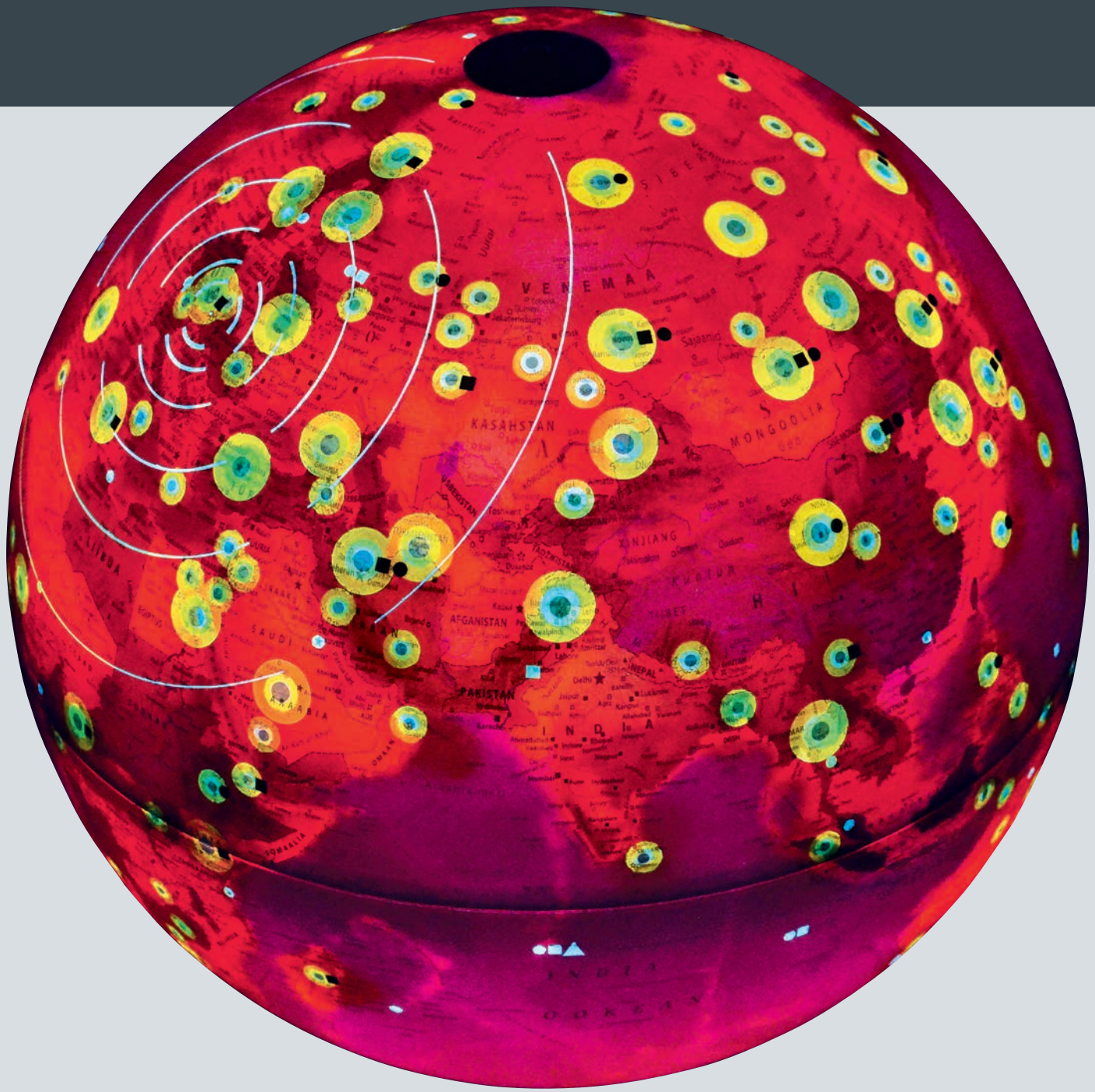
INGO GÜNTHER: WORLD PROCESSOR



HOOD MUSEUM OF ART | DARTMOUTH

INGO GÜNTHER: WORLD PROCESSOR

Juliette Bianco and Katherine Hart in conversation with Ingo Günther

Artist Ingo Günther has worked on his *World Processor* series for over twenty-five years. His installation of fifty illuminated globes at Hood Downtown draws attention to what is knowable about the world through data and statistics. Drawing on the United Nations' Human Development Reports (HDR) as well as other statistics gathered from institutions, agencies, and independent researchers, Günther selects subjects that, when graphically visualized, alter our perceptions about life, living, and the world at large. Each globe tackles an issue—such as immigration patterns, locations of fiber optic cable, concentrations of billionaires, nuclear-test-ban treaty monitoring sites (see cover), or wetlands (plate 1)—documenting its status worldwide. Most topics represent types of information that is easily comprehended visually, but challenging to absorb via lengthy prose, numbers, charts, or graphs. These include locations of walls along national borders, or dead zones in large lakes or oceans caused by pollution from human activities.

Exhibition co-curators Juliette Bianco, Deputy Director, and Katherine Hart, Senior Curator of Collections and Barbara C. and Harvey P. Hood 1918 Curator of Academic Programming, interviewed Günther in November 2016. The following is an edited version of that conversation.

Katherine Hart (KH): In your early career, going back to your work as a studio assistant to Nam June Paik, you were involved in video art and installations. What drew you to working with data?

Ingo Günther (IG): Data is interesting because data is intentionally objective. As an artist, it's an interesting challenge to deal with something objective and to represent something objective. Maybe it's a journalistic aspiration to be objective and to use data rather than having an emotion or an opinion. I'm still guided by that motivating myth of objectivity.

Juliette Bianco (JB): How does the medium of the globe allow you to negotiate the line between subjective choice and objective data?

IG: A map appears to have no bias—that is, what the authority of maps is rooted in, this holds even more true for globes. The medium, therefore, comes with a certain responsibility, because inherently people will believe what they see on a globe as "fact" or "truth." That's why some countries require a license for the distribution of globes, and you cannot just import or export globes to these countries. This can be because of a border dispute in Peru, for example, or the labeling of the waters to the south of China. Everybody labels things differently. Maps and globes have an incredible authority and maybe that is why being objective—or trying to be objective—is critical. And yet there are so many ways to approach each globe, and thus, there are so many "editorial" decisions that I have to make.

KH: Can you describe the origins of your *World Processor* project?

IG: When you look at a globe, it's usually described as a geopolitical or a geophysical globe. I thought, why not turn that on its head, do away with most of the surface geography, topography, and the color schemes separating countries and do something that's much more important to us as humans in terms of what is going on economically and socially, and then make comparisons? While

working at the United Nations I saw a map that traced human population centers, as opposed to land mass. In terms of where people live, the continental shapes are much less important, and I thought that this would be a more accurate representation of the world.

JB: What were your goals when you started the *World Processor* series, and how has it changed over the years?

IG: It has changed dramatically. At a first comparative glance between then and now, somebody might say, "Well, it hasn't really changed that much." But it has changed deeply, inasmuch as the series originates in the pre-Internet age. I started at a time when most people got their information from local television, radio, and newspapers and books. One of the goals I had was to get away from that local perspective, where everything is out of proportion compared to the global scale, and give larger context to the local and national news stories. The world was changing so dramatically when I started, and we needed a more global perspective; the globe would be the quintessential tool to do it.

JB: That makes me think about the social norms of looking at globes, and how individuals look at globes. People often look for themselves first. I'm wondering if you observe how people look at globes in general, and how they look at your globes in particular?

IG: I did an experiment where I took a globe out of its usual context. Normally you see them in a confined space, like a room, when you look at a globe, and then you look at something else. The globe has been a conversation piece, and imperialistic tool, for five hundred years. What I did was take the globe—one of my raw illuminated plastic globes with nothing protective around it—out of that living room or boardroom context, and set it up in the middle of a town square. Fathers lifted up their children and explained to them, "This is where we are, and this is the rest of the world." It became this tool to explain where they were. The thing was that the town where that happened was not on the globe, and so there was a lot of disorientation and anger and public complaining about that.

JB: How often do you update the data on the globes?

IG: That's a huge issue. When I started this project, I thought I would do this maybe for a year or two, and then have a substantial enough body of work to have encoded the methodology. I didn't imagine that history would speed up, and that things would change at this pace. Then I thought maybe I would need a few of them updated once every ten years. I figured things like average life expectancy on a global level would not change every year. But it did, dramatically, several months every year, and that was unexpected. Also, it's not that I feed data into this machine and then press the button and a globe comes out. Every time I update a globe subject it's reconsidered and reconceived. This hands-on process leads to the new object. Realistically I can update a topic once a year, maximum, per globe. It is equally important to format the issue in a way so that the globe would not require hourly or weekly updates. For that kind of up-to-the-minute information, it's much better to go to Google. A memorable, intense, and clear emblematic visual is much more important to me.

JB: Working with all this data, and understanding the planet from many different perspectives and in so much detail as you do—how has that affected the way that you interact with the world and the barrage of information and misinformation that comes at us all the time?

IG: I have a certain level of frustration with what I see in the news, with what I see as journalism. There's often this myopic focus on some issues that are just not that important. A lot of the issues that we're facing in the future will be very, very different from the stuff that we're dealing with now. There's something about the world that is unfathomable, and maybe it should serve as a warning that even when we have all this information, we're still making value judgments about what is important, or not. Visualizing information in general, but particularly in the shape of a sphere, may give you a sense of control and understanding that you don't actually have. I always think that there's a false sense of control once we have the data visualize it. Understanding the issue is a great first step, but that may not even be remotely enough to tackle the issue.

KH: You've been interested for a long time in issues of immigration. Can you talk about your early work on that subject and how it has evolved?

IG: At its essence, migration is the story of mankind. There are elements connected with migration that are generally positive, but of course it's always a disruption as well. To show how migration happened in the past, happening now and where it's hindered, or not happening, that is very interesting to me. Of course, now we have sixty-five million people on the move, who are refugees or migrants on some level. How do you differentiate between seasonal migrants, or economic migrants, actual refugees, people who should have asylum but maybe don't get asylum, or they're stuck somewhere, modern nomads that are moving back and forth every few years? That's a very interesting thing to map out. I see this as a story of both crisis and success. These sixty-five million people are the manifestation of a successful, better world. The majority of these people would have died in the past due to famine, disease, war, or other economic injustices. They are now able to draw themselves out of the conflict zones and get away from areas where they would otherwise die. It shows how successful we as humans have become. On an individual level, it is often a very disastrous and catastrophic story, and sometimes a story of survival and potential success. That framing of the issues is also important to me. Obviously, we seem not to be doing enough because there is still a lot of human suffering. But macroscopically the world has improved tremendously, if incrementally and undramatically so.

KH: What are some of the difficulties that you encounter when working with certain data sources?

IG: One bad data source is countries that try to look good on an international level. If a county, for instance, tells you that they have a ninety percent literacy rate, you can bet it's less than that, it's more like forty or fifty or maybe sixty. Countries are embarrassed to share not-so-glorious data. One should have general data skepticism because of the ideologies put into the data used for ranking. At this point, the best data source, in general, is the Human Development Report (HDR), created by the United Nations Development Program (UNDP). The HDR collects everything from health, education, nutrition, all kinds of data, including life expectancy. All that gets reported on a national level only. I can't wait for county level reporting in the maybe not-so-distant future. That will change our understanding profoundly.

JB: How do you account for human or database error?

IG: One thing you might not initially think about is that different conventions in the

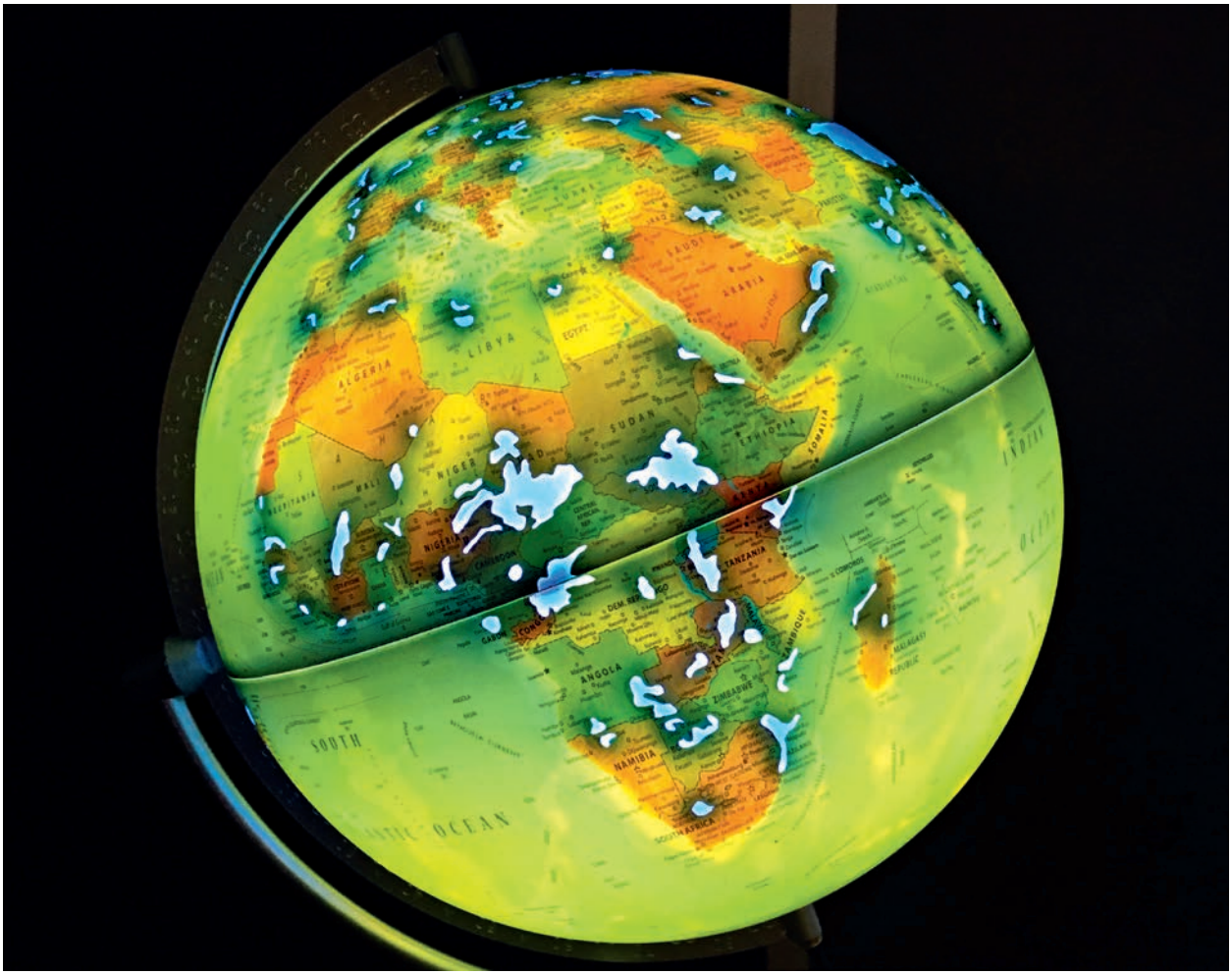


PLATE 1 [115-2] *Wetlands (2016)*: "Wetlands" is the collective term for marshes, swamps, bogs, and similar areas. About 75% of all endangered species are native to the world's wetlands.

notation of data can lead to incorrect analysis. In Europe, for instance, if you write one hundred thousand, it will be 100.000, whereas here it will be 100,000. Since we deal with so much data, a lot of the data are just automatically being imported or pasted. Unless you have intelligent data translator software, there can be mistakes. We call that "dirty data." Some universities, especially Indiana University, have worked on data interface translators between different coding systems and languages. These are classic big data issues. Also, the zero seems to be a big source of problems. One must be on the lookout for results that do not correlate to something else one knows to be true. That is where the experience of having done this for a long time comes in, because I know what to expect and certain things just don't go together. Then again, sometimes I get surprised and see that there are things that have radically changed.

JB: Do you have an example?

IG: One of the examples of data that I thought would not change that fast, but has, is life expectancy (plate 2). Life expectancy has changed so dramatically over the last twenty, twenty-five years. I mean, the last hundred years, if you will, but even more

steadily over the last twenty. On a yearly basis there's a change, increasing one year every three years. Now the life expectancy globally is more than 70 years, and fifty years ago, it was just over 50. This is a clear sign of the incremental success of humanity, maybe helped by UN programs, technology, globalization, maybe capitalism, and maybe socialist ideas too. All of that together has resulted in this remarkable achievement. The same thing is true with birth rates. Only forty years ago, on average it was 4, and now it's down globally to 2.4. Which is shockingly close to 2.33—the rate at which the population would be stable. The huge population explosion that we've been afraid of did not happen. Maybe the world population will increase a little more, but then who knows.

KH: How are you dealing with environmental issues? I know you have addressed, for example, dead zones (plate 3).

IG: I think that the very first globe that I made was called *The Ozone Hole*. All I did, and I thought it was clever, was cut a hole in the southern hemisphere, around the Antarctic, and just added the name "ozone hole," as if it were a prominent geographic feature. I thought that would be a way to make the point that it is there. But then you must realize the ozone hole is something that fluctuates on a daily basis. You cannot even average it over a year because it has different intensities at different times of day, and so there is no way of quantifying it properly. That was typical challenge I encountered, and that is also true for so many other environmental phenomena.

Dead zones are often temporary. The early version of that globe looked as if basically half the word is a dead zone, but dead zones come and go. Sometimes they are virtually permanent, like the hypoxic area that's at the center of the Gulf of Mexico that has been pretty much without marine life for many years. Then again, the term "dead zone" sounds so dramatic—and sure, it's dramatic for that area—but it doesn't mean that we have dead zones everywhere. It means that we have a fertilizer runoff issue, for instance, and that we have hypoxic zones as a result. Sometimes it's just important to recognize that it's a phenomenon, and these are the areas that are most likely affected.

KH: Wrapping up, do you see your *World Processor* series changing in the years ahead?

IG: I'm very surprised that after all these years, I'm still making individual globes, standing one next to the other. That allows the viewer a level of unscripted interactivity that is important to me. A few years back, I started working on the *Geo-Cosmos*, a twenty-foot-diameter globe permanently displayed in the Miraikan, the National Museum of Emerging Science and Innovation, in Tokyo, Japan. That globe is a huge LED screen wrapped around a massive sphere, and is an incredibly nice tool to play with. Other than that, I've always worked with a globe thirty centimeters (12 inches) in diameter, because it's very manageable and small enough to transport, and as raw material it is affordable. Perhaps it has something to do with our heads being about the same size. I am speculating that there's some deep psychological connection that we have to a globe that size; that we can relate to it on a one-to-one basis. I would be happy if someone would accept the stories that I am presenting, and discover what I see in the data. But I am just as happy to see people drawn into all the different subject matters of the data, drawing their own conclusions. I've seen people interact with the globes as if they were having a conversation. Maybe that's wishful thinking! ✦

PLATE 2 [8-17] *Life Expectancy (2015)*: Life expectancy is one of the central indicators in the UN's Human Development Index (HDI). Regional averages are shown, along with each country's life expectancy. The world average is written in large text in the Pacific Ocean. Average life expectancy has seen a steady increase of one year over every three years in the recent past.

PLATE 3 [392-2] *Dead Zones (2016)*: Dead Zones, or hypoxic areas, are aquatic regions with low oxygen content, primarily due to nutrient pollution by humans. These oxygen-zapping pollutants render the areas unlivable for much marine life. Hypoxia can be coastal, or it can occur in major lakes and rivers due to agricultural pollution such as fertilizer run-off, and make its way outward toward costal ocean waters.

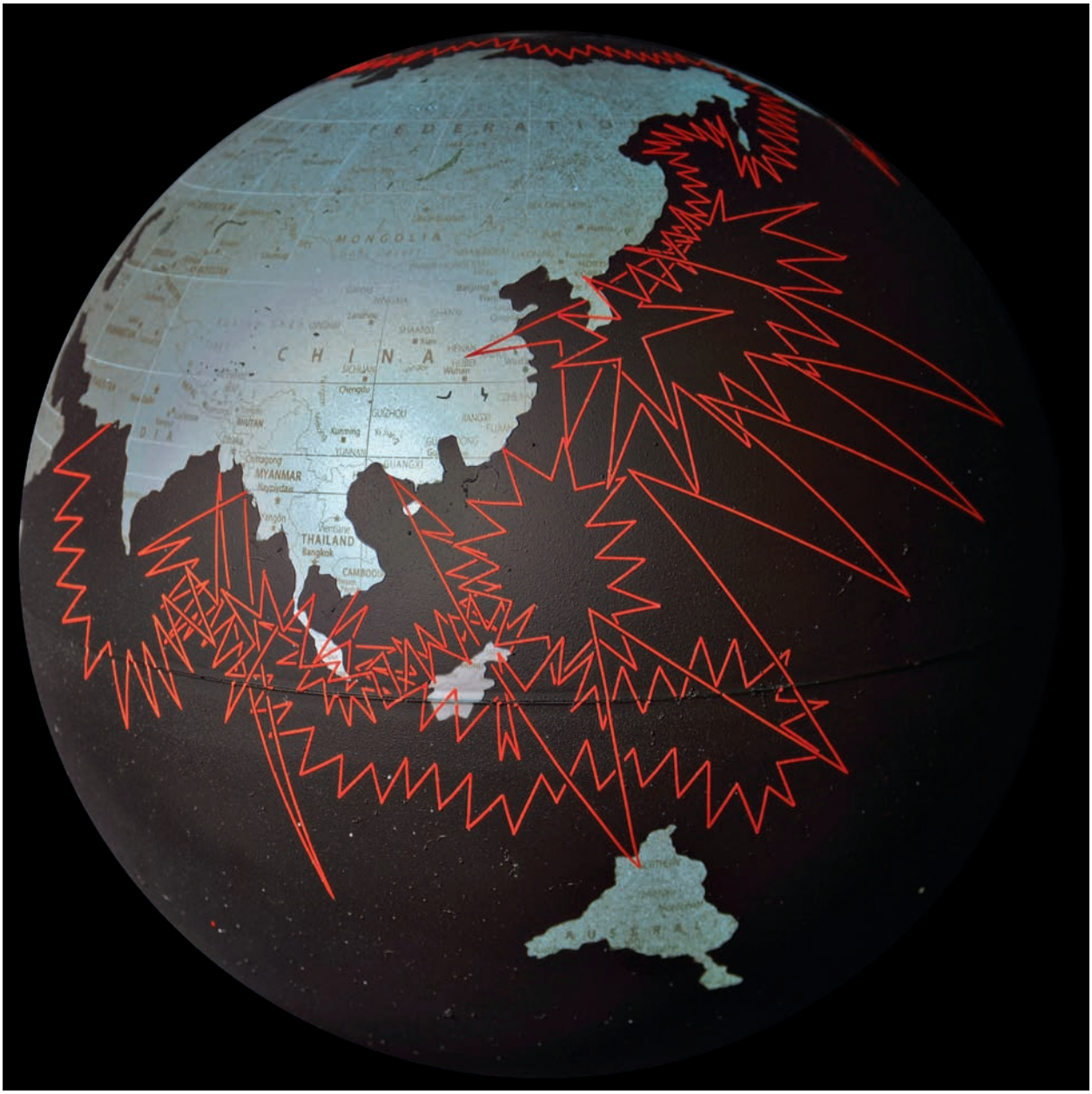


PLATE 4 [388] *Sharks Attacked (2013)*: Black paint covers the ocean and bleeds into the coastlines, sometimes enveloping an entire country, where unprovoked shark attacks have been recorded. Conversely, red "bite" marks extend from countries' borders where humans kill more than 1 million fish per yearly capture. These marks extend a distance relative to the country's capture production.

PLATE 5 [155-17] *Company vs. Country (2016)*: Some companies have yearly gross incomes larger than the entire GDP of a given country. Seventy of the top 100 economies are corporations, not countries, up from about 50 in 2002.

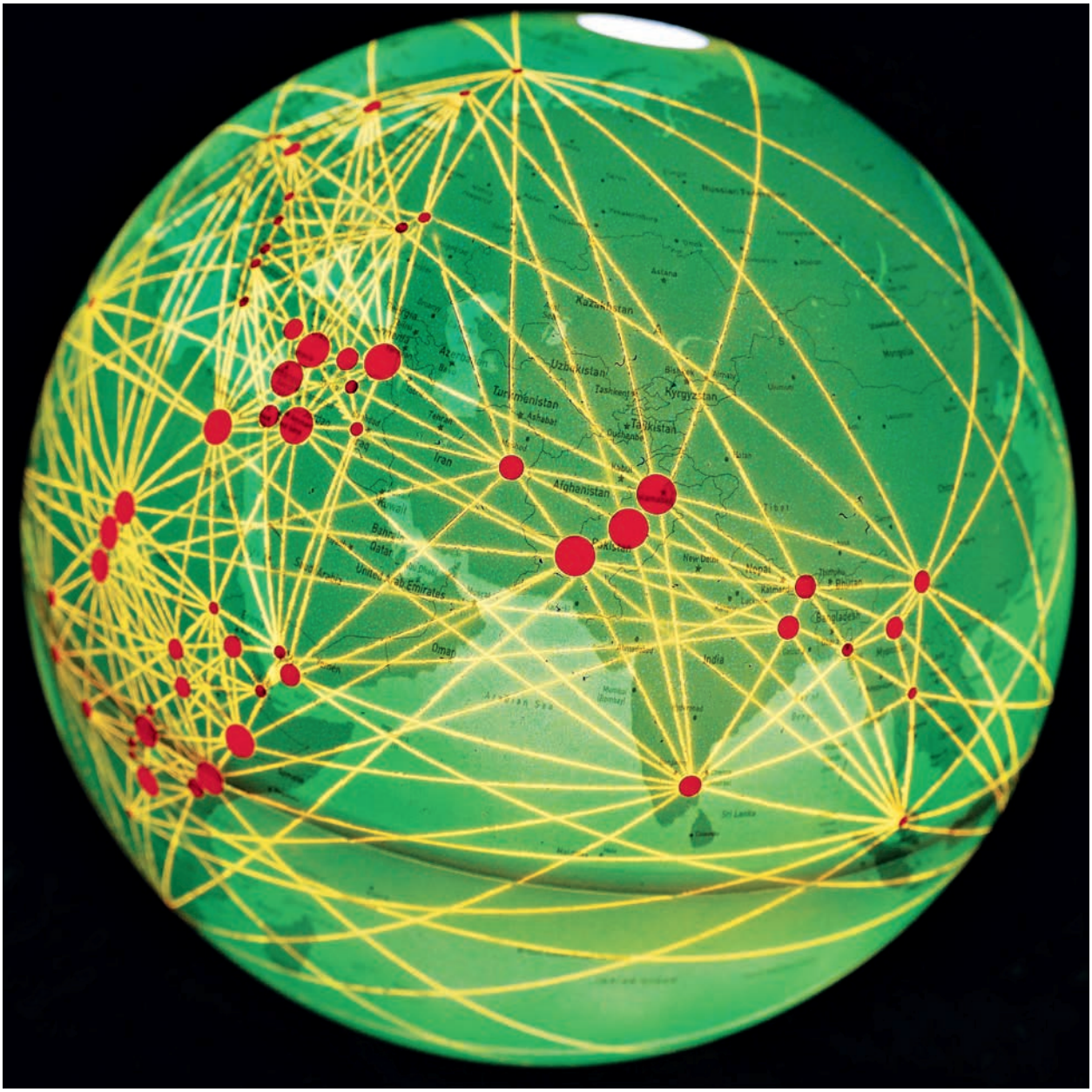


PLATE 6 [154-7] *Refugee (Republic) Network (2016)*: A worldwide network, connecting refugee camps via various technologies, could facilitate a trans-global, experimental, supra-territorial state for refugees to represent themselves. Nodes of this network are shown at the site of refugee camps: small nodes represent camps of 25,000 refugees or less; medium nodes are 25,000 to 75,000; and large nodes represent more than 75,000 refugees at a camp.

REFLECTIONS ON THE WORLD PROCESSOR EXHIBITION

Richard Wright

I am challenged by the incomprehensibility of the world's totality.
—Ingo Günther, ingogunther.com/#/worldprocessor

Ingo Günther's *World Processor* exhibition joins a fundamental project in geography: how to effectively and succinctly depict complex spatial patterns and the interconnectedness of things. This brief essay contextualizes Günther's marvelous collection of globes via three main questions: Why use globes? What do global-scale maps have to offer compared to other types of cartography? What does a global perspective offer during a political moment of global skepticism?

Over the last thirty years, revolutions in computing and computational power have produced transformations in cartography and geovisualization. Google Earth, for example, a virtual globe, allows users to explore Earth (and other planets) using data from satellites, aerial and street-level photography, and geographical information systems (GIS). In other realms, new computing power and new computing programs allow users to relatively easily map distributions or flows of social and natural phenomena. Websites now invite users to make their own cartograms and tile maps. Free or inexpensive software allows budding cartographers to make their own maps. And new services produce "maps of the day," available from a Facebook or Twitter feed.

Yet Ingo Günther is onto something: unanimated, decidedly analog, physical as opposed to virtual globes continue to fascinate. A globe's round shape provides a realistic impression of size and distance. In contrast, while flat maps can effectively represent a small portion of the world (a neighborhood, a mountain range), maps work less well for global-scale phenomena. Transforming a 3D object into two dimensions inevitably causes distortion.

Mapping data in 3D produces maps with no center; they accent the interconnectedness of things. In addition, a global perspective has a special resonance today. Ingo Günther's globes are a unique combination of politics, art, geography, and journalism. In some globes, Günther emphasizes legibility (in the way he chooses to graphically convey the statistics), and in others the visual metaphor seems to be the strongest element. In some of these globes, even the theme is sometimes not immediately legible. For instance, the flow of lines and shapes in *Bird Migration* seems to reflect organic movement. *Murder Capitals and Contents* is red, and the circles look like they are spinning out of control. In *Solar Exposure*, the earth appears to have become the sun. *World Processor* is a project in which the power of each globe's representation of "global issues" relies on an effective combination of visual legibility and graphic efficacy. On many of the globes, content and form come together in a rewarding marriage of these elements.

Günther settled on globes that have a circumference at their largest point of about 3 feet. Globes, of course, come in different sizes. Ingo Günther chose a particular scale of roughly 1:42 million. (The circumference of the Earth is about 40 million meters. Using a metric scale, many globes are made with a circumference of one meter, so they are models of the Earth at a scale of 1:40

million. In imperial units, many globes are made with a diameter of one foot, yielding a circumference of 3.14 feet and a scale of 1:41,777,000.) It is worthwhile to consider what is gained and what is lost by mapping on a globe at the scale of 1:42 million.

We have been living in a globalizing world for a while. Commentators may point to other eras in the last few centuries as "global," but the last few decades have been remarkable. By any metric, the current era of globalization is unprecedented, and we can identify several key measures to justify that observation. Flows of goods, services, and finance now account for over 36 percent of global GDP, up 50 percent since 1990. Now, one in three goods crosses national borders, and more than one-third of financial investments are international transactions. More people live outside their country of birth than ever before. According to one book title, we live in an "age of migration."

That being said, 2016 may well mark a turning point in the seemingly inexorable drive to ever greater globalization and interconnectedness. In the United States, both the Democratic and Republican presidential candidates were staunchly opposed to the Trans-Pacific Partnership (TPP) trade agreement. The new president ran for office more broadly on an anti–free trade platform, including opposition to the North American Free Trade Agreement (NAFTA). In 2015, the European Union came under strain from a financial collapse in Greece, and in 2016, the Brexit referendum in the United Kingdom of Great Britain and Northern Ireland cast further doubt not only on increasing European integration but also whether or not the United Kingdom itself would hold as a union. The response, in the West as well as from other quarters, to the slaughter and dislocations in Syria that have engendered the worst refugee crisis since World War II has been to look away and turn inward. Thus globalization skeptics are not just Western subjects. To the list of those in Europe and the United States who are keen to build new barriers and become nostalgic for a time when globalization was less intense, we should add Recep Erdoğan in Turkey, Vladimir Putin in Russia, Xi Jinping in China, and Narendra Modi in India. They might not be overtly anti–free trade or the like, but make no mistake: their popularity is based on their appeals to national pride over any human rights derived from a scale that would transcend the nation state.

These sentiments and nationalistic appeals have a physical manifestation in walls and barriers, which are sprouting up all over the world. The Berlin Wall has been replaced—not in situ, but in other places. The partitioning of space is based on two assumptions: first, identity groups exist and can therefore be classified; and second, these categories are attached to distinct territories. Contrary to some opinions, the US-Mexican border is already heavily fortified and walled for hundreds of miles. The term "Fortress Europe" has real meaning, especially for the thousands of migrants and refugees seeking entry.

Skepticism about globalization or universal rights is not the preserve of the political right or the left. Brexit was driven by a group of Conservatives but received considerable and perhaps decisive support from white working-class voters. The Labour opposition to Brexit was mild, and not helped by their leader's doubts about not only EU membership but also the United Kingdom's membership in the North Atlantic Treaty Organization (NATO).

Globalization and its skeptics also extend to the physical environment. We're living in an era of global climate change and a period of massive die-off. We're also living in an era of climate denial and an abdication of the role humans are playing in the unprecedented changes taking place in our physical world. The evidence conclusively shows that the majority of these changes are anthropogenic.

PLATE 7 [1] *TV Ownership (2010)*: If you multiply the number of daily TV deaths by the number of people owning TV sets and subtract that number from the population, most nations would disappear on a daily basis.

All this is to say that while globalization may not be the inexorable force we once thought, global viewpoints retain their currency. One way to approach Ingo Günther's clever global visualizations is to think about his globes as classified into broad categories. The "physical world" includes the works *Arable Land*, *Wetlands* (plate 1), *The Solar System*, *Fresh Water*, *Major Rivers*, and *Oceans and Continents*. The world, however, is not just physical; it is inhabited, and currently its most influential inhabitants are human. Günther uses several globes to show spatial variation in raw population (*People Power*), automobile fatalities (*Bad Carma*), human origins (*DNA Traces*), the bread-and-butter of the discipline of demography (*Birth Rates*, *Infant Mortality*, *Maternal Mortality*, *Life Expectancy* [plate 2]), urbanization (*Mega Cities*), linguistic variation (*Around the Earth in 80 Languages*), and migrations (*Overseas Chinese Network*).

Another group of globes encompass economic worlds. These include depictions of the Chinese diaspora, as well as economic flows (*Global Trade Currents*, *Labor Migration*, *Pre-industrial Trade Routes*), wealth inequalities (*Internet Users*, *TV Ownership* [plate 7], *Money*, *Global South*, *Foreign Aid* [back cover]), and other fascinating aspects of our global economy (*Enclaves and Special Economic Zones*, *Horizon of Ubiquitous Computing*, *The Shape of Science*, *Wine Production and Consumption*, *Company vs. Country* [plate 5], *IFC versus FDI*, *Gold Production*).

Any cartographer faces the challenge of choosing what to depict and exactly how to do it. The cartographer also has to access the right data. This last issue is especially challenging in the sense of finding comparable data across the globe. There are some universal standards, such as infant mortality or life expectancy, but other comparable data collected in different countries is much harder to find—data on the arms trade being a prime example. Depicting "island nations," on the other hand, is much easier!

World peace and nuclear armaments are clearly concerns in this exhibition. What could be more indicative of a global sensibility than the strike range of modern nuclear warheads, the location of rocket launch sites, and thinking about world peace in the context of nuclear proliferation as some world leaders trumpet nationalism and strength as their calling cards.

Humankind faces perhaps its most serious challenge in global warming. At best, increasing concentrations of CO_2 in the atmosphere are triggering rising sea levels, subtle and not-so-subtle changes in climate extremes, and so on. Günther captures anthropogenic

change most directly in his globes depicting agricultural biodiversity, *Rainforest Leftovers*, and what we have come to call *Dead Zones* (plate 3).

While much of the material is very serious and themed, a dark humor is at work in parts of the series. For example, Günther decided to turn inside out humankind's fascination with the incidences of shark attacks to map *Sharks Attacked* (plate 4). In another instance, his clever play on words *Bad Carma* draws attention to the global geography of road fatalities (and why you should be very careful crossing roads in Kuwait).

Last but not least, while depicting data using 12-inch analog globes might seem somewhat "retro," Ingo Günther's work resonates with important contemporary trends. For example, "big data" refers to the challenges of making sense of very large and complex data sets. His globes do just this. They do other useful work too. While the tension between globalization and deglobalization might have reached some new heights of late, a global perspective has never been out of fashion. Moreover, Ingo Günther's work reminds us that the fate of the human race has never before been more interconnected than it is today.

Richard Wright is the Orvil Dryfoos Professor of Public Affairs in the Department of Geography at Dartmouth.

INGO GÜNTHER: WORLD PROCESSOR

The exhibition *Ingo Günther: World Processor*, on view at Hood Downtown March 24–May 28, 2017, is organized by the Hood Museum of Art, Dartmouth, and generously supported by the Hansen Family Fund and the Marie-Louise and Samuel R. Rosenthal Fund.

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The interview in this brochure is based on a filmed conversation between the three participants in the Jones Media Center, Baker-Berry Library, Dartmouth, on November 22, 2016. An extended version of the interview is published on the Hood Museum of Art website.

COVER: [278-3] *Comprehensive Nuclear-Test-Ban Treaty Monitoring Network (2011)*: Locations of the seismic, hydroacoustic, infrasound, and radionuclide sensing facilities of the Comprehensive Nuclear-Test-Ban Treaty International Monitoring System, as well as the International Data Centre of the CTBTO, located in Vienna. As of 2005, the treaty is not yet in effect, pending ratification of all 44 states listed in Annex 2 of the treaty.

BACK COVER: [247-3] *Foreign Aid (2013)* (detail): Thicker lines drawn from capital to capital indicate aid-flow in excess of 66 million dollars per year. Thinner lines represent the 20-to-66-million-dollar bracket. Smaller amounts have generally been ignored unless they represent a significant portion of the donor country's budget.

About Hood Downtown

During the interval of our construction and reinstallation, Hood Downtown will present an ambitious series of exhibitions featuring contemporary artists from around the world. Like the Hood Museum of Art, Hood Downtown is free and open to the public.

Upcoming Exhibition

Julie Blackmon: The Everyday Fantastic
June 9–August 27, 2017

Spring Term 2017 Hours

Wednesday–Saturday:
11:00 a.m.–7:00 p.m.
Sunday: 1:00–5:00 p.m.
Monday and Tuesday: Closed

Directions and Parking

Hood Downtown is located at 53 Main Street, Hanover, NH. Metered public parking is available in front of Hood Downtown on Main Street, and behind the exhibition space in a public lot between Allen and Maple Streets. An all-day public parking garage is located at 7 Lebanon Street.

HOOD DOWNTOWN EXHIBITION SPACE