrey* (Slessor 1932, 47),<sup>4</sup> the poet pokes fun at himself (“my rather tedious hero”) by singling out the canals described in “Dutch Seacoast” and the long-forgotten sources from which his poetry drew inspiration (Slessor et al. 1994, 98–99):

Have you not poured yourself, thin fluid mind,  
Down the dried-up canals, the powdering creeks,  
Whose waters none remember  
Either to praise them or condemn,

4. According to the editors of *Kenneth Slessor’s Collected Poems*, “Sentimental Soliloquy” was completed in April 1930 (Slessor et al. 1994, 381), which means “Dutch Seacoast” had been written by then.

Whose fabulous cataracts none can find  
Save one who has forgotten what he seeks?

A. D. Hope also plays with the poet's sources in "Slessor Twenty Years After: Why the Poems Survive." In that sensitive essay, Hope quotes from only one of Slessor's poems—the final three stanzas of "Dutch Seacoast"—and ends his eulogy with "countries of the mind" in the poem's penultimate line (Hope 1963, 38; rpt. Thomson 1968, 130):

If asked to say what Slessor has succeeded in best, I should say that it has been to create a genuine country of the mind for poetry out of material which seems only fit for charades and to have demonstrated that for Australia such a country is as suitable a source of creation as the native landscape.

As we shall see, the inspiration for "Dutch Seacoast" was also the inspiration for the entire sequence. In his poetry notebook, Slessor made "Blæu's painted towns" one of the opening phrases of *The Atlas* (February 22, -s58). Then he proceeded to list many of the features on the town maps, so that what he says about Blæu ends up being his longest entry prior to his work on "The King of Cuckooz" (ibid.; see March 2–3, -s62 to -s63). Even more compelling, the final stanza of "Dutch

Seacoast" reworks Slessor's very first poetic statement in *The Atlas* drafts: "If only world cd be like world of old mapmakers neatly parcelled into known and unknown" (March 5, -s64; see Caesar 1995, 59). Because his yearning for order evolved into such a dominant theme within the sequence, "Dutch Seacoast"—initially slated as second (March 18, -s76; March 28, -s83; April 3, -s88)—became the central poem of *The Atlas*.

The poem makes explicit Slessor's attempt to order chaos. While "Post-roads" focuses on human progress, ecstatic obsession and the quest for immortality, the middle poem of *The Atlas* deals with how artists represent space and time. For the first time in the sequence, Slessor has us imagine that he is actually looking at the map described by his poem: in this case, a plan view of Amsterdam with buildings in perspective by the Dutch cartographer Joan Blæu (1598–1673) (Figure 1). By critiquing Blæu's map



Figure 1: Detail of a portrait of Joan Blæu by Johan van Rossum (1660). Famous throughout Europe, Joan Blæu was called the "prince of printers" (*Typographorum princeps*; Koeman et al. 2007, 1314n126). The original oil on canvas painting measures 122×96 cm (48×38 in) and shows Blæu's left hand on the 4-volume edition of the *Atlas Novus* (1645–1654; see Van der Krogt 2005, 7). Photographed by the author at the *Nederlands Scheepvaartmuseum* in Amsterdam (RB 0301).

in “Dutch Seacoast,” Slessor encourages us to compare poetry with cartography, life with art.

## JOAN BLAEU AND OLD MAPS OF THE WORLD

Joan stood at the very heart of the famous Blaeu family of mapmakers and publishers, which included his father and partner, Willem Janszoon Blaeu (1571–1638), his brother Cornelis (1610–1644), as well as his sons and heirs Willem Blaeu (1635–1700), Pieter Blaeu (1637–1706), and Joan Blaeu II (1650–1712).<sup>5</sup> After his father’s death in 1638, Joan expanded their cartographic business and became “manager of the largest printing house in Europe” (Koeman 1970, 20; Koeman et al. 2007, 1314–1315). Like Willem before him, Joan also secured appointment as mapmaker and supplier of charts for the Dutch East India Company (VOC), which not only gave him “access to cartographic information from around the world,” but also proved a lucrative monopoly that he maintained until his own death thirty-five years later (Zandvliet 2007, 1460; see 1439). Although he became wealthy enough to hold high public office, two events in 1672 may have precipitated his demise: the destruction of his business by fire, and his dismissal from the City Council after two decades of service (Koeman 1970, 8–11). As for his cartographic masterpieces, *Atlas Maior sive Cosmographia Blaviana* (“The Grand Atlas or Blaeu’s Cosmography,” 1662–1672)—which had grown from the two-volume set that his father and he published in 1635 to a twelve-volume atlas containing 600 maps—enjoyed an “unparalleled reception” and became “a fiercely coveted status symbol among wealthy patricians” (Koeman et al. 2007, 1330); while *Toonneel der Steden van de . . . Nederlanden*, best known in English as Town Atlas of the Netherlands (1649; see Blaeu [1652?]a), represents “the culmination of the book and map production of Joan Blaeu” (Koeman et al. 2007, 1335; see 1315).

Slessor’s engagement with Joan Blaeu was immediate. Long before he’d completed the poem, “Dutch Seacoast” began to take shape as he copied three lines of prose into his poetry notebook. On the very first page in his draft of *The Atlas*, Slessor wrote (NLA MS 3020/19/1, February 22, -s58: Slessor’s emphasis):

Blaeu’s painted towns, fortifications, soldiers, tulip-gardens, blue-tiled roofs, scarlet houses in neat rows, canals, spires, watermills turning, rivers full of boats, shipyards, soldiers on fortifications, mynheers in groves (drinking)

As usual in *The Atlas*, most of Slessor’s verbal images come from the 1929 Francis Edwards catalogue *Old Maps of the World*. This particular passage comes from the catalogue’s preface. Which means that Slessor—while perusing *Old Maps of the World*—must have found these words as soon as he opened the catalogue (Francis Edwards 1929, 4–5) (Figure 2):

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5. All dates of the Blaeu family, except for Joan’s (see Koeman et al. 2007, 2071), come from Tooley et al. (1999–2004, 1:143–145; compare Van der Krogt 2000, 25–27). The editors of *Kenneth Slessor: Collected Poems* mistakenly assign Willem Janszoon Blaeu’s dates to his son Joan Blaeu (Slessor et al. 1994, 360).

PREFACE

THE collection of old maps has in the last few years assumed a position of considerable importance. There is a mystery and romance about old maps that their modern counterparts can never hope to rival. In the eighteenth century it was fashionable to condemn geographers who

... "in *Afric maps*

*With savage pictures fill their gaps,*

*And d'er unobtainable downs*

*Place elephants for want of Towns."* . . . SWIFT.

To-day that is the essence of their charm. Charles Lamb, the harbinger of many a romantic movement, was the first modern to discern their extraordinary attraction and to crystallise it in the phrase "*dusty maps of Mexico, dim as dreams, and soundings of the Bay of Panama.*" To hold an ancient atlas of rich and gorgeous colouring, to turn the leaves to see the quaint fantastic figures adorning their borders, ships riding the seven seas, and towns picked out in red and gold, gleaming as if the sun shone on them, is to have in one's hand the epitome of an age, art and knowledge combined in happy proportions. To see a Dutch town by Blaeu is to see how delightful the art of map-making can be made—little red houses neatly arranged in rows, with blue tiled roofs, churches and public buildings standing out above their neighbours, watermills turning merrily, not only the ocean but rivers and canals filled with shipping, shipbuilding in the yards, soldiers on the fortifications, mynheers walking down shady groves, even the very design of garden plots being shown—the whole forms an animated scene of infinite

4

FRANCIS EDWARDS LIMITED . . . . . Preface

brilliance. To wander farther afield it is impossible to see unmoved, Jamaica under Spanish rule with its ancient towns of Oristan and Sevilla, or solemn sleepy Dutch New York, to see the Victoria bursting into the Pacific, or following in the wake of the conquistadors to read the sonorous names of Spanish piety.

The utilitarian interest of the early efforts of cartography are obvious. A few excellent books have been published, Beazley's *Dawn of Modern Geography*, Nordenskiöld's *Facsimile Atlas and Periplus*, Chubb's *Atlases of Great Britain*, Heawood's *Geographical Discovery*, Sir George Fordham's *Works*, Humphrey's monograph, Phillip's *Library of Congress List*, etc. From these the bulk of the notes have been compiled, but the whole subject is still largely undeveloped. The extent of the following list offers many unexplored byways for the enthusiastic student or collector to follow, and it is hoped that its perusal will give much pleasure to its recipients, and enable and encourage many to "*wade still farther and farther into the sweet study of cosmographic.*"

5

Figure 2: "Preface," in the 1929 Francis Edwards catalogue *Old Maps of the World, or Ancient Geography; a Catalogue of Atlases & Maps of All Parts of the World from XV Century to Present Day* (Francis Edwards 1929, 4–5). Courtesy of the New York Public Library and of Francis Edwards Ltd.

To see a Dutch town by Blaeu is to see how delightful the art of map-making can be made—little red houses neatly arranged in rows, with blue tiled roofs, churches and public buildings standing out above their neighbours, watermills turning merrily, not only the ocean but rivers and canals filled with shipping, shipbuilding in the yards, soldiers on the fortifications, mynheers walking down shady groves, even the very design of garden plots being shown—the whole forms an animated scene of infinite brilliance.<sup>6</sup>

Slessor was so charmed by this description that he quoted it verbatim in the "Author's Notes" appended to *Cuckooz Contrey* (July 22, -s191;

Slessor 1932, 75; rpt., Slessor et al. 1994, 360), thereby making his note on "Dutch Seacoast" the longest of those he devoted to the sequence. Even the courteous seventeenth-century Dutch expression "mynheer" ("sir," literally "my lord") survives the transcription, although he substituted more picturesque expressions for several catalogue descriptions—"tulip gardens" for "garden plots," "scarlet" for "red," "drinking" for "walking." More important, the catalogue's lyrical description inspired Slessor not only to compose the poem, which he tentatively called "Dutch Map (Blaeu)" (March 18, -s76), but to begin what would become the 130-page draft of *The Atlas*. Though he does not mention *Old Maps of the World* in his "February 22" entry (-s58, above)—in fact, he does not name the catalogue until more than 110 pages into his draft (July 22, -s191)—anyone familiar with the Francis Edwards catalogue scarcely requires his header "Atlases" (just below "February 22") to recognize that Slessor had abruptly ended one project (January 9 to February 20: -s22 to -s57: see Haft 2011, 31) and begun the opening sequence of *Cuckooz Contrey*.

## BLAEU'S TOWN ATLAS OF THE NETHERLANDS

Several steps would precede his creation of the poem, however. First, Slessor had to track down the atlas to which the description refers. Turning from the catalogue's preface to its highlights of cartographic history (Francis Edwards 1929, 6–7), he discovered the importance of the Blaeus to map historians, map dealers, and collectors, for whom Willem and Joan Blaeu are "the most widely known cartographic publishers of the seventeenth century" (Van der Krogt 2000, 25). In

6. Underlines are mine and indicate verbal images in the 1929 catalogue that Slessor paraphrased in his poetry notebook.

fact, the catalogue’s highlights completely ignore Robert Norton, mention John Ogilby, John Speed, and Nicolas Sanson—from whom Slessor also borrowed his epigraphs—only once; yet shower the Blaeu family with no fewer than five tributes (Francis Edwards 1929, 7) (Figure 3):

1635 Blaeu’s Atlas. A notable advance on all previous productions, Blaeu’s Atlases form the finest examples of decorative map-making. His first map published 1606, the firm continuing until 1672.<sup>7</sup>

1638 Jansson, contemporary and rival of Blaeu. The first publisher to issue views and plans of towns concurrently with but separate from his maps.

1645–62 Blaeu published his atlas of English Counties.

1649 Blaeu published his atlas of Holland, the *chef d’oeuvre* of the greatest master of pictorial cartography.

1662 First issue of county maps of Scotland by Blaeu from Pont’s manuscripts.

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- 1574 First map of an English County, viz. Saxton’s Bucks, Berks and Oxon.
- 1579 Saxton’s Atlas, the first atlas of English county maps.
- 1584 Wagenar published Mariners Mirror.
- 1595 First Edition of Mercator’s Atlas. The first use of the word Atlas as applied to a collection of maps possibly adapted from Lafferri, who was the first to use the symbol of Atlas supporting the world on his shoulders.
- 1607 Mercator Hondius Atlas. The first to give their respective names to N. and S. America.
- 1611 John Speed published the second English county atlas.
- 1635 Blaeu’s Atlas. A notable advance on all previous productions, Blaeu’s Atlases form the finest examples of decorative map-making. His first map published 1606, the firm continuing till 1672.
- 1638 Jansson, contemporary and rival of Blaeu. The first publisher to issue views and plans of towns concurrently with but separate from his maps.
- 1645-62 Blaeu published his atlas of English Counties.
- 1647-67 Nicholas Sanson, founder of French school of cartography, flourished.
- 1649 Blaeu published his atlas of Holland, the *chef d’oeuvre* of the greatest master of pictorial cartography.
- 1662 First issue of county maps of Scotland by Blaeu from Pont’s manuscripts.
- 1675 Ogilvy’s Book of English Roads, the first of its kind.
- 1677 London adopted as prime meridian (instead of Feyrol) by John Adams.
- 1683 Petty’s Atlas of Ireland and its divisions, the first of its kind.
- 1746 J. Rocque published the first exact large scale map of London.
- 1775-81 Faden issued his important series of American maps with plans of the military operations.
- 1776-81 Atlantic Neptune published by British Government for the use of the Royal Navy in American waters. The most ambitious and monumental map publication ever attempted.
- 1783-4 Triangulation commenced on Hounslow Heath by Gen. Roy.
- 1792 Rizzi Zannoni issued his atlas in which the most striking and delicate treatment of engraved map surface is shown.
- 1801 First production of Ordnance Survey, viz. Kent.

Figure 3: “Data,” in the 1929 Francis Edwards catalogue *Old Maps of the World* (Francis Edwards 1929, 7). This is the second of two pages enumerating important dates in European cartography from 500 BCE to 1801 (6–7). This chronology must have helped Slessor refine his search of the most celebrated seventeenth-century cartographers. Courtesy of the New York Public Library and of Francis Edwards Ltd.

7. Note how the singular—“Blaeu’s” and “his,” particularly in the “1635” tribute—makes it look as if only one individual is involved. Later, the catalogue elaborates: “John, Cornelius, and William Janszoon Blaeu [1571–1673], the Dutch Cartographers, produced in the early Part of the 17<sup>th</sup> Century a Magnificent Series of Maps, so Beautifully Drawn, Engraved, and Decorated, that their Work stands Unrivalled as the Finest Exhibition the world has seen of the Art of Map-Making” (Francis Edwards 1929, 71, entry 163). Unfortunately, “1571–1673” combines the dates of Willem’s birth and Joan’s death. Whether correctly or not, the catalogue gives Willem/William—often identified as “G. Blaeu” (the Latin version of his name was Guilelmus)—the lion’s share of credit for many of the Blaeu maps it advertises; and singles out Joan/John only in entries 18 (p. 21), 19 & 21 (p. 22), 163 (p. 71), 332 (p. 93), and 751–752 (p. 132). Finally, the catalogue’s “1635” tribute lists 1606 as the date of Willem’s first map (Francis Edwards 1929, 7), whereas scholars now agree that he began publishing maps in 1604 and producing globes as early as 1598–1599 (Koeman 1967, 68; Van der Krogt 2000, 25; Tooley et al. 1999–2004, 1:143–145; Koeman et al. 2007, 1314); moreover, the *firm* survived until 1695, when, over two decades after Joan’s death, his sons auctioned off the remaining printing department, thus marking the “end of the Blaeus as a printing house of world renown” (Koeman 1967, 69).

From there, it didn't take Slessor long to find Joan Blaeu's "atlas of Holland," listed as item 18 among the catalogue's 852 entries. Blaeu's "Holland Dedication Copy" is not only the second most expensive item in the catalogue, but is hailed as "the *chef d'oeuvre* of the greatest master of pictorial cartography" (Francis Edwards 1929, 7).

Blaeu's atlas was meant to dazzle (Francis Edwards 1929, 21) (Figure 4):

18 BLAEU (JOAN.)

Toonneel der Steden van [de] vereenighde Nederlanden met hare Beschrijvingen uytgegeven by Joan. Bleau. [*sic*]

*Engraved title, 124 double page, 7 half page maps and 10 text illustrations, consisting of general maps of Holland and its provinces, views of towns, fortifications, and individual views of public buildings, &c., all in full contemporary colouring heightened with gold, including prospects of the famous towns of*

Nimmigen,	Harlem,	Amsterdam,
Zutphen,	Delft,	Gouda,
Dordrecht,	Leyden,	Rotterdam, &c.

*views of Curia at 's Gravenhage, exterior and interior, large plate of Landboats, &c. Folio, contemporary red morocco, richly gilt, panel sides, raised bands, linen tapes, gilt edges, Amsterdam [1649].*

Special Dedication Copy from the States General to Sydi Abdalla ben Sydi Muhamed, Prince of Salé, and no doubt one of the gifts of a contemporary Dutch Embassy who favoured an alliance with that Prince against Spain. The dedication to Sydi Muhamed is printed in Dutch and Arabic, and curiously asks for God's blessing on that rapacious corsair.

It is a magnificent example in immaculate condition of the best work of one of the greatest masters of ornate map making. Its charm is indescribable, the various minutiae are so delicately rendered, and the colouring is brilliant. No modern process can give absolute fidelity to the beauty of the original, but some idea of the scale of the production may be gained by referring to the coloured plate, which is roughly one fifth reduced in size.

Slessor was hooked. In his poetry journal, he copied the title of this atlas (March 28, -s83). *Toonneel der Steden van de vereenighde Nederlanden* belongs to one of the two volumes of Blaeu's Dutch towns, first published in Latin in 1649, shortly after the Treaty of Münster concluded Holland's Eighty Year War with Spain (1568–1648: Koeman et al. 2007, 1335).<sup>8</sup> If the 1648 Peace of Westphalia ended "the fictional unity of Christian Europe once and for all" (Akerman 1991, 338), Dutch cartographic historians assure us that:

8. For images of the frontispieces, see Koeman (1967, figs. 19 and 20), Van der Krogt (2010, 343), and Ekamper (2009), who also provides a map linked to the town maps in both volumes of *Toonneel der Steden*.

Of all the Blaeu atlases, the town atlases of the Low Countries are held in the highest esteem in the Netherlands. This is due not only to their very fine production, but to the fact that their composition was tied to the struggle for independence from Spain. Bound up with the most dramatic and heroic period of the shaping of the Dutch state, they depict the proud and industrious cities of the Northern Provinces in their full splendor (Koeman et al. 2007, 1335; see Koeman 1967, 295).

After two initial Latin editions in 1649, Blaeu published not only a third Latin edition sometime around 1652 but also the Dutch edition of his famous atlas (Van der Krogt 2010, 1, 300, 329, 343). Whereas the two volumes in the original Latin edition contained the same number of views, by the time the Dutch edition came out, those in the Republic of the Seven United Provinces volume (Blaeu [1652?]b) outnumbered those in the Spanish Netherlands volume (Blaeu [1652?]c) by as many as 129 to 94 (Van der Krogt 2010, 302, 329). In the patriotic title “Town of the United Netherlands,” Slessor had found his epigraph for “Dutch Seacoast.”

## MAPS INTO POETRY

Blaeu’s town maps made their cartographer “one of the greatest masters of ornate map making” (Francis Edwards 1929, 21), a virtue that proved irresistible to the painterly poet. And Slessor had an extra benefit that he may not have had when composing the other poems of *The Atlas*: that of actually *seeing* a map crafted by the cartographer of the poem’s epigraph. Keyed to item

17 BELMAS (J.)

Journaux des Sieges faits ou soutenus par les Francais dans la Peninsule, 1807-14.  
24 large double-page plans (one missing).  
Large folio, half morocco, Paris, 1836.

Sieges dans la Peninsule  
£1

18 BLAEU (JOAN.)

Toonneel der Steden van vereenighde Nederlanden met hare Beschrijvingen uytgegeven by Joan. Bleau.

Engraved title, 124 double page, 7 half page maps and 10 text illustrations, consisting of general maps of Holland and its provinces, views of towns, fortifications, and individual views of public buildings, &c., all in full contemporary colouring heightened with gold, including prospects of the famous towns of

Nimmigen,	Harlem,	Amsterdam,
Zutphen,	Delft,	Gouda,
Dordrecht,	Leyden,	Rotterdam, &c.

views of Curia at 's Gravenhage, exterior and interior, large plate of Landboats, &c.  
Folio, contemporary red morocco, richly gilt, panel sides, raised bands, linen tapes, gilt edges, Amsterdam [1649].

Holland Dedication Copy

£600

Special Dedication Copy from the States General to Sydi Abdalla ben Sydi Muhamed, Prince of Salé, and no doubt one of the gifts of a contemporary Dutch Embassy who favoured an alliance with that Prince against Spain. The dedication to Sydi Muhamed is printed in Dutch and Arabic, and curiously asks for God’s blessing on that rapacious corsair.

It is a magnificent example in immaculate condition of the best work of one of the greatest masters of ornate map making. Its charm is indescribable, the various minutiae are so delicately rendered, and the colouring is brilliant. No modern process can give absolute fidelity to the beauty of the original, but some idea of the scale of the production may be gained by referring to the coloured plate, which is roughly one fifth reduced in size.

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Figure 4: Description of Joan Blaeu’s Toonneel der Steden van [de] vereenighde Nederlanden (1649), item 18 in the 1929 Francis Edwards catalogue *Old Maps of the World* (Francis Edwards 1929, 21). This volume of Blaeu’s Town Atlas featured the northern—i.e., independent—part of the Netherlands; while the other volume, Toonneel der Steden van’s Konings Nederlanden, covered the southern part of the Netherlands, which had been reconquered by the King of Spain and, to this day, remains predominantly Catholic. That this magnificent copy of Blaeu’s “Theater of the Towns of the United Netherlands, with their Descriptions” was dedicated “from the States General to Sydi Abdalla ben Sydi Muhamed, Prince of Salé,” shows that “rapacious corsair[s]” of Northern Africa were as politically influential in the mid-seventeenth-century as they had been a generation earlier, the period in which “The King of Cuckooz” was set (1620–1621, *The Atlas*, poem 1; see Koeman 1970, 42). Courtesy of the New York Public Library and of Francis Edwards Ltd.



Figure 5: “Blaeu’s View of Flushing, 1649,” fold-out map from the 1929 Francis Edwards catalogue *Old Maps of the World* (Francis Edwards 1929, 20). On a 20×23 cm page (8½×9¾ in), the 15×20 cm map (6½×8 in) with its northern orientation is keyed to the final words of item 18 (21; see Figure 4, above): “No modern process can give absolute fidelity to the beauty of the original, but some idea of the scale of the production may be gained by referring to the coloured plate, which is roughly one fifth reduced in size.” The original map of Vlissingen, plate 51 iijE in the Dutch edition of *The United Netherlands*, measured 41.5×51 cm (16½×20 in) (Van der Krogt 2010, 1542, entry 4736). The Flushing map typifies the other maps of the *Town Atlas of the Netherlands*, whose presentation is “plain and consistent” (Koeman 1997, 92). Courtesy of the New York Public Library and of Francis Edwards Ltd.

18 is “Blaeu’s View of Flushing, 1649” (20), one of only *four* maps illustrating the catalogue, and the *only* one in color (Figure 5). In his notebook, Slessor put a question mark beside the words “2: View of Flushing/Vlissingen” (April 3, -s88). The “2” indicates that he was considering the map for “Dutch Seacoast” when the poem was slated as second in the sequence. More intriguing, Slessor’s line “a gulf of sweet and winking hoops” may allude to the map’s pattern of light and shade defining the semi-circular waves that cradle the ships in the foreground of Blaeu’s view: the poet’s “April 1” journal entry (-s86) not only repeatedly emphasizes “waves” and their “neat” arrangement, but specifies that “28 ships are on them hooped”—precisely the number of ships on the Flushing map’s sea.

That Slessor ultimately turned his focus to Amsterdam is only natural. Amsterdam was not only Blaeu’s home but also the great metropolis driving the seventeenth-century Netherlands (Schama 1987, 224). The poem’s references to “500 poops” and “the bubble-clear/canals of Amsterdam” suggest that Slessor found a copy of Blaeu’s magnificent view of Amsterdam—*Amstelodami Celeberrimi Hollandiae Emporii Delineatio*

*Nova*—with its innumerable vessels packing not only the Amstel River but also Amsterdam’s canals and port (Figure 6).<sup>9</sup> Although the map does not appear in the catalogue, two details in Slessor’s poetry notebook lend further weight to his having seen it. One is his description of waves “counted & arranged (parcelled & combed)” (April 1, -s86), which describes the water on Blaeu’s *Ya Fluvius* (IJ River) far better than it does the sea around Flushing. Then there’s the word “hay-cocks” in the same entry. Slessor inserted this word into his journal after he’d listed certain features that could appear on any town map (ibid.):

soldiers on fortifications, blue-tiled roofs, scarlet houses, water-mills turning, tulip-gardens, canals, spires, clocks, foundations, fishpools,

9. Slessor’s drafts show that he revised the number of ships from 5 to 28 in the same entry that introduces his line “a gulf of sweet and winking hoops” (April 1, -s86; and see April 3, -s88). The number increased to 100 (May 6, -s111, to May 13, -s118; MS 3020/19/18, -s178) and, finally, to 500 (May 12, -s117, to May 21, -s124).

boats on rivers, sloops, churches, cathedrals, monasteries, farms, piers, wharves, bridges, docks, chimneys, windmills, shipyards, mynheers in groves (drinking) neat rows/haycocks.

Written in a heavier hand than the other words, “haycocks” sticks out precisely because it does not appear in any of the Francis Edwards descriptions of Blaeu maps (1929, 4–5, 7). And also because there are no piles of hay on the Flushing map, yet they proliferate wildly on the map of Amsterdam.<sup>10</sup>

Despite differences in size, orientation, perspective, and quantity of features, the maps of Flushing and Amsterdam nevertheless resemble one another closely. Both show water and ships filling the bottom, while the town floats above. Blocks of buildings, seen from overhead, are separated by canals and surrounded by fortifications, moats, and gardens. Although Slessor claimed that “bolted shadows, row by row/float changeless on the stones below,” shadows are notably absent from the perspective plans lest they muddy the geometric precision of the streets. Yet Slessor has captured the elevation of turrets and mansions “lean and tall,” the motionless windmills, and the prominence of ships—shown on the maps either in profile (Flushing) or in bird’s-eye view (Amsterdam). With regards to colors, waters are gray-blue rather than the “brown” of “port” (Slessor’s allusion to the Dutch fondness for drink); and the tiles of “blue-tiled turrets” are more to be imagined than evident on the map. Yet roofs and steeples are “blue,” and “fox-coloured” describes the towns’ brick buildings on these hand-colored views. Furthermore, “Dutch Seacoast” alludes to the artistry of Blaeu’s landscapes by referring to painterly techniques: “tubed in their capsule of soft glaze,” “rinsed,” “jellied brown.” Although the catalogue mentions “soldiers on the fortifications, [and] mynheers walking down shady groves” (Francis Edwards 1929, 4), living beings are notably absent from Blaeu’s maps of Amsterdam and Flushing. Slessor followed

10. When Slessor finally got around to rhyming “clocks” in stanza two, he tried “docks,” then settled upon “weathercocks” (“the blue-tiled turrets, china clocks/and glittering beaks of weathercocks”), instead of “haycocks” (May 21, -s124). The titles that Slessor gave his poem provide no indication of which Blaeu map(s) he may have seen. He retained the more general “Dutch” in his poem’s title even as he changed its name from “Dutch Map (Blaeu)” (March 18, -s76) to “Dutch Landscape” (March 28, -s83), then to “Dutch Coast” (April 3, -s88) and, finally, to “Dutch Seacoast” (May 1, -s106).



Figure 6: *Amstelodami Celeberrimi Hollandiae Emporii Delineatio Nova* (“New Delineation of Amsterdam, Holland’s Most Famous Trading Port”), plate 26 in Joan Blaeu’s *Toonneel der Steden van de vereenighde Nederlanden* ([1652?]b). The original is 41 x 54 cm (16 x 21 in) (Van der Krogt 2010, 688–689, entry 110, which lists it as plate 23 iJE in vol. 1). Beside the lists of landmarks that frame the map on the upper-right and upper-left is the coat-of-arms of Amsterdam (left), and a shield with a sailing vessel (right). The compass in the lower right indicates that the map is oriented southwest—the typical orientation favored since the sixteenth century (687–693, figs. 107–111, 122–135)—with the town pictured above the IJ inlet [YA Fluvijs] that gave Amsterdam access to the world. The colors of this map accord with the “red, green & guinea-yellow” description in Slessor’s poetry notebook (April 1, -s86). Courtesy of the Library of Congress, Geography and Map Division (G1851 .B52 1652).

suit.<sup>11</sup> Yet because the catalogue praises the mapmaker's towns for "form[ing] an animated scene of infinite brilliance" (ibid.), Slessor breathed life into the inanimate, only to negate it throughout his poem: "no wind . . . may strike," no calendar may "compute," mansions "never fall," and "no tide may stir"; while "beaks" belong only to "weathercocks," and "saints" are ships' figureheads. He even emulated the order, simplicity, and human scale of the Town Atlas maps by making "Dutch Seacoast" the shortest and most regular of *The Atlas* poems with its six compact stanzas of four lines, *aabb* rhymes, and conversational iambic rhythms.

## "WORLD OF OLD MAPMAKERS"

If Slessor found his subject in Blaeu's map(s) and in the catalogue's description of the Town Atlas, his reaction to *Old Maps of the World* conditioned his theme. Early in his draft of *The Atlas*, when Slessor was still jotting down phrases from the catalogue ("Atlases [1]"–"Atlas 6": -s58 to -s63), he suddenly had an inspiration (March 5, -s64):<sup>12</sup>

If only world c[oul]d be like  
world of old mapmakers  
neatly parcelled into  
known and unknown  
human & [? trees & ships etc.]—  
instead of which it is  
strange dark confusing  
baffling currents  
& whole [of] living  
insubstantial

So sudden was this inspiration that Slessor scribbled these words diagonally across the left side of his notebook, thus breaking for the first time his routine of drafting *The Atlas* in neat horizontal lines on the right side—a rather graphic example of his dichotomy between order (the "neatly parceled . . . world of old mapmakers") and its opposite ("strange dark confusing . . . insubstantial").

In the final stanza of "Dutch Seacoast" Slessor rephrased his dichotomy as he turned from the delightful order of Blaeu's artistic representation to anxiety over his own perception of the world:

O, could he but clap up like this  
My decomposed metropolis,

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11. The drafts of "Dutch Seacoast," on the other hand, show that Slessor considered inserting people ("galley-captives" or "galley-chaunters": May 8, -s113, MS 3020/19/18, -s114; "seaboys": May 12, -s117), mermaids (May 8, -s113), angels (May 10, -s115), and wildlife into his own description (May 3, -s109; May 7, -s112).

12. The transcription comes from Slessor et al. (1994, 358), who leave out the illegible final two phrases after "insubstantial." I've added the bracketed phrase "trees & ships etc." and would change "& whole [of] living" to "& whole being." Dutton (1991, 144) incorrectly read "strange dark confusing" as "strange dark confusion," and "baffling currents" as "bubbling currents."

Those other countries of the mind,  
So tousled, dark and undefined!

Within the previously light-hearted *Atlas* sequence, this stanza stands out as Slessor's first unambiguous acknowledgment, at least in *Cuckooz Contrey*, of the darkness that pervades many of his other poems. Intensely autobiographical, it hints at what Geoffrey Dutton calls "the blackness and the anger" behind Slessor's "mask of the bon viveur" (Dutton 1991, 336):<sup>13</sup>

Chaos, whether metaphysical, philosophical or of the fourth whiskey... was essential for Slessor. But Slessor also longed for order, was picky and worked as few poets have on the minutest details of his poems (336–337).

If Blaeu's Amsterdam is a "world saved from the flux of tide and time," as Adrian Caesar argues, Slessor's final stanza emphasizes the essential difference between life and art (1995, 59):

The word "decomposed" is deliciously chosen here, connoting not only the city's deathliness, but also rendering emphatic the contrast between the artistically "composed" city of Amsterdam on the map, and Slessor's city, which eludes such artful ordering. And then there are those darker places still, in the recesses of the mind, that also remain untamed.

Slessor's concern with definition and order—as well as their absence—suits the physical as well as the political landscape of the Netherlands. The Dutch were almost continuously at war throughout the seventeenth century; if not with Spain, then with England or France. Moreover, since the thirteenth century, almost half of that "little country" has been painstakingly rescued from the sea. During Blaeu's lifetime, the Netherlands suffered terribly from floods in 1624 and 1626 (Schama 1987, 218–220), even as Dutch folklore kept the inundations and violent storms of the late Middle Ages firmly in the collective memory (37–50). Dutch windmills were designed to drain water as well as to draw it: their invention, in fact, hastened the reclamation of land between 1590 and 1640, and helped feed Amsterdam's "exploding population" of 150,000 (34–38), which had grown five-fold since 1570 (Heslinga et al. 1985, 36; Kistemaker and Van Gelder 1982, 62). To this day, building foundations rest on thousands of pilings sunk into the earth, a practice that gave rise to the "famous verse oxymoron of 'upside down masts of wood'" (Schama 1987, 301n22). Amsterdam's name proclaims its watery origins, for the town was settled only after the Amstel River had been dammed. Slessor's "sky full of ships, bay full of town" captures the upside-down, terraqueous world of the Netherlands with its inconstant commingling of sky, sea, land.<sup>14</sup>

*Slessor's "sky full of ships, bay full of town" captures the upside-down, terraqueous world of the Netherlands with its inconstant commingling of sky, sea, land.*

13. The next time Slessor verbalizes this dichotomy, it is in connection with "Seafight," the fifth and bleakest poem of the sequence: "(5) Could the world but be as safe, & neatly ornamented as a map! Seafight" (March 18, -s76). When Slessor composed "Seafight," however, he included only one direct allusion to a map. That allusion appears in his opening lines: "Here in a gulf of golden leaf/you'll find a seafight ringed in flame."

14. So do Slessor's drafts: "And birds that float in parchment air/Like flocks of trout suspended there" (May 3, -s109, and May 7, -s112), and "in abbies drowned below" (May 6, -s111). Although Slessor meant

*Amsterdam “became an instance of the ‘ideal city’” during the seventeenth century at the same time that the Netherlands appeared as close to ideal as any country—a veritable “island of plenty in an ocean of want.”*

Historically, towns have been mapped with relative accuracy because of their size and well-defined boundaries; moreover, town plans often give viewers the sense of gazing at a complete and unified whole (Akerman 1991, 171). But however “life-like” bird’s-eye views may appear (Woodward 2007, 16n53), they can be notorious for concealing, within an attractive layout, the squalor and vice of urban life. Certainly Blaeu’s Amsterdam, like any city, had its share of both. Yet Blaeu lived in the Dutch “Golden Century,” famous for its sparkling “economic fortunes, colonial energies, and demographic growth” (Schama 1987, 383). During this century, Amsterdam not only became the hub of northern European trade within the Dutch empire (Wolf 1979, 189), but also played a leading role in the world: “In a brief span of time, the city had grown to be one of the most important metropolises on the political, economic and cultural world stage” (Schilder 2000, 7). On Dutch ships, treasures from exotic ports flowed into Amsterdam’s warehouses and increasingly sumptuous canal houses (Schama 1987, 301–303). Dutch cartographers, after supplanting the Italians, became international leaders in their field before relinquishing supremacy to the French (Van der Krogt 2005, 31; Karrow 2007, 619).<sup>15</sup> Wall maps by the Blaeus hung in public and private buildings alike (Schilder 1996; Koeman et al. 2007, 1341–1356). Jan Vermeer (1632–1675) and other Dutch masters revealed how popular the cartographic arts had become by reproducing in their paintings the very maps and globes that proudly adorned Dutch interiors (Welu 1978; Hedinger 1986; Schilder 2000, 40–49; Zandvliet 1998, 210–254). Visitors to Amsterdam marveled at her many virtues.<sup>16</sup> In short, Amsterdam “became an instance of the ‘ideal city’” during the seventeenth century (Kistemaker and Van Gelder 1982, 59–67) at the same time that the Netherlands appeared as close to ideal as any country—a veritable “island of plenty in an ocean of want” (Schama 1987, 318; see 323). So much so, that few Dutch volunteered to settle overseas, resulting in the gradual unraveling of their far-flung empire with

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his “decomposed metropolis” to contrast with Blaeu’s meticulously ordered map of Amsterdam, Simon Schama explains that art historians recognize a “preoccupation” in [the Dutch Golden Age] “with . . . a coming apart . . . So that the animate and inanimate world of the Dutch was seen in a state of organic flux, forever composing, decomposing and recomposing itself” (1987, 10–11). Not surprisingly, polder maps—i.e., large-scale topographic maps of reclaimed land—are not only a “specific type of Dutch multisheet map,” but were also popular publications between about 1610 and 1750 (Koeman 1997, 92). Today, over half of the Netherlands “would be under water if there were no dunes or dikes to protect it against flooding from the sea or from the large rivers” (Koeman and Van Egmond 2007, 1263). On the other hand, Max Reneman (1923–1978)—a Dutch artist and critic, argued “that the Netherlands was a work of art, the only territorial nation in the world that had been constructed by its own inhabitants . . . By draining and creating the polders, the Dutch had largely created the Netherlands” (Van Riemsdijk and Zinovich 2013, 63).

15. Two decades after the center of cartographic publishing moved from Italy to the Low Countries in the 1570s, Amsterdam suddenly became “the major map publishing center” of Europe (Karrow 2007, 619; see Koeman et al. 2007, 1305–1306). Several Amsterdam-based firms and families enabled the Dutch to maintain their cartographic supremacy in the seventeenth century. Besides the Blaeus, these included Cornelis Claesz. (1560–1609), Jodocus Hondius the Elder (1563–1612) and Henricus Hondius (1596/97–1651), Pieter van den Keere (1571–after 1646), Johannes Janssonius (1588–1664) and his family, Abraham Goos (ca. 1590–1643), Claes Jansz. Visscher (1587–1652) along with his son Nicolaes Visscher I (1618–1679) and grandson Nicolaes Visscher II (1649–1702), Cornelis Danckertsz (1603–1656) and Justus Danckertsz the Elder (1635–1701), Frederik de Wit (1629/30–1706), and Pieter Mortier (1661–1711). All dates are from Tooley et al. (1999–2004).

16. Visitors to Amsterdam were amazed at how “decently” its citizens were housed (Schama 1987, 4); at its cleanliness, which lessened susceptibility to plagues (375–378); at the abundance of fresh fish, vegetables, and rich foods (150–166) that contributed, along with the gin and beer of the “hard drinking” Dutch (189–193), to the expanding waistlines of its citizens (152, 218); at the affection that spouses demonstrated for one another and their children (422–425, 485–512); at the town’s low arrest rate (582–583); at how stable Dutch society remained in an era racked by civil strife (4, 224); at how welcoming she was to religious refugees from the south (587–600).

the loss of Brazil (1654) and New Amsterdam (1664). But that still lay ahead. Like the bird’s-eye views of nineteenth-century American towns and cities, Blaeu’s maps of Flushing and Amsterdam, created at a high point in the Dutch Golden Century, “sing the national anthem of peace and prosperity, of movement and openness, of calm and order, and of destinies to be fulfilled” (Danzer 1990, 144; see De Graaf 2001).

## “THOSE OTHER COUNTRIES OF THE MIND”

Just as Slessor began “Dutch Seacoast” with the Netherlands, so in the final stanza he leaves Amsterdam for “those other countries of the mind.” No country fit that description better than Australia, the most “variously” and “erroneously” mapped of all lands (Tooley [1949] 1990, 120). “Alone among the continents of the world it was imagined long before its actual discovery” (Tooley 1979, vii), and only began emerging from the hypothetical Unknown Southern Land during the seventeenth century—thanks to the Dutch (Mutch 1942, 5; Schilder 1990, 239–258). During Blaeu’s prime, VOC ships sailed between the Netherlands and China, Japan, Ceylon, the Dutch East Indies (Indonesia), and South Africa—all the while “extending the known surface of the globe from the Arctic Sea to the antipodean isles of Tasmania and Nieuw Zeeland” (Schama 1987, 389). While commanding VOC ships in 1642–1643, the Dutch navigator Abel Tasman (ca. 1603–1659) became the first European to discover Tasmania and New Zealand with their “dark” Aboriginal peoples (Sharp 1968). And his 1644 voyage demonstrated that Australia was *not* part of some enormous polar continent extending to the equator, as depicted earlier by Joan’s own father, Willem Janszoon Blaeu (Koeman et al. 2007, 1351, 1369, 1379) (Figure 7).

Tasman’s findings made their way back to the offices of the Dutch East India Company. As official mapmaker of the VOC, Joan became the first to incorporate both of Tasman’s voyages onto a printed map: specifically, his 1645–1646 revision of Willem’s 1619 world map (Schilder 1990, 262–305, fig. 4.6; Shirley 2001, entry 300 [for Willem’s 1619 map], and entry 366

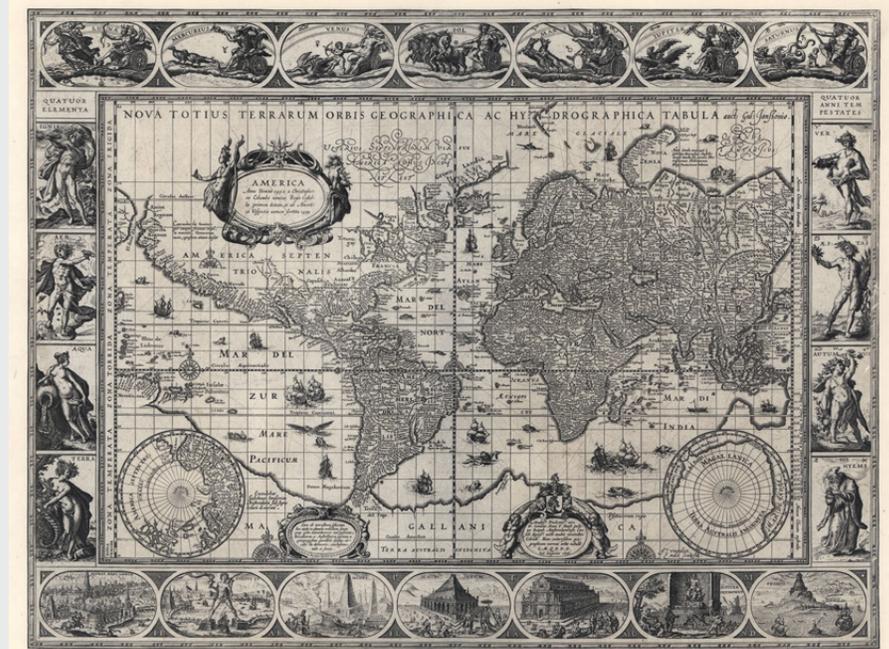


Figure 7: *Nova Totius Terrarum Orbis Geographica ac Hydrographica Tabula* [“New Geographical and Hydrographical Map of the Whole Sphere of the World”] by Willem Janszoon Blaeu [G. Ianssonius, Willem’s original patronymic] and engraved by Josua van den Ende (Amsterdam, 1606). For over fifty years, this world map on a Mercator projection (30 × 45 cm, 12 × 18 in)—described as “one of the supreme examples of the map maker’s art”—enjoyed an active circulation (Shirley 2001, entry 255). Along its borders, allegorical figures of the seven planets (top) echo vignettes depicting the Seven Wonders of the Ancient World (bottom), while the four elements (left) echo the four seasons (right). The map itself features ships and sea monsters skirting the coast of an enormous southern continent whose size nearly counter-balances that of the known world. Courtesy of the Library of Congress (G3200 1606 .B6).



Figure 8: Joan Blaeu's *Nova et Accuratissima Totius Terrarum Orbis Tabula*. This is the form that Blaeu's double-hemisphere map took in his *Atlas Maior* (1662–1672: vol. 1, pl. 1), praised by H. de la Fontaine Verwey as “the greatest and finest atlas ever published” (quoted in Van der Krogt 2005, 34). At only 40×54 cm (15½×21 in) (Shirley 2001, entry 428, pl. 315), *Nova et accuratissima totius terrarum orbis tabula* is dwarfed by Joan's 1648 map, whose twenty sheets together total 205×299 cm (nearly 7×10 ft). In fact, the *Atlas Maior* world map was “not directly taken from the large original of 1648 but [was] copied from one of his competition's reductions” (450). Nevertheless, like its more scientific-looking predecessor, this ornate and highly reproducible atlas map also refers to Australia as *Hollandia Nova* (New Holland) and its coasts similarly “suggest the real shape of the western part of that continent” from the Gulf of Carpentaria in the northeast to the Great Australian Bight in the south (Wieder 1925–1933, 3:62). The Southern Continent hypothesized by the ancient Greeks has disappeared, but so too has any hint of Antarctica. As if to symbolize its place between the old and the new, Joan framed the world between images of Copernicus and Ptolemy, and placed allegorical representations of the planets and the seasons above and below (Van der Krogt 2000, 485). Reproduced from Kyrchok (2012).

[for Joan's 1645–1646 map]]. Two years later, Joan included much the same detail from the 1645–1646 revision—along with exactly the same image of Australia (*Hollandia Nova*), Tasmania (*Van Diemens Landt*) and New Zealand (*Zeelandia Nova*)—in his own (enormous and better known) 1648 world map *Nova totius terrarum orbis tabula*, published on the occasion of the signing of the Treaty of Münster (Zandvliet 1998, 211; see Wieder 1925–1933, 3:61–65, pls. 51–71). Not only was Joan's 1648 map “lauded as the finest expression of Dutch cartography at the highest point of its development, ... [but his] world outline ... established a pattern which was followed by virtually all succeeding maps until the last decade of the century” (Shirley 2001, entry 371).

Joan's beautiful double-hemisphere map demonstrates how much more he knew of Australia than his father's generation did (Figure 8). In the 1650s, Joan's world map became the model for two inlaid marble maps of the eastern and western hemispheres covering the monumental floor of the *Burgerzaal* (“Citizens' Hall”) in Amsterdam's new Town Hall (Tasman and Meyjes 1919, xcix, 264–268; Zandvliet 1998, 211nn4–6). Blaeu may have even taken part in designing the world map and the celestial chart installed there (Goossens 1996, 28).

While the Town Hall is now the Royal

Palace, and the terrestrial hemispheres had to be replaced in 1746 (Schilder 2000, 7, fig. 1.2), a surviving 1661 floor plan nevertheless reveals “*New Holland*”—as the Dutch christened Australia—sporting Tasman's outlines (Heeres 1898, 77–78). And the floor itself is the centerpiece of Jacob van Campen's grand vision of Amsterdam: for the architect had modeled the Citizens' Hall after the universe—with Amsterdam at its heart and the world at its citizens' feet (Figure 9).<sup>17</sup> A more

17. Tasman's voyages meant so much to Australians that, ever since 1931, the Public [State] Library of New South Wales has housed what was thought to be the original manuscript map of Tasman or his associates (State Library of New South Wales 2012). Now believed to be a late seventeenth-century Dutch copy (1695), the Bonaparte-Tasman map (as it is also called) was reproduced in 1860 by J. Swart to accompany his edition of Tasman's navigation journals. Since the Public Library opened its new building in 1942, visitors crossing the vestibule of the Mitchell Library have been greeted—*Burgerzaal*-like—by a marble mosaic map

“conspicuous cartographic display of global power” can scarcely be imagined (Zandvliet 1998, 211), particularly in a building hailed “the eighth wonder of the world” (Heeres 1898, 79).<sup>18</sup>

In his wide-ranging *Image of the World: 20 Centuries of World Maps*, Peter Whitfield suggests that “the great illustrated maps of the seventeenth century sought to restore the sense of man’s belonging in an interpreted world, the maps now taking a secularized form, in which European man was the undisputed master of his world” (1994 and 2010, 74). The cartography of the Dutch Golden Age attracted Slessor, at least in part, because he craved a world capable of being comprehended and mastered. Blaeu’s town views, in particular, epitomized for Slessor the very human need to control space and time. So much so that in “Dutch Seacoast” the cartographer’s waters are static and “bubble-clear,” as if Blaeu had only a “narrow vision” of the sea as “the site of the imagination, and of reality as it exists in full human awareness” (Haskell, quoted in Slessor et al. 1990, 7). Slessor was exaggerating, of course, and not just because the delicate lines on Blaeu’s maps suggest that water *is* flowing through canals and that waves *are* lapping against ships. “Caught up as he was in the far less artful and wholly contingent sphere of journalism,”<sup>19</sup> Slessor’s fascination *as well as* his frustration with Blaeu’s town “portraits”—so meticulously ordered and confining—reflect his own anxieties as well as the more general fears of his generation suspended between two World Wars. Yet his love of Baroque maps would give birth to the next poem of *The Atlas* as well. And Slessor’s

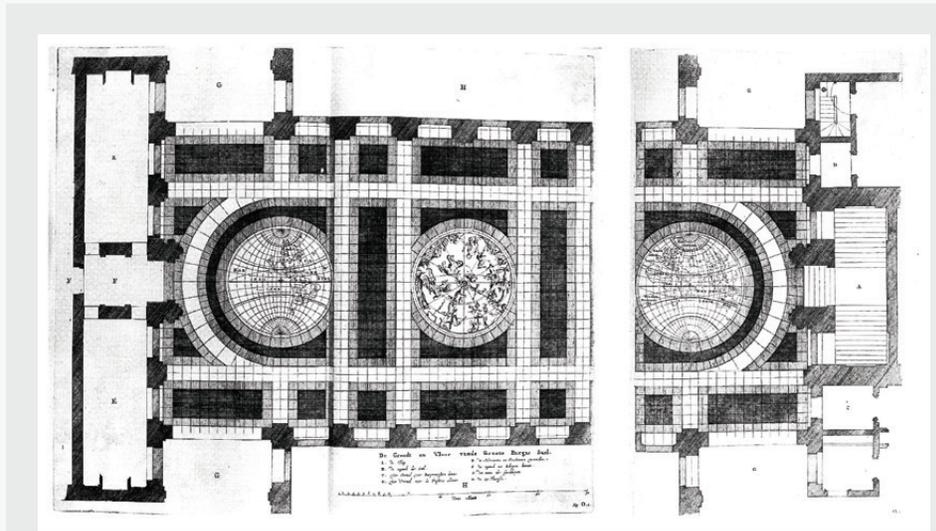


Figure 9: Jacob Vennekool’s depiction of the “Floor of the Great Civic Hall” [De Grondt en Vloer vande Groote Burger Sael]. The engraving is Figure “O” in the first edition of Jacob van Campen and Jacob Vennekool’s *Afbeelding van ’t Stadthuys van Amsterdam*. In dertigh coopere Platen geordineert door Jacob van Campen; en geteeckent door Iacob Vennekool, Amsterdam: Dancker Danckerts, 1661. With each hemisphere measuring 22 feet in circumference, the world map inlaid on the marble floor of Amsterdam’s Town Hall was “one of earliest public images showing Tasman’s discoveries on the Australian continent” (NSW Government Online Shop 2013a). Nearly 300 years later, beginning in 1942, the State Library of New South Wales graced the floor of the Mitchell Library vestibule with a marble map replicating what was then believed to be Tasman’s original map of ca. 1648. Reproduced from Goossens (1996, fig. 33).

replicating that nineteenth-century reproduction (Hooker 2006; Tent 2006, 8–10). The library commissioned Slessor’s friend/cartographer James Emery, who had illustrated Slessor’s collection *Trio: A Book of Poems* with a chart of Tasman’s and Cook’s voyages (Slessor et al. 1931; Haft 2011, 16–20), to produce a facsimile of the Bonaparte-Tasman map (Emery 1946; Mitchell Library 1948, 23). Published in 1947, Emery’s facsimile is still available for \$2.95 in the Library Shop (NSW Government Online Shop 2013b).

18. Slessor’s ephrastic map-poem had seventeenth-century Dutch precedents. Around 1655, the acclaimed poet Joost van den Vondel (1587–1679) composed a lengthy poem in which he referred, in lines 977–984, to the inlaid world map in the Citizens’ Hall (Vondel and Albrecht [1655] 1982, 153, 146–147; Heeres 1898, 78n4). And in 1656, the Dutch statesman and poet Constantijn Huygens (1596–1687) celebrated the subject in a brief poem (Vondel and Albrecht [1655] 1982, 154; Heeres 1898, 79).

19. The quote is from Philip Mead, who generously read the manuscript of this article. Needless to say, any errors or oversights are my own.

“Mermaids” (*The Atlas*, poem 4) is a riotous romp through seas of fantastic creatures, and a paean to the maps that gave such creatures immortality.<sup>20</sup>

## ACKNOWLEDGMENTS

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This paper is dedicated to Lou Heldens and Ludo Slagmolen, Dutch artists and dear friends.

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20. Stay tuned for Part Four of my study.

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# Surveying Louisiana: Cartographic Records in the Southeastern Architectural Archive

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While primarily known for its architectural holdings, the Southeastern Architectural Archive ([seaa.tulane.edu](http://seaa.tulane.edu)),<sup>1</sup> a research repository located at Tulane University, houses cartographic materials associated with four generations of surveyors/engineers that document over 150 years of mapping endeavors. The records chronicle the region's division into long lots, the creation and expansion of canals and sewerage systems, and the development of *faubourgs* and more recent subdivisions. The collection includes survey sketches, field notebooks, chain of title research, historic maps, auction announcements, and correspondence.

The collection's origins trace to the entry of Dominick E. Seghers (né Dominique Édouard Seghers; 1849–1911) into the surveying business in 1868. The family continued in the field for over one hundred years when Dominick's grandson, Guy Seghers, Sr., ceased operations and sold the family's tracings to Lawyers' Title Company. In 1978, his son, Guy Seghers, Jr.—known as “Buddy”—attempted to sell the family's remaining records to the Louisiana Land Surveyors' Association for \$20,000 (Walker 1978). The association refused the offer but expressed its wish that the family's records be made available to local surveyors. When Buddy died the following year at the age of 49, his father decided to donate the records to Tulane University in memory of his son. The Louisiana Land Surveyors' Association was grateful for this donation as it ensured that the records of what its president referred to as the “vanishing American” would be permanently accessible (Walker 1980).

Although the SEAA owns a large collection of historic fire insurance atlases, it is not a repository known for its cartographic holdings. The Guy Seghers Collection was deposited into the SEAA shortly after its acquisition due to the large format of the surveys and stands apart from the archive's other holdings, since it does not represent the work of an individual architect or architectural firm. A staff member drafted an undated internal memorandum that acknowledged the complexity of the records and the difficulties that a researcher would have using them (SEAA n.d.). Without action on the questions and concerns addressed in this internal document, the collection was partially and minimally processed. Over the next 30 years, the collection was consulted less than 20 times, mostly by older property attorneys associated with the Lawyers' Title Company.



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1. Modeled after Columbia University's Avery Archive, the SEAA was founded in 1980 to document the built environment of the Gulf South region. The archive's foundational holdings consisted of antebellum architectural drawings that had been used for instruction in the Tulane University School of Architecture.



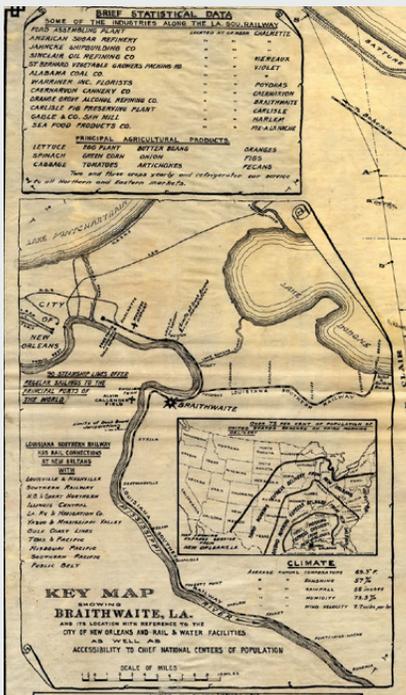


Figure 3: Ricketts, Seghers, & Dibdin. Key Map Showing Braithwaite, LA. And Its Location with Reference to the City of New Orleans and Rail and Water Facilities as well as Accessibility to Chief National Centers of Population. New Orleans, 1931. [Detail of map].

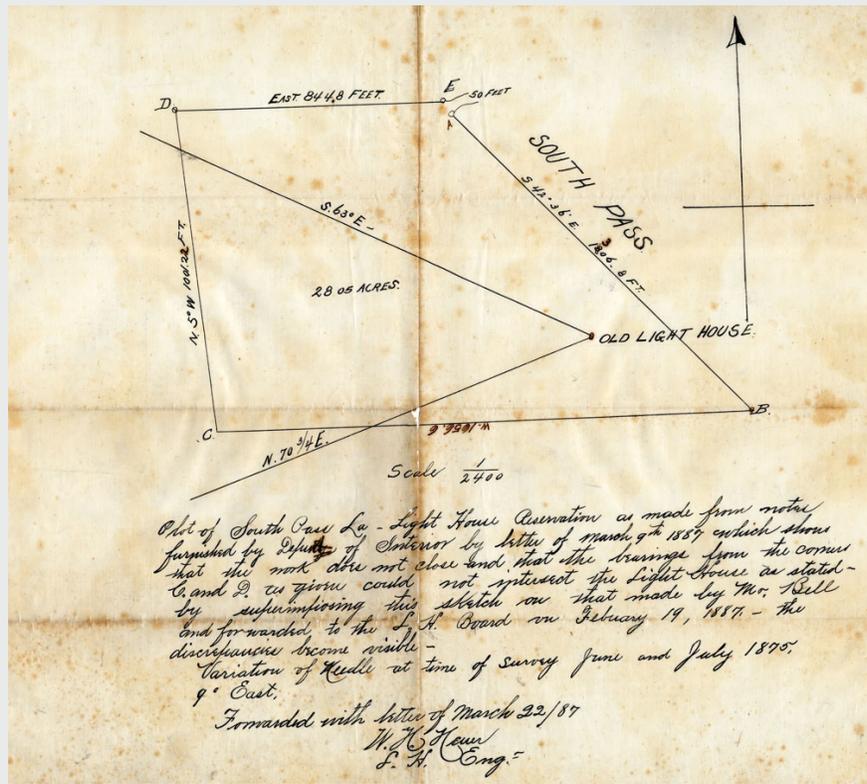


Figure 4: W. H. Heuer. Plot of South Pass La-Light House Reservation as made from notes furnished by Deputy of the Interior... 22 March 1887. Ink on tracing vellum.

Records associated with various attempts to control water or chart transportation routes also feature prominently. One early letter, written by surveyor John Communy to city surveyor Louis H. Pilié regarding a draining machine on Orleans Street, itemized his difficulties procuring appropriate materials (Communy 1862). Another series of correspondence documents late nineteenth-century attempts to resurvey the South Pass Light House reservation on the Mississippi River due to discrepancies in earlier surveys and geological markers lost to subsidence and erosion (Figure 4). The Seghers gathered such documentation and filed it according to geographic location.

The Seghers were drawn to Plaquemines Parish when oil speculation began to boom along Louisiana's wetlands. Guy J. Seghers, Sr. solicited the U. S. Coast Guard to develop a correct survey of the area between the Southwest Pass and the South Pass of the Mississippi River (Seghers 1959). He gathered together earlier surveys to document the need for more precise mapping (Figure 5). The Coast Guard responded that it believed there was a need for such a survey but the organization lacked the authorization to commission it and the funds to support it (Brallier 1959).

The dearth of accurate surveys for Plaquemines Parish resulted in considerable litigation. The Seghers frequently became involved in legal claims, especially as expert witnesses. Notably, the Seghers records include a large body of cartographic work associated with Hog Island and a complicated legal case involving the

region's wetlands, navigable waters and Louisiana succession rights. For this case, *Kuchenig v. California Company*, the Seghers gathered consecutive surveys of the island, as well as textual documentation chronicling inaccurate geographic data.

In 1960, a Missouri resident named Fred Kuchenig retained the services of New Orleans attorney Hughes J. De La Vergne, II, in connection with claims of ownership of a tract of land in Breton Sound, Plaquemines Parish. De La Vergne then hired Guy Seghers, Sr. to determine whether, in his opinion, there was an encroachment on the Kuchenig land by the California Company which was conducting speculative drilling operations off of Hog Island. Seghers ordered official plats, copies of the E. D. Richardson and A. J. Powell survey (1845–46), field notes and surveys associated with surrounding townships, coast and geodetic surveys (as well as descriptions of extant and lost triangulation stations), obtained oil company speculation plats, hydrographic surveys, aerial photographs, and oyster commission maps (Figure 6). He made multiple trips to Plaquemines Parish and hired boat transportation to the surviving triangulation stations. After considerable investigation, Seghers identified “The California Company Well No. 2” as situated on the Kuchenig property. In 1951, the State of Louisiana’s Mineral Board had leased the land to the California Company, which drilled a mineral well and removed oil, gas, and other hydrocarbons. Based on the Seghers research, Kuchenig petitioned the court to recognize his sole ownership of the property and demanded that California Company account for all oil and gas extracted from this land. The case dragged on in multiple lawsuits that reached the Fifth Circuit Court of Appeals more than once. Final court decisions are not included in the Seghers holdings.

While files such as *Kuchenig* provide substantive representation pertaining to Plaquemines Parish, the Seghers office records mostly document greater metropolitan New Orleans, consisting of Jefferson, Orleans, and St. Bernard Parishes.

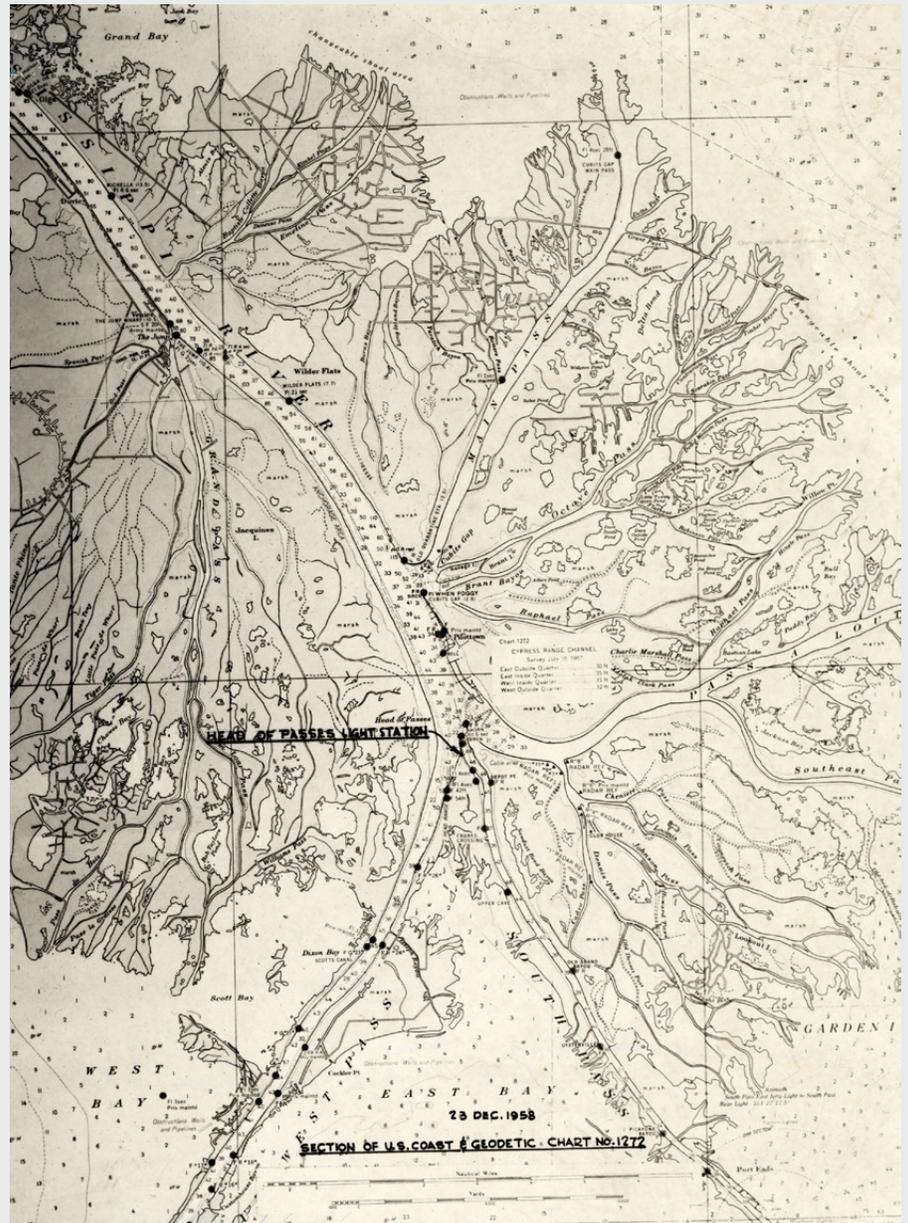


Figure 5: Section of U. S. Coast & Geodetic Chart No. 1272. 28 December 1958. Photostat.



Figure 6: Western Shore / Isle Au Breton Sound from Deep Water Pt. to California Pt. Louisiana. 1868-1869. U. S. Coast Survey by C. H. Boyd. Detail of photostat.

By the early twentieth century, population increases prompted land speculation in the development of new subdivisions. The Seghers business records include hundreds of subdivision surveys, as well as lot surveys within subdivisions. Often times, those records are augmented with historic plats associated with early land grants and plantation tracts. Major and minor subdivision surveys may be found in the collection: Lake Vista, Lake Terrace, Pontchartrain Park, Derby Place, Gentilly Terrace, Green Acres, Metairieville, and even one called “Own-Your-Own” subdivision (Figure 7). This latter development was originally surveyed by civil engineer S. E. Calongne in 1926 but greatly expanded in the 1960s with surveys completed by John M. Krebs. The Seghers files include the Calongne and Krebs surveys, as well as their own surveys for the Conservative Homestead

Association and individual property owners. Multi-generational documentation of a given land area is a typical feature of individual files.

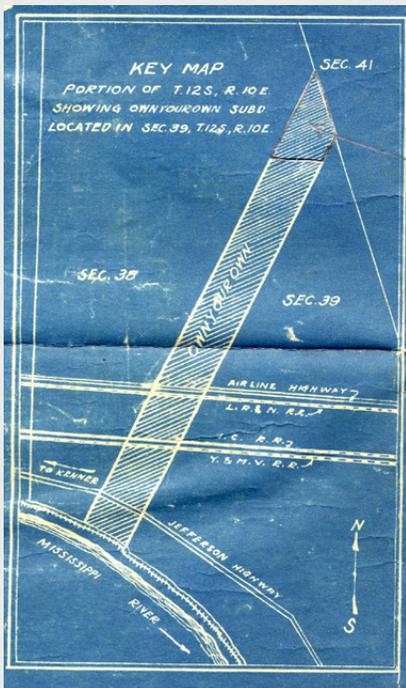


Figure 7: S. E. Calongne, Key Map of Ownyourown Subdivision, Jefferson Parish, LA. Upstream Realty Company, 10 November 1926. [Detail of blueprint].

The vast coverage presented by the collection proves especially noteworthy. Since the Seghers family business outlasted its rivals, the collection reflects not only changes to land management strategies and property ownership but also to the surveying profession. While the family’s earliest records suggest the Louisiana profession’s domination by *arpenteurs*, by the 1950s, the family was increasingly providing structural engineering assessments to the city’s modernist architects. Clients included municipal, parish, state, and federal governments, the Dock Board, the U. S. Army Corps of Engineers, the Roman Catholic Church, plantation owners and major oil companies. Viewed comprehensively, the collection provides researchers with an incredible variety of cartographic documentation.

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# The Design of Gray Earth: A Monochrome Terrain Dataset of the World

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## INTRODUCTION

Gray Earth is a new terrain dataset available at Natural Earth ([NaturalEarthData.com](http://NaturalEarthData.com)), a NACIS-sponsored repository of free map data (Kelso 2009, Patterson 2012). Serving as a monochromatic counterpart to the site's full-color terrain rasters, Gray Earth provides a worldwide depiction of landforms in grayscale. It comes in three resolutions that complement the 1:50- and 1:10-million vector data also available at Natural Earth. In addition to a basic version showing features of the Earth's land surface, visitors can also download deluxe versions that include supplemental ocean fills, bathymetric shading, and major rivers (Figure 1).



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Gray Earth is not a final map, but rather an element that mapmakers can use with cartographic and GIS software. It has two primary purposes: to serve as a terrain layer for grayscale maps, and to provide a neutral base for maps that use bright,

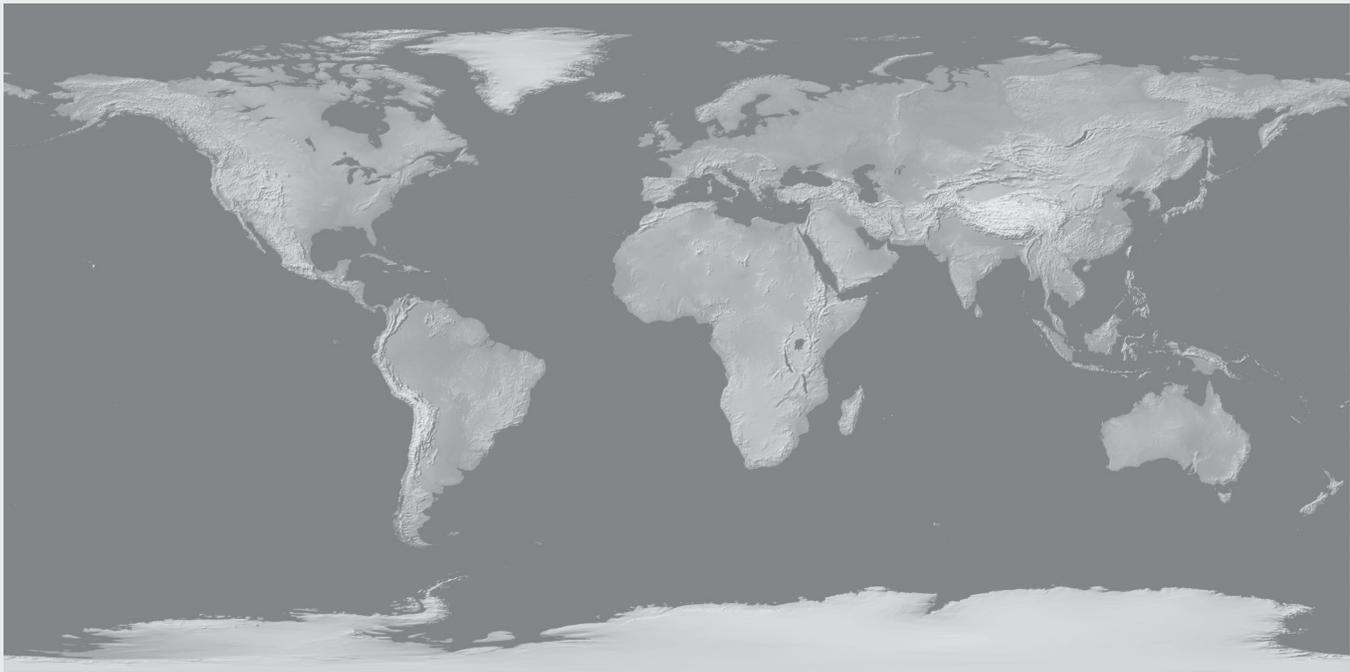


Figure 1: Basic version of Gray Earth with a supplemental ocean fill.

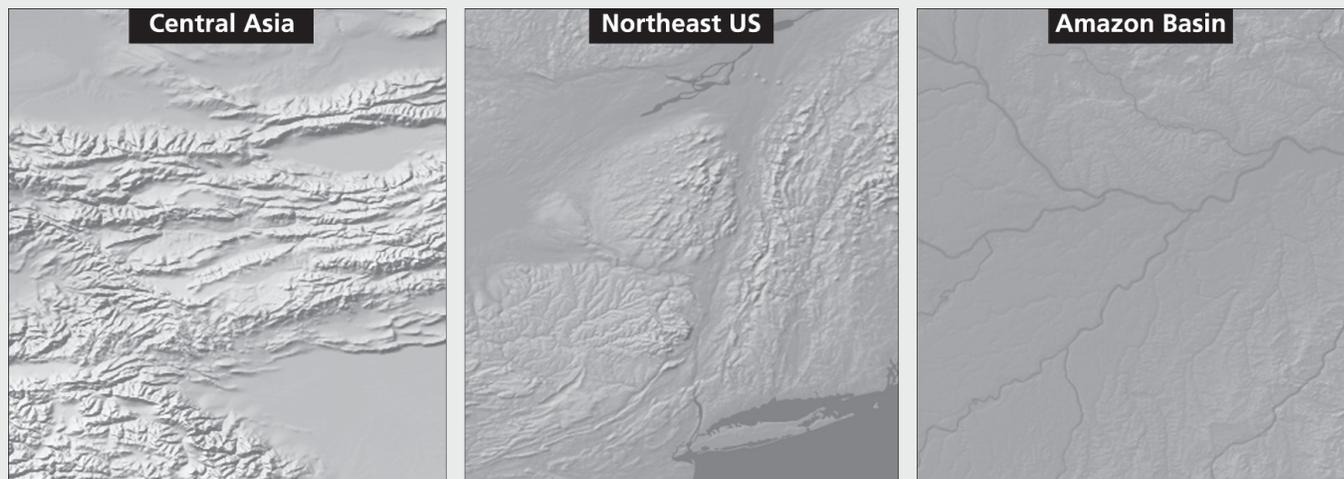


Figure 2: From left to right: high, medium, and low relief as it appears in Gray Earth.

saturated colors to represent thematic and statistical information. Against the gray backdrop, colors will pop.

Land areas in Gray Earth feature relief shading combined with hypsometric tints that blend into one another from darker lowlands to lighter highlands. Tonality of the land is generally light and the contrast is muted to better serve as an inconspicuous base for other map information. Despite being subdued, Gray Earth nevertheless reveals terrain details everywhere on Earth from the high, rugged mountains of Central Asia to the relatively flat lowlands of the Amazon Basin (Figure 2). The lighter land and darker water bodies provide figure-ground contrast.

The final Gray Earth dataset has an outward simplicity that belies the complex techniques that went into its development. We relied on a variety of GIS, mapping, and graphics processing software to develop the layers from which the final image was built.

### ELEVATION DATA

Building Gray Earth began with compiling a suitable elevation dataset. For terrestrial elevation data, we used SRTM30 Plus, updated locally in the eastern Himalayas and southern Andes with higher quality data acquired from Viewfinder Panoramas (see References section for URLs). The bathymetry was based on CleanTOPO2, replaced with ETOPO1 data for the Caspian Sea and the Great Lakes. The land and sea layers were composited together, then downsampled from 30-arc second (~1km) to 1 minute (~2km) resolution. The final elevation raster measured 21,600 height samples wide by 10,800 high and employed the Plate Carrée (Geographic) projection, WGS84 datum.

Once the necessary elevation data had been assembled, we turned to developing the foundation of Gray Earth: unique hypsometric tints, designed to accommodate map reading at global and regional levels.

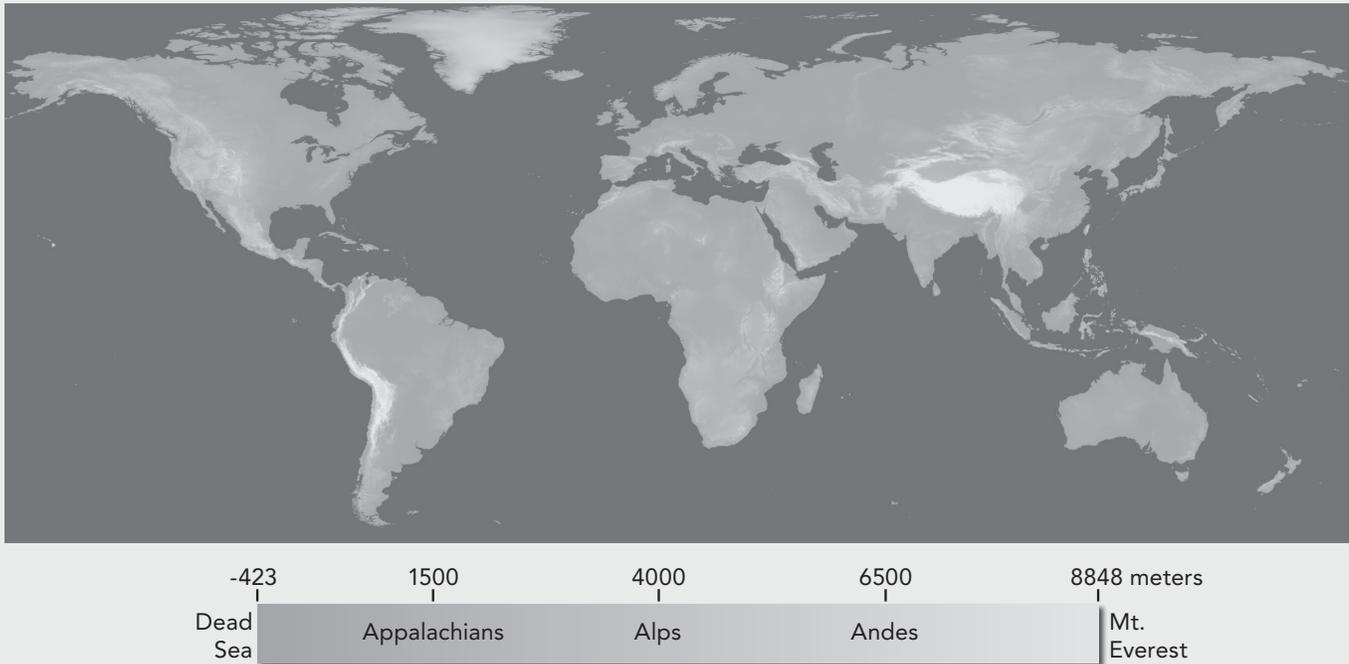


Figure 3: Hypsometric tints with a limited grayscale ramp.

### LOCAL AND LOCALLY-ENHANCED HYPSONETRIC TINTS

One of the primary limitations of working in grayscale, or any monochromatic scheme, is the narrow range of available tones; it's hard to fit a lot of detail into such a constrained color ramp. Creating worldwide hypsometric tints, for example, involves compressing the full range of Earth's elevations to a point where many of its finer features become illegible. Figure 3 demonstrates the challenges. Here, elevations are indicated by a color ramp constrained to the lighter half of the grayscale spectrum, from 40% black lowlands to 10% black highlands, reserving the darker half for water features.

The Earth's most significant highlands stand out quite legibly: the Tibetan Plateau, the Andes, and the Greenland ice cap. But beyond the most macro of macro-scale features, much of the world looks fairly flat. Gone is Australia's Great Dividing Range, along with the vast plateau of southern Africa; even the imposing Alps are difficult to make out. They are beyond the capacity of the limited color ramp to convey.

We ordinarily think of hypsometric tints as encoding absolute elevations. But we can also think of them as encoding relative elevations: how high is an elevation compared to the highest and lowest points on the map. The tallest peak sits at one end of the tinting scheme, the lowest valley the other. Every other location is assigned a color in between, based on how its elevation compares to these two extremes. This is very much in line with how many people read hypsometric schemes on maps; rather than continually checking the legend to determine actual

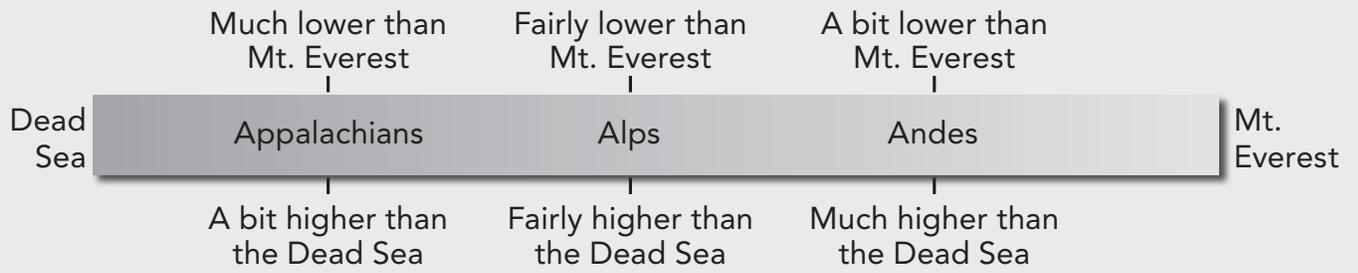


Figure 4: A relative interpretation of a hypsometric tinting scheme.

elevations, we usually look for which places appear higher or lower than others (Figure 4).

Returning to our problem in Figure 3, many of the missing features are comparatively small when measured against the elevation extremes of the Earth. A change in elevation of 2,000 meters may be impressive and regionally significant, but it is only a portion of the 9,271-meter range that the tinting scheme must cover. With such a limited color palette, these lesser features become nearly indistinguishable. It's a technically accurate portrayal, but it is not particularly useful in creating an attractive and informative base map. The grayscale tinting scheme must do more, and for that we need to revisit the idea behind hypsometric tints.

Rather than show elevations relative to maps' extremes, we can instead show elevations relative to their immediate surroundings. A peak may be rather small when

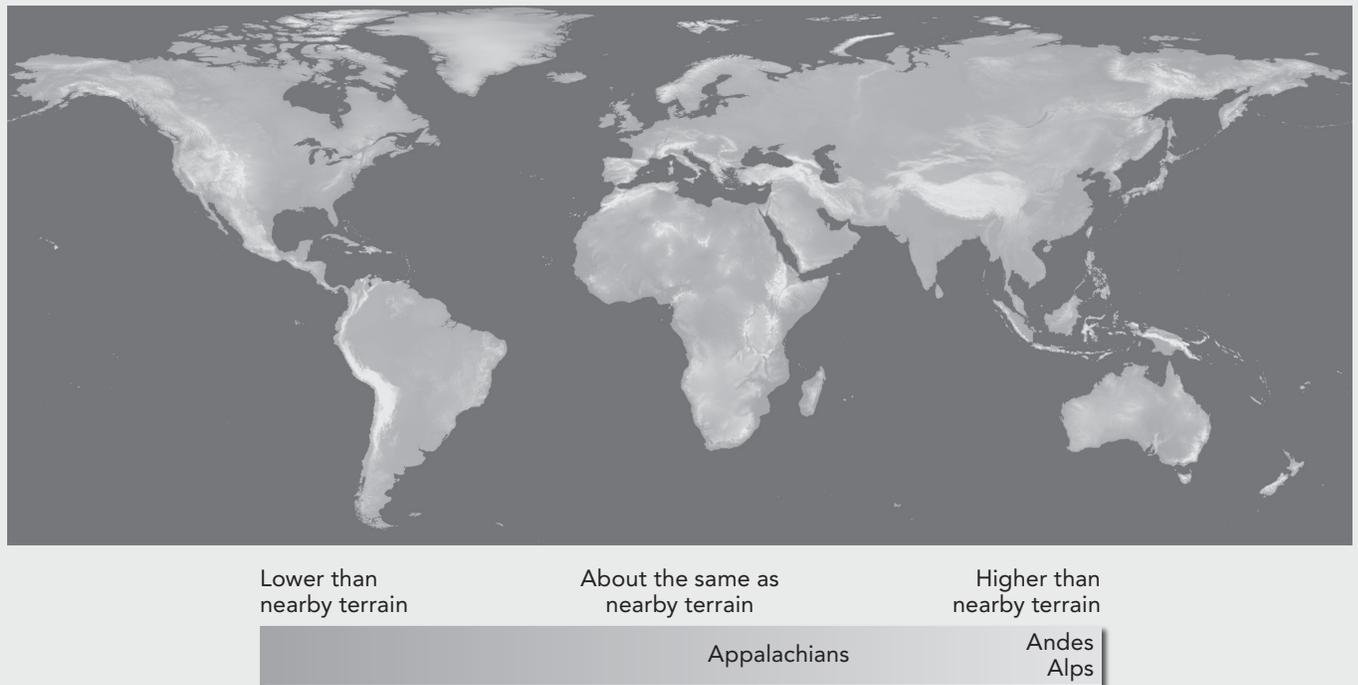


Figure 5: Local hypsometric tints.

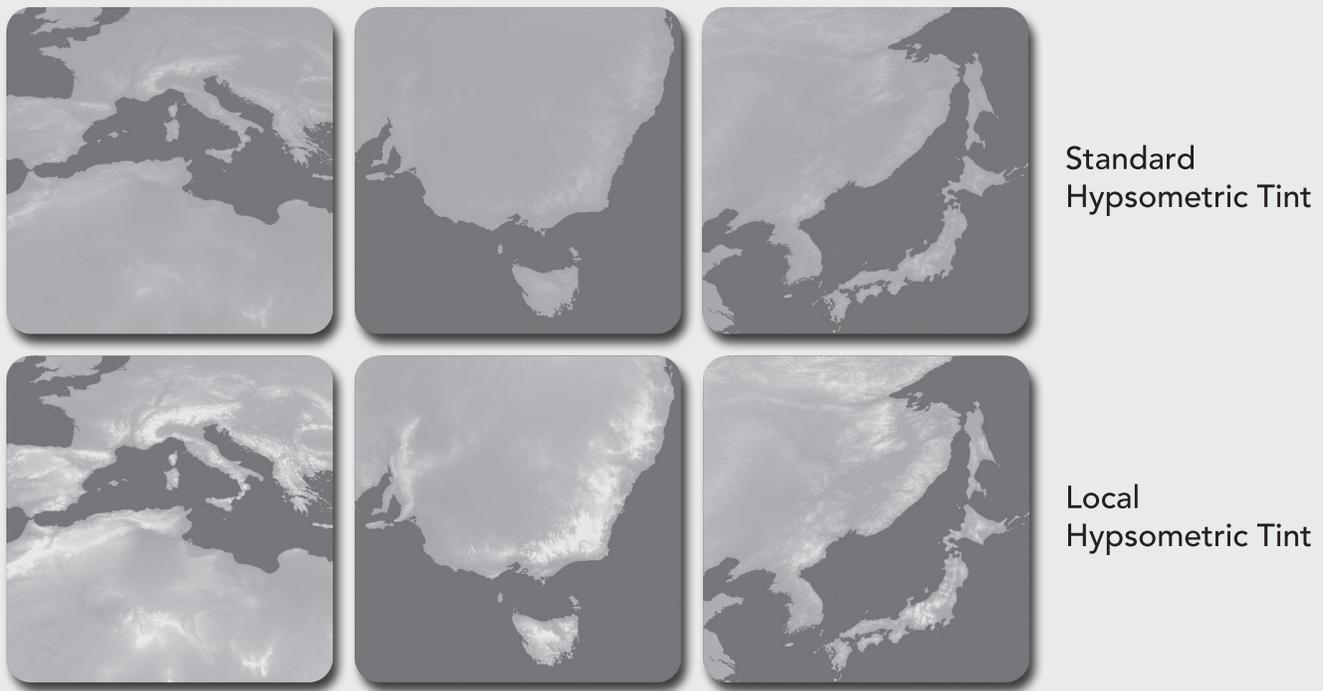


Figure 6: Detail images from Figures 3 and 5.

compared to Mt. Everest, but does it become significant when measured against nearby terrain? Figure 5 demonstrates what happens when we show only whether the elevation of a place is higher or lower than its neighbors, what we might call **local hypsometric tints**.

No longer hindered by the need to portray everything relative to the highest and lowest points on Earth, much of what was missing in Figure 3 becomes clear. In places like Australia or eastern North America, detailed terrain is revealed where there was previously only a flat gray. The result is a base map that is more visually interesting and more informative about the world's landforms. The local hypsometric tints make more efficient use of the limited tonal range of a grayscale color ramp.

The problem with local hypsometric tints, as many readers may have already noted, is their lack of consistency worldwide. Low mountains are portrayed as though they are as high as great ones, and there's no way to create any sort of legend that allows a conversion between color and elevation. While it may be technically inaccurate, this method can be more narratively accurate than applying standard hypsometric tints. Figure 5 is better able to give an informative reply to a reader who asks, "What sort of terrain shapes the lives of people in various parts of the world or influences its phenomena?" The low-detail image of Figure 3 may correctly convey which places are the tallest on the Earth, but it suggests a planet that is mostly smooth. This may be true when it is seen from space, but the Earth becomes very rugged when experienced by a person on the ground. Figure 5 is a terrain representation with a more human scale.

For Gray Earth, we employed a blend of local and standard hypsometric tints. This allowed regionally significant terrain details to show up clearly while maintaining a more consistent vertical scale worldwide; lower features are visible, but—unlike in Figure 5—they are depicted as clearly less lofty than Tibet. We call this blended approach locally-enhanced hypsometric tints. The resulting terrain representation is quite versatile. Many users of the Natural Earth datasets create regional and local maps. Places such as Tibet or the Andes may not appear on a user’s map and, by reducing their influence on the overall color scheme, Gray Earth will look good in a wide variety of contexts.

### CREATING LOCAL HYPSONETRIC TINTS

Creating local hypsometric tints is fairly straightforward, and can be done in most any GIS package. We used ArcGIS to create those used in Gray Earth. To mathematically represent the idea of measuring a place’s elevation relative to that of its neighbors, we can create a raster dataset that provides, for each location, the number of standard deviations above or below the neighborhood mean. Getting there involves three steps.

1. **Neighborhood mean and standard deviation.** In order to compare a location to its surroundings, we need to learn a couple of things about those surroundings by using neighborhood analysis functions. These functions look at each pixel in a raster dataset (in this case a DEM) and determine its neighborhood: the group of all pixels within a chosen distance of that pixel. Then, they compute statistics, such as the mean, for that group. The first step in preparing a local hypsometric tint is to generate two new rasters based on our initial DEM: one with a neighborhood mean and one with a neighborhood standard deviation. The choice of the neighborhood size determines how large of a surrounding area we’d like to consider when applying local hypsometric tints to each location.

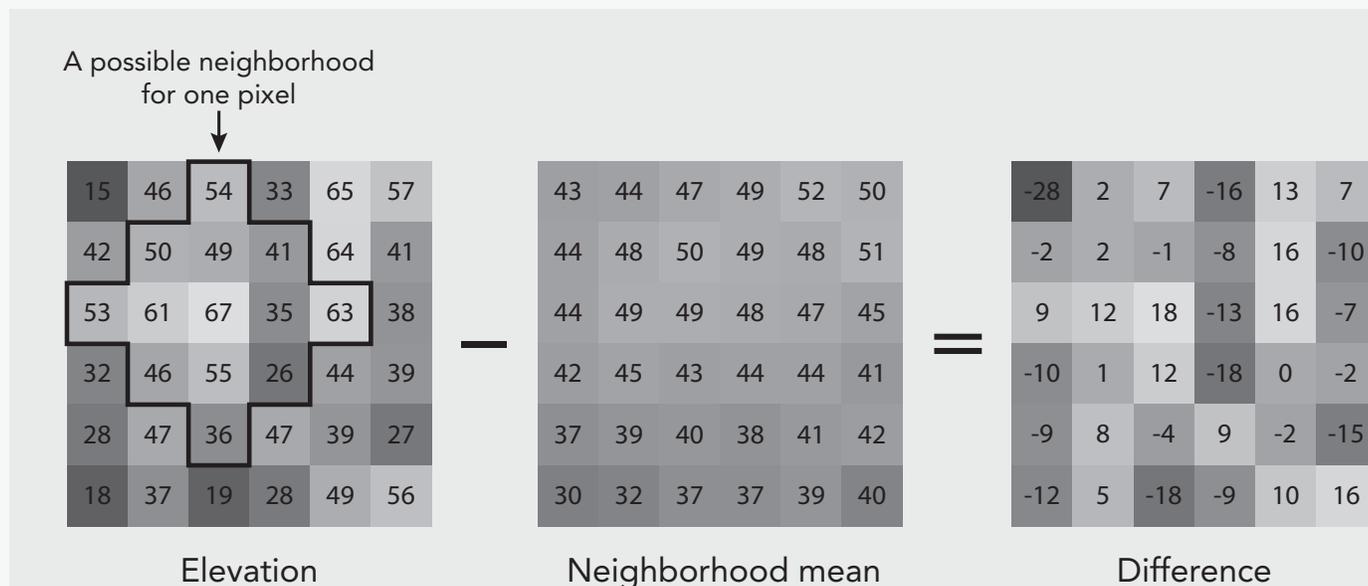


Figure 7: Neighborhood statistics and the calculation for step 2.

2. **Compare each elevation to its neighborhood mean.** For each location, we have an elevation and the mean elevation of its neighborhood. The second step is to compare them by subtracting the neighborhood mean from the elevation. This yields a new raster showing how much higher or lower than its surroundings a location is.
3. **Divide by the neighborhood standard deviation.** The standard deviation statistic measures how much variation there is in the neighborhood. A small standard deviation means that the area is fairly flat: most values are close to the mean. A larger number suggests a more rugged terrain. This measurement allows us to add some important context to our analysis of local elevations. We may find in step 2, for example, that a particular pixel is 500 meters taller than its neighborhood mean. It could be a significant local prominence standing out on a flat plain (if the standard deviation were small), or perhaps it is just part of an undulating range of small mountains (if the standard deviation were large). The standard deviation determines whether the elevation differences we are measuring are significant. Our final step in preparing the local hypsometric raster is to divide the results from step 2 by the neighborhood standard deviation.

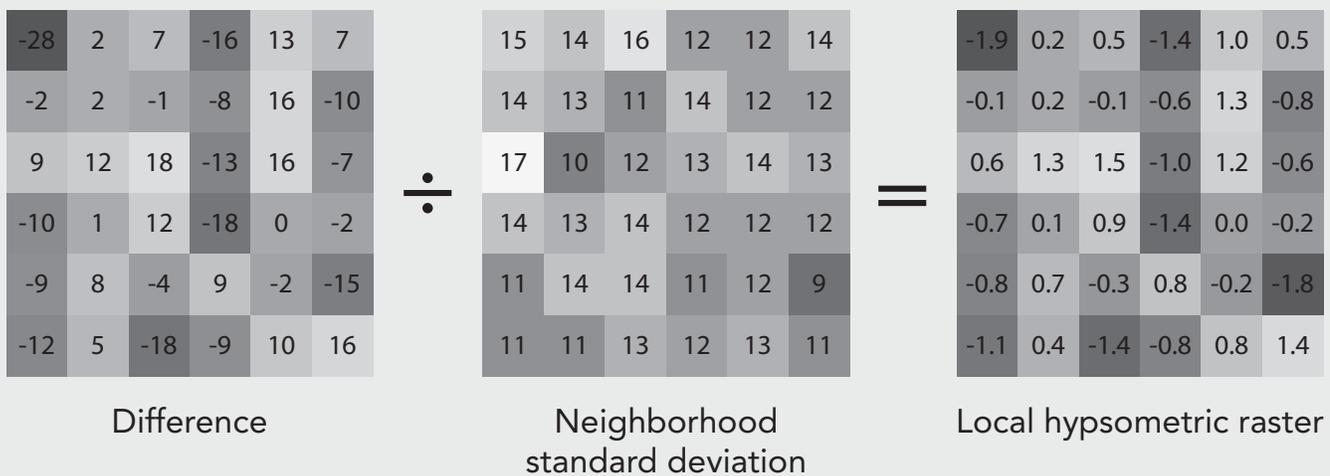


Figure 8: Computing the final local hypsometric raster.

The end result is a raster dataset that encodes how significantly the elevation of each pixel differs from that of its surroundings. We can apply a simple color ramp, as we would to a DEM, and the end result is a set of local hypsometric tints.

### CREATING THE FINAL HYPSONETRIC TINTS

To create the hypsometric tints used in the final Gray Earth product, we next moved our work into Adobe Photoshop. We combined several layers of local hypsometric tints with differing neighborhood sizes (1000 to 3000 pixels) along with one of standard hypsometric tints. We then blended all of these parts together to

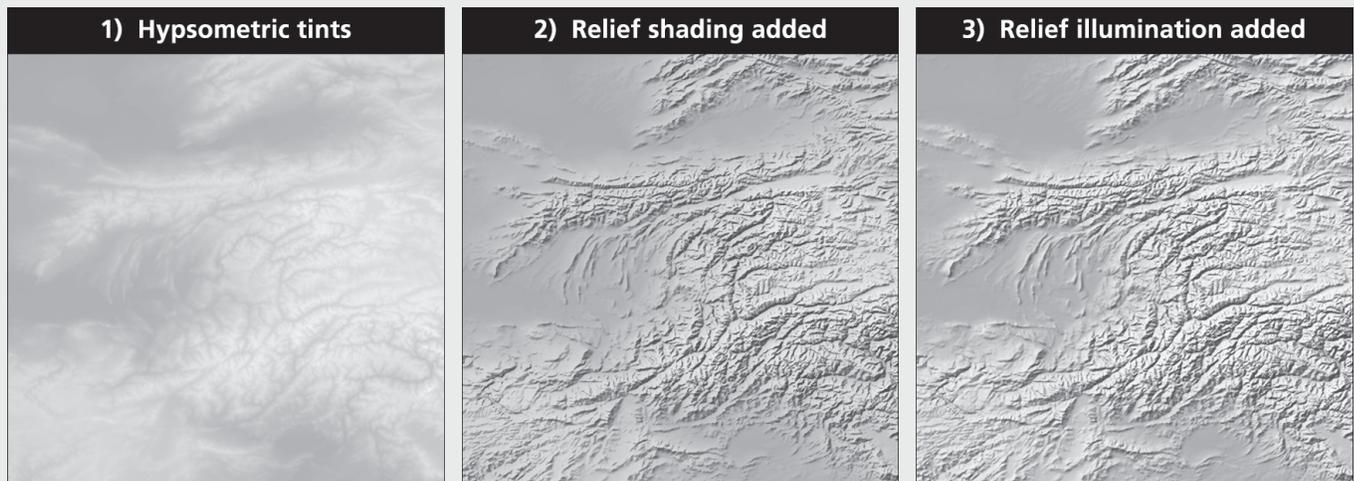


Figure 9: Light touch: Gray Earth combines hypsometric tints, relief shading, and relief illumination.

create locally enhanced hypsometric tints, adjusting the composition until we were satisfied with the balance between macro- and micro-scale features.

Next, we brought additional lowland darkening to areas below approximately 200 meters in elevation. Large areas of land on Earth are relatively low and flat, such as the Amazon Basin, northern Eurasia, and the southeastern United States. Showing these areas slightly darker accentuated the subtle elevation differences. To accomplish this in Photoshop we converted the SRTM30 Plus elevation data to a 16-bit grayscale raster—16 bits of data provided smoother transitions—and then used the Curves adjustment to remove areas over about 200 meters. By setting the layer to the Multiply blending mode at a low opacity, we subtly darkened the lowland areas where the raster was not choked.

Following a similar procedure, we also brought slightly darker tones to the deepest valleys on the Tibetan Plateau. This very large region would have looked too uniformly light without this adjustment. We drew a feathered layer mask in Photoshop to confine the darkening to this region.

### SHADED RELIEF

Once we had developed and fine-tuned our hypsometric tints, we were ready to prepare the shaded relief—the other half of Gray Earth. We generated a separate relief for each of Gray Earth's three final sizes, measuring 10,800, 16,200, and 21,600 pixels wide. Each was rendered in Natural Scene Designer Pro 6.0 from the same elevation raster that we used to prepare the hypsometric tints, and then downsampled as necessary to fit our target size. We used the default light settings in Natural Scene Designer, a 15% gray background, and two applications of DEM smoothing. Smoothing the elevation data before rendering took place yielded a more generalized shaded relief with fewer artifacts and noisy textures. Varying the vertical exaggeration factor—smaller scales received more vertical exaggeration—created shaded reliefs that look consistent between the different resolutions of

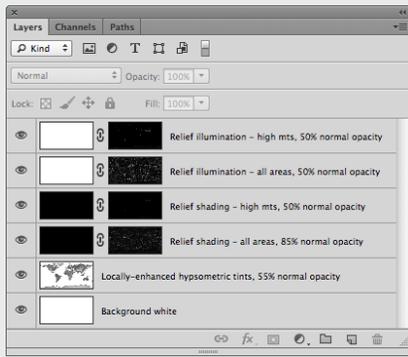


Figure 10: Gray Earth composite layers in Photoshop.

Gray Earth, an important consideration for multi-scale web mapping. The shaded reliefs produced for Gray Earth are now the standard for all Natural Earth 2.0 raster products.

Finally, we added the shaded relief to the background hypsometric tints as separate shading and illumination layers in Photoshop. This approach creates a relief depiction with a more three-dimensional and lighter appearance overall. As the last step in creating the final Gray Earth product, we added secondary shading and illumination layers to give the highest peaks slightly more emphasis.

Figure 10 shows the Photoshop layers and layer masks used to composite the Gray Earth shaded relief. Pasting the shaded relief rendering into the layer masks—where it behaves much like a photographic negative—allows the printing of black shading or white illumination on top of the background hypsometric tints. Adjusting the opacity of these layers yielded a delicate balance of shadow, light, and background tints.

## CONCLUSION

When making Gray Earth, we had in mind a product that could serve a wide range of cartographic design needs and appeal broadly to many users' tastes. While it is quite versatile, we encourage you to modify it as needed if you find that it does not exactly meet your project requirements. Only a few minutes of Photoshop tinkering can alter its appearance dramatically, even colorizing it (Figure 11). You can also easily add a layer of rasterized Natural Earth vector data—glaciers, reefs, urban areas, etc. We hope that you will find Gray Earth to be an attractive new addition to the Natural Earth data library, and that it will be a valuable element in your future projects.

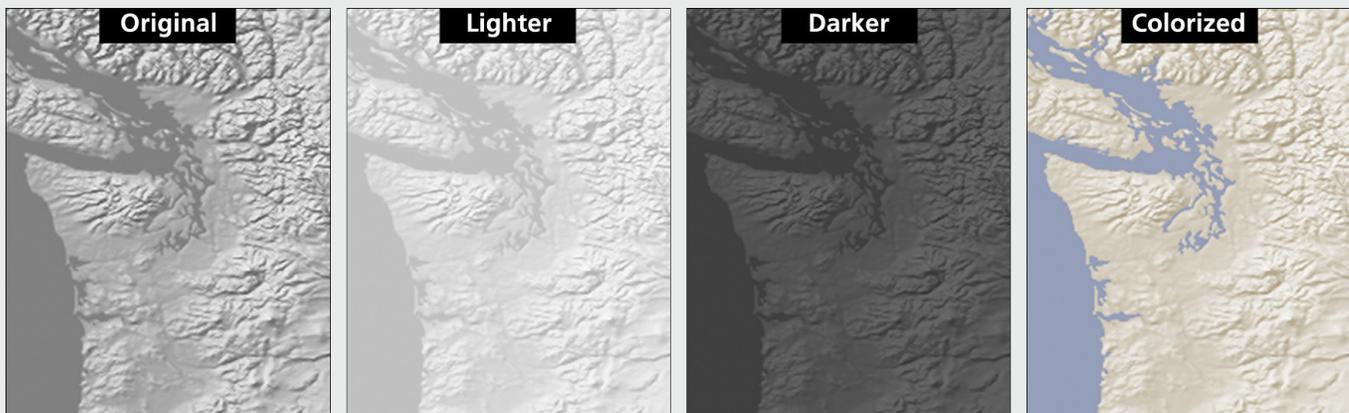


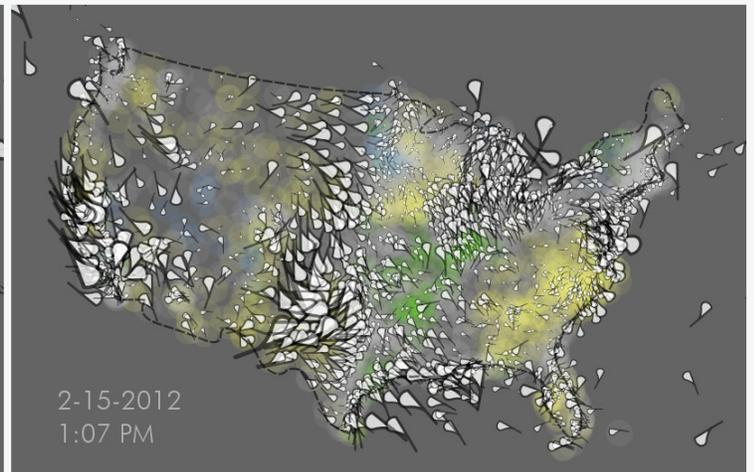
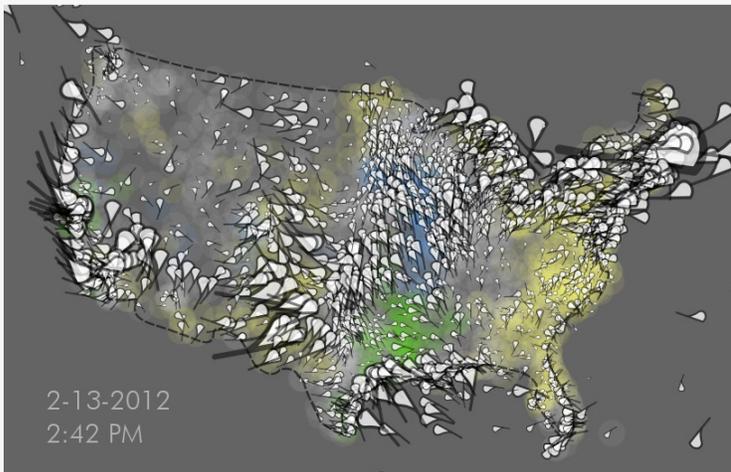
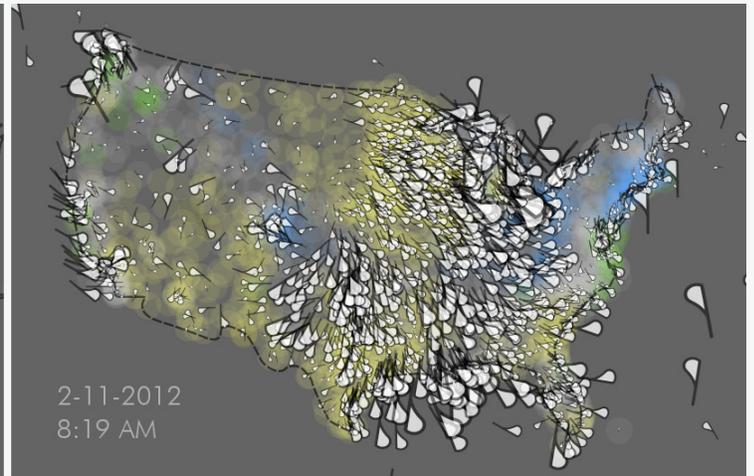
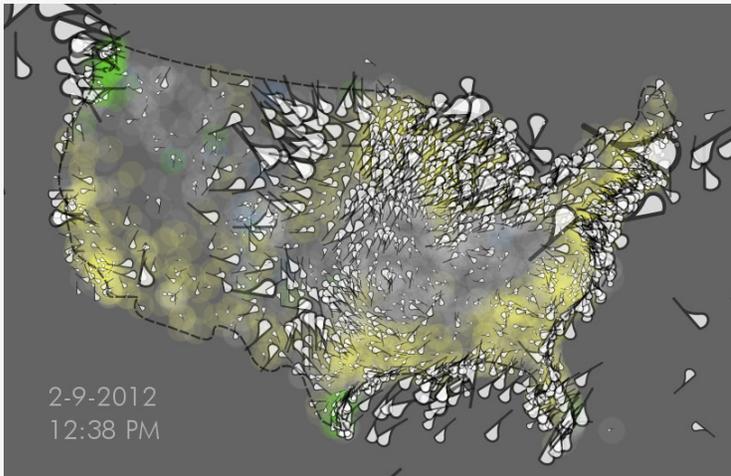
Figure 11: Possible Adobe Photoshop adjustments to Gray Earth.

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## Portraits of Wind

Tim Sinnott: tim@greeninfo.org | @tsinn



A map, by definition, is a representation, an artistic likeness. My approach to map-making over the years has shifted from detailed representations of an area towards suggestive and artistic representations of space and information. I have become focused on the idea of abstracting the real world, using minimal data sets, colors, and text, enabling me to create unique and compelling visualizations.

Weather has captivated me for as long as I can remember. Weather maps have provided me with a way to understand my environment, and to see the effects of, and patterns in, precipitation, temperature, and wind. In grade school, I can distinctly remember being glued to local television and radio programs with just the first mention of severe weather. With both my fear and excitement piqued, I found myself trying to consume as much information as possible about impending storms. Elements of weather have been monitored, constantly, for many years. The amount



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of data collected and distributed to the public in recent years is astounding, and for me, totally inspiring. With this particular project, I set out with a plan to map the wind, searching for comprehensive data sets that included weather station location, wind speed, and wind direction. I was thrilled when I stumbled upon the Current Observations XML feed from the National Weather Service, which provided me with thousands of observations from around the country, including wind data and much more.

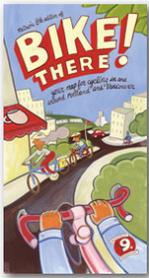
I can't deny that the actual process of pulling these wind data points into a map was a rather time-consuming labor of love. Though it required a series of steps to manipulate and visualize this XML feed, I love the general simplicity of the idea of taking one data set and building a map that helps us understand our world just a bit better. I parsed and compiled individual XML files into one large CSV, opened it in Quantum GIS, and got to mapmaking. After drawing and discarding roughly 20 iterations of SVG symbols representing wind—ranging from spirals to raindrops—I finally created a simple icon that I felt expressed the movement and strength of wind without overwhelming the viewer. The CSV file gave me latitude and longitude values to place my wind points on the map. Fields for wind direction and speed allowed me to rotate and size the icons. Because many of the icons overlap when mapped at this scale, applying some translucence to the icons gives the visualization depth and a temporary, natural feel.

Satisfied with this cartographic foundation, I felt it could use some color, something subtle to contribute a little more to the story. I noticed that the Current Observations data also included a field for weather type, which I reorganized into five general categories: sunshine, clouds, fair weather, rain, and snow. I symbolized the original wind locations as a separate layer of large circles, colored by category, and pushed them to the back of the map with higher transparency to give a very subtle suggestion of weather conditions around the country.

With my minimalist approach, I felt this was all the maps needed. Stamp each one with the date and time of observation, and let them speak for themselves. The twisting patterns of wind and the splotches of bright colors together give a sense of kinetic energy, sometimes ordered, sometimes chaotic.

*Visual Fields focuses on the appreciation of cartographic aesthetics and design, featuring examples of inspirational, beautiful, and intriguing work. Suggestions of works that will help enhance the appreciation and understanding of the cartographic arts are welcomed, and should be directed to the section editor, Laura McCormick: [laura@xnrproductions.com](mailto:laura@xnrproductions.com)*

## BIKE THERE!: YOUR MAP FOR CYCLING IN AND AROUND PORTLAND AND VANCOUVER, 8<sup>TH</sup> EDITION



By Oregon Metro. Portland, OR: Oregon Metro, 2011. 26.5" x 39", 4.5" x 9" (folded). \$9, waterproof paper, [www.oregonmetro.gov](http://www.oregonmetro.gov). ISBN: 978-0984475100

**Review by:** Chandler Sterling and Greg Grube, University of Wisconsin–Madison

In the 8<sup>th</sup> edition of *Bike There!*, Oregon Metro provides a map of the Portland, Oregon area, detailing the many suitable options for cycling around Portland and the surrounding region (Figure 1). The waterproof map shows 235 miles of off-street bike trails and 600 miles of on-street bike routes and includes cycling safety tips and guidelines for better biking. The map's authors did an excellent job in depicting a complex network of roads and bike paths simply; drawing a connection between Portland and the surrounding communities with the main emphasis on natural areas and outdoor recreation (Figure 2). The inset maps help to show points of interest in Portland and surrounding communities in greater detail. Bike shop locations are also shown, which are features of particular interest to recreational cyclists. Overall, the authors created a crisp design that looks good, is user-friendly, easy on the eyes, and evokes a sense of calmness which reflects the theme of a relaxing day cycling.

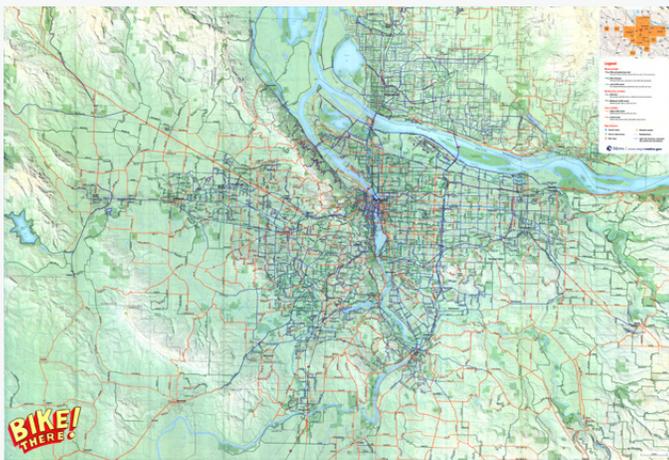


Figure 1: One complete side of *Bike There!* showing the entire Portland metro area.



Figure 2: *Bike There!* depicts numerous parks and green spaces for recreation, as well as a hierarchy of suitable routes.

Although the map appears simple at first, its complexities are discerned upon close inspection of the roads and paths. It shows a hierarchy for of cycling suitability, using color to differentiate between bike trails, main bikeways, bike lanes, and high or low-traffic streets. The colors work well together and match the pastel theme of the base map. By decreasing the scale to show the entire Portland Metro area, thereby connecting one city to another, the authors' map embodies the name *Bike There*. This map would be helpful for individuals who live in surrounding cities but commute to Portland for work. This map is not strictly for commuters, however, as accessibility to parks and natural areas in both the city and country are depicted.

The predominately green, hill-shaded hypsometric base map reflects a theme of outdoor adventure; it creates a feeling of escape from the complexity and compactness of an urban area (Figure 3). As one looks at the map, it is easy to get lost imagining exploring the rolling hills of the countryside, or taking a relaxing ride to the Columbia River. Soft pastel colors suggest an easy traverse of the open landscape on a sunny day. The colors suggest a simplistic paradigm, engaging the reader in a cycle-centric world. The authors excluded the built landscape of the city from the map, a decision which contributes to the theme of encouraging cycling as an alternative mode of transportation for traveling in and around the area and avoids the sense of chaos associated with major urban areas. Portland seems less like a hectic metro area with a maze of streets, and more like a relaxing network of bike paths. A good visual hierarchy is also



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Figure 3: An inset map of the suburb community of Gresham.

maintained through de-emphasizing the city as an urban area and focusing on the abundance of cycling routes.

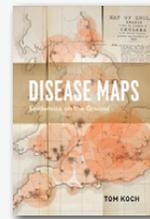
As functional as the map is, by ignoring the built environment it is also somewhat deceptive. It de-emphasizes the compactness and concentration of the downtown area and makes it seem as easy to move around there by bike as it would be in the countryside. These are high traffic areas with lots of motor vehicles and pedestrian traffic, and yet the map only shows the bike paths and roads, making it seem more open than it likely is. Another issue encountered when reading the map is the confusing map legend, which ranks the routes according to suitability levels with sub-categories within those groupings. This complexity is not a problem in itself, but the symbol color scheme does not lend itself to an intuitive hierarchy. For example, the colors used to designate the different path suitability range from purple (most suitable), to green (moderately suitable), and orange (least suitable). Using these specific hues to rank suitability is not as appropriate as a sequential color scheme would be. The reader needs to first familiarize themselves with what each line color means, and then with the order of suitability, in order to understand which bike paths are best.

The biggest problem with *Bike There!* is the inconsistent labeling of features throughout the map. There are places on the map where parks and natural areas are labeled well, and would help a biker to reach their destination, but in other places, parks and natural areas are not labeled at all, and the reader is left to wonder what is actually at that location and, if they know a park or area is there, why it was not important enough to merit inclusion. In places that do have labels, there are many instances of labels overlapping features, making them nearly impossible to read, and some instances

of labels getting cut off on the edge of the map. There are also some instances of improper label placement, which yields a weak association between the label and the feature. Granted, in some of these places the areas to be labeled are small, but with more care and attention, the map could have been more consistent, and thus more clear.

Overall, the design of this bike map serves its purpose well for commuting and recreational cyclists. It shows a vast array of bike trails in the entire region, with insets for areas of denser information. It does a great job simplifying the complexity of the Portland Metro area by excluding the built environment, and of conveying a sense of outdoor adventure, even though it may be deceptively pastoral. The map is an effective navigational tool, whether there is a set destination in mind or simply a plan to meander through the countryside. All Portland residents (and those venturing from outside) looking to explore the area by bicycle should have a copy of *Bike There!*.

#### DISEASE MAPS: EPIDEMICS ON THE GROUND



By Tom Koch. Chicago: University of Chicago Press, 2011. 330pp. 147 illustrations, 106 in color. \$45.00 Hardbound. ISBN 978-0-226-44935-7

**Review by:** Jonathan F. Lewis, Benedictine University

*Disease Maps* explains how mapping facilitated a rethinking of illness from a type of isolated individual affliction to a geographically distributed public health problem. The book's three sections ("The Idea That Is Disease," "Cholera: The Exemplar," and "The Legacy And Its Future") contain twelve chapters, with ample illustrations evenly distributed throughout.

"The Idea That Is Disease," the book's initial section, consists of five chapters built around what Koch identifies as the book's central argument: "that to understand disease and its history we need to think about *seeing* at every scale" (4, emphasis in original). While it is possible to imagine disease being visualized at local levels, such as the microscopic or a diseased body, the focus here is on mapping the distribution of individuals presenting common symptoms across cities, countries, and larger regions. It is Koch's contention that mapping creates "the context in which disease theories are proposed and tested" (4), thereby enabling

visualization at a higher level: that of how disease itself is understood.

Early in this section, Koch describes such contemporary diseases as AIDS, West Nile virus, and H1N1 influenza in order to document the vital part played by maps in understanding the spread of these illnesses, and to illustrate how maps advance visual thinking. Koch writes that “mapping is a method of assemblage within which ideas are constituted and then argued about specific experiences. . . . The map’s intellectual service lies in this conjunction of analytic presentation and experimental argumentation in a visual exposition. . . . In this way mapping produces a type of knowledge, one rooted in a relational space, which has been critical to disease studies for centuries” (13).

The author juxtaposes the 16<sup>th</sup> century breakthrough publications on anatomy with contemporaneous cartographic works: each replaced wisdom passed down from the ancient world by favoring what was actually seen over what had been read. Just as many of the new maps from Finé, Braun and Hogenberg, and Ortelius were of cities, so too the study of disease came to be centered on outbreaks in urban areas, and Koch describes how the connection of maps with specific places harmonized with the belief that diseases were inextricably linked to those places. What mapping seemed to reveal was not the introduction of infection into a fixed population, but rather the introduction of population into a fixed place where infection resided. It seemed clear that it was sites that were diseased, or were comprised of elements that activated infection among especially susceptible individuals, and that these sites, in conjunction with temperature, humidity and maybe even local geology, allowed diseases to wax and wane seasonally.

Because of the linkage between cities and disease, urban population records were quickly recognized as invaluable diagnostic tools, transforming “a clinical diagnosis into a demographic thing whose effect could be counted, year by year, in accurate records of the city, region and nation” (64). This kind of data collection began in earnest in the 17<sup>th</sup> century and matured in the 18<sup>th</sup> in response to the dominant disease of that period: yellow fever. Yellow fever’s general association with tropical climates, and with hot, humid summers in temperate regions, made explanations relying heavily on natural forces seem plausible. At the same time, however, non-medical professionals advanced the idea that, while local conditions might encourage outbreaks, diseases themselves were imported from infected areas with which

trade was conducted. Mapping was central to identifying all these factors: the geographic spaces where diseases had their origins, the trade routes of transmission, and the locales of contributing factors.

The book’s second section, “Cholera: The Exemplar” represents a thorough compilation of important cartographic efforts to advance understanding of that disease. Koch portrays each new effort at mapping cholera as identifying a particular type of the disease, differentiating, for example, one that infected British soldiers in India from another that attacked members of the indigenous population. This proliferation of choleras led researchers to assemble a wealth of data “too complex for a simple inductive argument, too vast for a simple statement. Mapping was becoming an essential medium for all these cholera, one in which tables of data were transformed into arguments” (117).

Not surprisingly, a sizable portion of *Disease Maps* examines the role played by John Snow in identifying cholera’s method of diffusion and infection. This portion of the book is quite detailed, and draws extensively from the author’s other works about Dr. Snow. Like them, these chapters describe the popular overemphasis placed on Snow’s role in pinpointing cholera’s source. Some writers have depicted Snow’s critics as hopelessly blinkered and unable to see the breakthrough he had wrought, but Koch portrays Snow as stubbornly refusing to answer legitimate and basic questions posed by his peers and lumping together data that had been collected at different levels of spatial analysis. He describes one “astonishing intellectual leap in arguing on the basis of very local, neighborhood outbreaks in Albion Terrace and Horsleydown that cholera everywhere in London, and by extension the world, was waterborne.” Koch notes that “for Snow’s contemporaries, what was significant was not the mistake in addition or his method of calculation . . . but his logic and its leap from the scale of the local, neighborhood outbreak to that of region, the metropolis at large, and cholera in the world” (152–153). Koch goes on to contrast this with the work of William Farr in collecting extensive statistics about more than two dozen different diseases. “It was in part the development of a mechanism for the collection of national health data, and Farr’s demonstration of its application to cholera, that permitted physicians to move from treating individuals to participating in the larger question of population health” (163). Farr also devised graphical representations of information: forecasts of expected incidence of disease outbreaks plotted against climatological data, coxcomb graphs of annual mortality statistics as a function

of average temperature, and a map of cholera's distribution across Britain during the 1848-1849 outbreak. "The conclusion for Farr and many of his readers was that cholera was created in a fermentation-like process propelled by the evaporation of contaminated lowland waters into the air" (180). Farr was not the only individual complicating Snow's work. John Simon carried out basic street-by-street research that Snow had avoided and found patterns of disease different from those Snow had predicted: "by 1856 Snow's views on cholera were discounted by many as obsessive; his science perceived as a matter of magisterial assertion rather than careful, factual evidentiary argument" (191). It took collaboration with Rev. Henry Whitehead, a curate whose parish lay at the epicenter of the 1854 cholera outbreak, to rescue Snow. Whitehead not only interviewed an enormous number of families living in the afflicted area, he constructed maps refuting popular misconceptions surrounding the outbreak. And while it was Whitehead's footwork that ultimately identified the index case at the center of the outbreak and an engineer's unearthing of the place where an infected cesspit transmitted the disease to the Broad Street pump, Snow's eagerness led him to publish his views on the subject before either of those events. Koch points out that, although correct, Snow's views were founded on conjecture and anticipation of corroborating evidence rather than solid research of his own. Consequently, it was not Snow's work but rather that of early bacteriologist Robert Koch that ultimately displaced miasmatic explanations for the spread of cholera.

The section's final chapter describes the pivotal role played by textbook author William Sedgwick in assembling and advancing the elevation of John Snow to the role of visionary. Sedgwick's textbooks trained a generation of epidemiologists to mimic Snow. W. H. Frost's investigative research into typhoid fever included a map, not because it revealed anything of consequence but because Sedgwick believed Snow had shown a map to be part of a credible research procedure. Frost went on to investigate other diseases and used maps to do so, despite mixed results, and through his writings helped perpetuate the mythology of Snow's contribution to epidemiology. Ultimately, Koch concludes that "science is not about being proven right *someday*. Science is about convincing a jury of one's peers of the rightness of a set of evidentiary proposition tested with a generally accepted methodology. That, John Snow did not do" (229).

*Disease Maps'* final section ("The Legacy And Its Future") contains a single chapter and a brief Afterword. In them,

Koch demonstrates the influence that the collection of data at the local level and its organization for analysis at several levels via mapping has had on thinking about one disease which has proven extremely difficult to combat: cancer. Maps assembled by a variety of cancer researchers are presented alongside the insights their creators hoped they would convey. Unlike some other diseases, which had been thought to have several varieties before being identified as being of one type, maps helped move cancer in the other direction. "What had been a single disease ... became a class of related but distinct diagnoses ... [Dr. Percy] Stocks statistically distinguished specific cancers ... within local, regional, and national populations" (259). As Farr had done for cholera, cancer's researchers generated, collected, organized, and made available to others great quantities of data. This information was employed to generate maps of the diseases' distribution, commonly in the form of atlases credited with "uncovering undetected but significant clusters of unsuspected cancer incidence" (265).

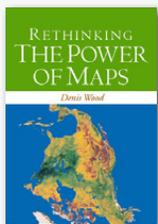
This need to see how data appear at varying levels illustrates the symbiotic relationship between statistics and maps generally, leading Koch to conclude that "[t]here is no battle between mapped and statistical data. ... Maps locate numbers that need maps if we are to transform incidence into ideas about causation. ... In the numbers and in the graphics that attempted to make sense of them it was the seeing that was a test of the knowing" (274). This will be of increasing significance in the future, as "we need to see at every scale, from that of the electronic microscope to that of the world at large. ... In this seeing we will need the mapping that has for centuries been a part of disease studies and the statistics that the map presents" (279). Throughout *Disease Maps*, the author maintains his theme of the importance of seeing at a variety of levels, marshaling evidence in his selection of maps that yielded insights into various diseases. The diversity of diseases and efforts to combat them that Koch describes, many at length, are a real strength of the book. Not surprisingly, given his earlier treatments of the subject, Koch's investigation of John Snow's role in identifying cholera's cause is extensive. Readers of Steven Johnson's popular *The Ghost Map* will find Koch's views and the data behind them a revelation. They may also see those sections as straying a bit from the detached, professional tone found throughout much of the rest of the book, with several pages employing first person singular to describe the author's frustrations with Snow and his claims. Ellipses also appear for the first time, reinforcing the less formal tone. "if the data was complete ... so be it. Let others do the detail

work; he was obliged to give his theory. Even if understandable, the result was unfortunate. Snow rushed and in his hurry chose not to carefully consider the concerns of other researchers. He knew he was right and was . . . impatient” (241, ellipses in original). This style has the effect of belying Koch’s own point about the importance of relying on the weight of evidence rather than the force of personality to overcome the objections of skeptics.

One minor criticism having nothing to do with the author should be mentioned: *Disease Maps* contains a surprising number of typographical errors, many of the sort that spelling and grammar checkers routinely flag. Nouns are missing, words are misspelled, at least one date clearly misidentified, words are reiterated within sentences, and some punctuation is missing. Though these distractions (I marked 25 overall) do not prevent the reader from following Koch’s line of thinking, they are out of character for a major university press.

Koch’s command of information is impressive: the breadth of illnesses examined, the variety of maps that generated revelations about diseases, and the depth of detail about yellow fever, cholera, typhoid fever, and cancer all produce confidence in the book’s main theme of viewing leading to theorizing and from there to knowing. *Disease Maps*’ chapter paralleling the development of cartography with that of early anatomy is both thorough and engaging as well. The book is certain to be a useful addition to collections about epidemiology and the history of public health.

## RETHINKING THE POWER OF MAPS



By Denis Wood, with John Fels and John Krygier. New York, NY: Guilford Press, 2010. 335 pages, maps, figures, notes, index. \$30.00, Paperback. ISBN 978-1-59385-366-2.

**Review by:** Russell S. Kirby, University of South Florida

*Rethinking the Power of Maps* is a substantially updated follow-up to Denis Wood’s *The Power of Maps*, published in 1992 to accompany an exhibit of the same name which he curated at the Cooper-Hewitt National Museum of Design, and which was later remounted at the Smithsonian Institution. The present volume is intended for a mass audience, yet readers with some knowledge of the history of academic geography and cartography will find several

chapters of considerably greater interest than will the general readership.

The book begins with a brief introduction, followed by eight chapters grouped into two parts titled “Mapping” and “Counter-Mapping.” Wood defines these terms in the introduction: “mapping” is used to describe the ways that maps serve the interests of the state or polity, and “counter-mapping” focuses on uses of maps to resist the power of the state (7). A number of philosophical and historical topics of greater and lesser interest are covered in the first section, including the emergence of mapping as primarily a post-15<sup>th</sup> Century phenomenon, the uses of maps to create and maintain order on the ground and within society, map elements as “signs,” and maps as aspects of culture.

The section on “Counter-Mapping” begins with a critical appraisal of the field of cartography, in which the author argues that the notion (propounded by Arthur Robinson and others in the 1940s and beyond) that cartography is, or was, a scientific discipline in its own right, never had a basis in theory or practice. The emergence of Geographic Information Systems and GIScience, Wood suggests, have sounded the death-knell for the discipline of cartography. Wood would not argue that there are no professionals who focus on cartography, but, rather, that new tools, techniques and methods of map dissemination make the process of map creation open to all. However, in the chapter on public participation GIS (PPGIS), Wood argues that most of what passes for PPGIS is a sham. The public has little say as to how a PPGIS is created, what its contents will be, or how it will be used. Furthermore, the role for “participation” is so circumscribed that the true potential of what might be achieved through public engagement can never be realized. While Wood makes this argument rather stridently, I found myself largely in agreement with the general proposition.

The book concludes with two chapters on the topic of map art. Here the discussion delves into the interface between contemporary art and methods of human expression and some artists’ use of mapping in a variety of innovative and occasionally disturbing ways.

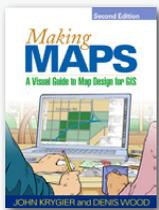
The section on counter-mapping was more intriguing to me than was the first section, as it points the way to the potential for future methods of expression using maps that extend beyond our current comprehension. As technology evolves, opportunities for counter-mapping will grow at an ever increasing rate—consider, for example, that at the time

Denis Wood completed this book, the now iconic iPad was only an idea, but since then, that device has transformed the way many access, use, and create information in all forms, including spatial data.

As one might expect from a geographer who teaches theory and principles of design, *Rethinking the Power of Maps* is illustrated with well-selected diagrams and maps that complement the arguments made in the text. The book is well-edited, the arguments are engaging, and the text is referenced in detail (the notes at the end of the volume take up 71 pages). At times the prose is more conversational than is typical of an academic discussion, but the occasional repetition that occurs is not too annoying.

Without question, this a book that professional cartographers will find of interest. Geography and map libraries should invest in hard-cover library editions, as this book will receive wide circulation. Many will undoubtedly read it in electronic book form, perhaps using iPads or other tablet devices. Personally, I would not recommend the book to someone just beginning to think about cartography and map representation, but those with some experience in mapping will definitely benefit from reading *Rethinking the Power of Maps*.

### MAKING MAPS: A VISUAL GUIDE TO MAP DESIGN FOR GIS, 2ND EDITION



By John Krygier and Denis Wood. New York City: The Guilford Press, 2011. 256 pages, maps, illustrations, diagrams, notes, bibliography, index. \$50.00, paperback. ISBN: 978-1-60918-166-6

**Review by:** Paulo Raposo, Penn State University

Writing in this journal, Denis Wood asserts that even if some of us consider ourselves among a trained professional corps of cartographers, “when it comes to mapmaking *there are no outsiders*,” and that mapmaking may be practiced by anyone, trained or not (2003, 6). This, of course, is true, and *Making Maps* is written by John Krygier and Wood for everyone; the book is a very accessible text on the elements of maps and their design, aimed at a novice or layperson reader wanting to learn how to make a map with today’s digital tools. It also serves as a textbook for coursework.

The book is unconventional. It opens with a short graphic novella, illustrating how two women quickly become interested in making maps to use in challenging their city’s plan to put a major thoroughfare through their neighborhood. Following straight on, before the table of contents, Krygier and Wood begin the book with rhetorical reasons why people want to make maps, and how different designs variously play to these reasons. This is followed up with further discussion on the reasons for making maps in Chapter 2, “What’s Your Map For?,” as well as throughout the book. Other chapters deal with various elements of map design: data, tools and software, projections, graphic variables and symbolization, generalization, text, and color. The authors keep a single example map—*The Flight of Voyager*, by David DiBiase and John Krygier, 1987—running throughout the book, quite effectively returning to it in each chapter to discuss how it has dealt with the chapter’s considerations. Chapters 6 and 7 particularly stand out; ostensibly these are overview chapters discussing the basic components of most maps (titles, labels, legends, etc.) and the concept of visual hierarchy, but these chapters do a nice job of having the reader consider those things immediately in the light of design notions such as placement, eye movements, symmetry, and balance.

The book is accompanied by a freely-accessible online blog, [makingmaps.net](http://makingmaps.net). While many textbooks these days are accompanied by websites, [makingmaps.net](http://makingmaps.net) pulls together a gallery of maps and map-related art pieces, serving as an exhibition-like design muse.

The first edition of *Making Maps* was a good book, but the second edition is significantly better. The general layout of the pages is more balanced and does away with much of the excessive whitespace of the first edition. The font itself (Stone Sans) is crisper and more modern, and is used nicely as an exemplar in the chapter on text. Not counting the novella at the beginning, the chapter sequence is mostly the same, except that the final chapter of the first edition, essentially a list of questions to pose oneself during map evaluation, is gone. Also, while the first chapter in the first edition felt like a very concise distillation of texts from Wood, such as *The Power of Maps* (1992), the first chapter now takes a more pragmatic approach, and sets the stage for the challenge of making effective (and affective) maps. It does this using a list of questions like those from the last chapter of the first edition. As in the first edition, the second concludes each chapter with a set of intriguing and funny quotes, and a few highly-abstracted cartographic art

pieces are placed between each chapter. Also like the first edition, the second provides the reader with a generally excellent set of references for further reading at each chapter's end. There are also substantial changes to the figures used throughout the book.

Some aspects of the second edition are particularly strong. As a whole, the book is actually quite beautiful and inspiring, and much of it stands as a good example of how black and white alone can achieve excellent graphic effect. The explanations of concepts are concise and effective, and written in an honest, colloquial style. Krygier and Wood's stress on data as it relates to intended map purpose is great. They devote a great deal of attention, for example, to data classification schemes in Chapter 8, providing effective visual examples and stressing the rhetorical impressions of each—a great passage I would have much appreciated in my freshman GIS class, learning about classification schemes for choropleth maps for the first time. Many discussions are accompanied by small diagrammatic maps that tend to display effective and non-effective design choices in extremes: quite useful to readers newly learning about design options.

There are only a few small shortcomings. While the authors suggest the book is suitable for both beginner and advanced cartography classes, it's probably much better used at introductory levels because of its persistent focus on basic map and graphic design elements. There is little nuance in the book's examples, verbal or graphical, to offer food for thought to more experienced designers. Further, while the use of *The Flight of Voyager* throughout the book to illustrate concepts from each chapter is quite effective, the book could have also benefited from doing the same with more examples of published maps by cartographers other than the authors. This latter point is partly addressed at the book's online blog, where Krygier has been posting various examples of maps and symbol sets with commentary.

The book is essentially very engaging and effective as a first text on how to make maps, and it stands out in its insistence that a mapmaker think about his or her rhetorical goals at each design decision. Well worth reading for someone new to the craft, or for someone wanting to review the rudiments with a fresh critical view such as Krygier and Wood provide.

## REFERENCES

Wood, D. 1992. *The Power of Maps*. New York: The Guilford Press.

———. 2003. "Cartography is Dead (Thank God!)." *Cartographic Perspectives* 45:4-7.



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CRITERIA	FAILS TO MEET EXPECTATIONS	MEETS EXPECTATIONS	EXCEEDS EXPECTATIONS	GREATLY EXCEEDS EXPECTATIONS	COMMENTS	TOTAL
The abstract is clear and concise as to the research purpose.	<input type="checkbox"/> 0	<input type="checkbox"/> 3	<input type="checkbox"/> 6	<input type="checkbox"/> 10		
Author succinctly and clearly introduces the research problem and explains the purpose of the article.	<input type="checkbox"/> 0	<input type="checkbox"/> 3	<input type="checkbox"/> 6	<input type="checkbox"/> 10		
Author addresses how the present research fits into previous research in the appropriate cartographic discipline.	<input type="checkbox"/> 0	<input type="checkbox"/> 3	<input type="checkbox"/> 6	<input type="checkbox"/> 10		
Methodology/analysis is technically/scientifically sound and well documented.	<input type="checkbox"/> 0	<input type="checkbox"/> 3	<input type="checkbox"/> 6	<input type="checkbox"/> 10		
Results are valid, clearly explained and illustrated.	<input type="checkbox"/> 0	<input type="checkbox"/> 3	<input type="checkbox"/> 6	<input type="checkbox"/> 10		
Discussion addresses the way in which research aligns with past studies and its implications for future work.	<input type="checkbox"/> 0	<input type="checkbox"/> 3	<input type="checkbox"/> 6	<input type="checkbox"/> 10		
Conclusions state most important finding of the research, with well founded implications for further studies.	<input type="checkbox"/> 0	<input type="checkbox"/> 3	<input type="checkbox"/> 6	<input type="checkbox"/> 10		
Maps are well designed and effectively communicate	<input type="checkbox"/> 0	<input type="checkbox"/> 3	<input type="checkbox"/> 6	<input type="checkbox"/> 10		
Illustrations are well designed and effectively communicate	<input type="checkbox"/> 0	<input type="checkbox"/> 3	<input type="checkbox"/> 6	<input type="checkbox"/> 10		
Writing is organized, grammatically correct, clear, and concise.	<input type="checkbox"/> 0	<input type="checkbox"/> 3	<input type="checkbox"/> 6	<input type="checkbox"/> 10		



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- Images must not be embedded in the manuscript, but should instead be included as separate files.
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- Images in raster format must, at minimum, be 600px wide; at least 1000px is strongly preferred. Images will be printed at 300 ppi.
- Where possible, graphics should have a transparent, rather than a white, background.
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**TITLE:** The title serves as the author's invitation to a diverse audience. It should be chosen wisely. The title section should include the full name(s) of the author(s) and academic or other professional affiliation(s).

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**KEYWORDS:** Five to ten keywords should be listed at the end of the abstract.

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Name of author(s). Year. *Title in Italics*. City of Publication: Publisher Name.

MacEachren, A. M. 1995. *How Maps Work*. New York: Guilford Press.

A. H. Robinson, J. L. Morrison, P. C. Muehrcke, A. J. Kimerling, and S. C. Guptill. 1995. *Elements of Cartography, 6<sup>th</sup> Edition*. New York: John Wiley & Sons.

**Articles in Periodicals:** Author's or authors' names as in *Books*, above. Year. "Title of Article." *Title of Periodical*, volume number, page numbers [follow punctuation and spacing shown in the following example].

Peterson, M. 2008. "Choropleth Google Maps." *Cartographic Perspectives* 60:80–83.

**Articles in edited volumes:** Name of author(s). Year. "Title of Article." In *Title of Edited Volume*, edited by [Editor's or Editors' names, not inverted], page numbers. City of Publication: Publisher's Name.

Danzer, Gerald. 1990. "Bird's-Eye Views of Towns and Cities." In *From Sea Charts to Satellite Images: Interpreting North American History through Maps*, edited by David Buisseret, 143–163. Chicago: University of Chicago Press.

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Cartography Associates. 2009. "David Rumsey Donates 150,000 Maps to Stanford University." *David Rumsey Map Collection*. Accessed January 3, 2011. <http://www.davidrumsey.com/blog/2009/8/29/david-rumsey-donates-150-000-maps-to-stanford>.

**Maps:** Maps should be treated similarly to books, to the extent possible. Specific treatment may vary, however, and it is often preferable to list the map title first. Provide sufficient information to clearly identify the document.

*A Plan of the City of New York and its Environs*. P. Andrews, sold by A. Dury in Dukes Court, St. Martins Lane, surveyed by John Montessoro, 1775.

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