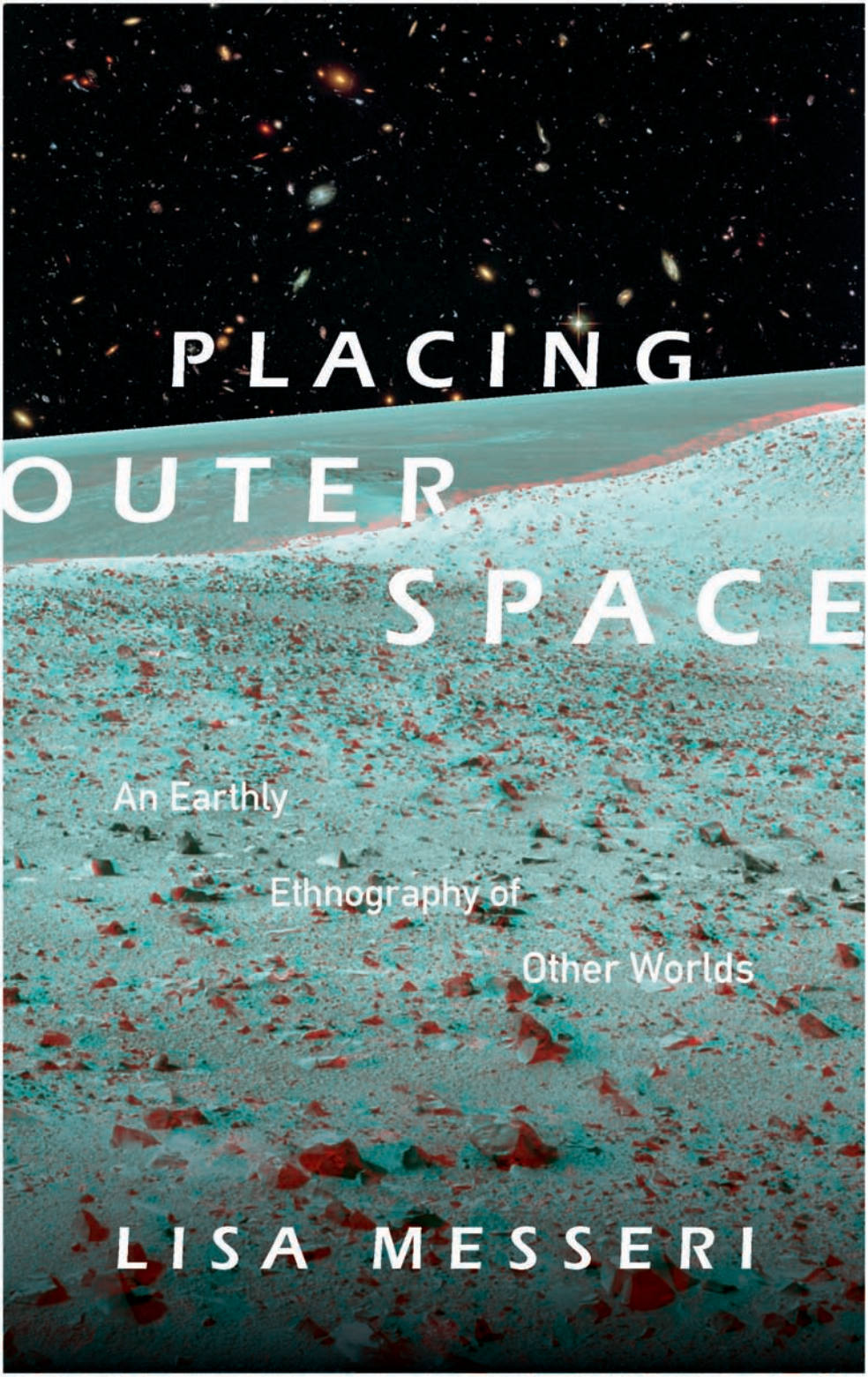
PLACING
OUTER
SPACE
An Earthly
Ethnography of
Other Worlds
LISA MESSERI

PLACING OUTER SPACE

EXPERIMENTAL FUTURES

TECHNOLOGICAL LIVES, SCIENTIFIC ARTS, ANTHROPOLOGICAL VOICES

a series edited by MICHAEL M. J. FISCHER *and* JOSEPH DUMIT

PLACING OUTER SPACE

AN EARTHLY ETHNOGRAPHY OF OTHER WORLDS

LISA MESSERI

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CONTENTS

Acknowledgments vii

INTRODUCTION
From Outer Space to Outer Place 1

ONE
Narrating Mars in Utah's Desert . . . 25

TWO
Mapping Mars in Silicon Valley 71

THREE
Visualizing Alien Worlds. 111

FOUR
Inhabiting Other Earths 149

CONCLUSION
Navigating the Infinite Cosmos 189

Notes 197

References 211

Index 231

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INTRODUCTION

FROM OUTER SPACE TO OUTER PLACE

> Concentrating on space, one encounters place.
> —Peter Redfield, *Space in the Tropics* (2000)

Two young boys point up at the night sky, silhouetted against a lake reflecting the oranges, blues, and purples of a sky at sunset. Even though we cannot see their faces, their body language speaks an animated excitement. A viewer of this scene, caught on camera by the boys' mother, might wonder what the kids are pointing to and why they are so excited. Sara Seager, the mother, an MIT professor of planetary science and MacArthur fellow, shared this picture with an audience at a conference on exoplanet astronomy, the study of planets orbiting stars other than the Sun. I sat among the astronomers, listening and watching as Seager built off of the energy and aspiration of the picture as she asked the audience to imagine that this picture was taken in the future. What might the boys be pointing to with such excitement? For the assembled audience, the answer was obvious: they will be pointing to a star known to have a planet just like Earth. Most known exoplanets are exotic and strange, but Seager and her colleagues hope that the future of their young field lies in the study of familiar, Earth-like planets. In searching for connections between Earth and other planets, today's planetary scientists refigure the night sky as teeming with *worlds*.

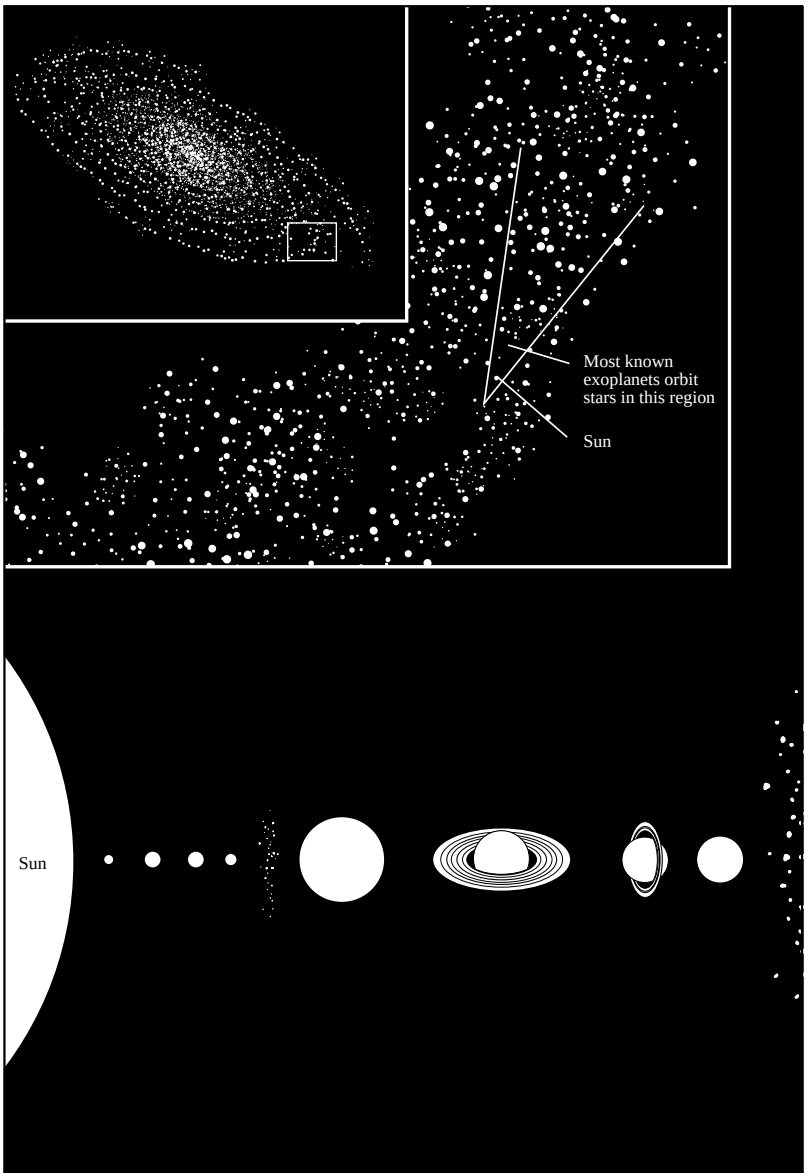
A few years after this conference, I listened to a radio interview with an exoplanet astronomer who had attended Seager's talk. She was trying to convey the significance of her field, asking the host: "When you look up in the sky . . . what do you feel? . . . There's a profound sense of loneliness, I think, that the universe is so big and I'm so small." Exoplanet astronomers claim, however, that their field is changing this structure of feeling. This scientist went on: "Imagine in the near-term future, you know, your grandchild or your great grandchild and his mother can point to a star and say, 'That star, that star right there has a planet just like Earth and it harbors life.' That's a different perspective" (Batalha 2013). This is a perspective that positions Earth not as a singular blue marble floating in a sea of darkness but as one planet among many on which humans might be capable of living.

Though imagining human (and other) life beyond Earth has long been a feature of speculative fiction, scientists are only recently offering definitive proof that such potentially habitable worlds exist and, moreover, might be common. Planetary scientists find meaning in these new discoveries by imagining and talking about planets as *places*. Places on Earth can be cities or villages, landmarks or landscapes. They have a specific character that might change over time or be differently perceived from person to person. But, importantly, one can *be* (or can imagine *being*) in a place. Place suggests an intimacy that can scale down the cosmos to the level of human experience. To claim that the infinite field of stars is not an invitation to loneliness but a prompt for feeling the pull of cosmic companionship requires a powerful and pervasive understanding of these planets as *worlds* and *places* that relate to our own—that invite being. This book is about how this understanding is developing in exoplanet astronomy and studies of our own solar system. It is about how outer space is being made rich with place.

The photo at the conference and the verbal description of a similar image during the radio show might be dismissed as popularization or performance. But these pronouncements go to the core of new ways of thinking about and doing planetary science. Place-making has become central to daily work in the field. Transforming numerical data from telescopes and satellites into full-blown worlds—into places a scientist can imagine visiting—structures the research of today's Mars scientists and exoplanet astronomers alike. The scientists whose works and lives I document in this book metamorphose the dark expanse of the night sky into a zone of fresh meaning and insight. In the face of this grand canvas and millennia of my-

thologizing the secrets held by the universe, place becomes a tool by which scientists can grapple with their objects of research on a human scale. Place is more than a given category; it is a way of knowing and of making sense. In connecting the mundane and the extraordinary, extraterrestrial place-making grounds knowledge of other planets in familiar contexts. Scientific practices of place-making turn the infinite geography of the cosmos into a theater dotted with potentially meaningful places that are stages for imaginations and aspirations. At the same time that the field of exoplanet astronomy is expanding, Mars science is also enjoying renewed interest. Successful rover missions and satellites returning beautiful, detailed pictures of the surface invite an intimacy with our neighboring planet. In this book, I discuss both Mars and exoplanet research to explore a full range of place-making practices that stretch from a planet fully mapped and photographed to ones with surfaces that are still mysterious and invisible. Exoplanet astronomers and Mars scientists use a variety of methodologies and technical languages and ask distinct research questions, but their shared pursuit of planetary place marks their fields as more similar than different. In these pages, I refer to the work performed by the scientists I encountered in my ethnographic work, be they planetary geologists, astrophysicists, or computer scientists, as part of the larger project of planetary science.[1] Such a frame of reference permits me to emphasize the shared concerns, desires, and beliefs that has made *place* a sought-after objective in this broader community.

I conducted this ethnography without ever leaving Earth, but my field of study extends well throughout the galactic neighborhood (see fig. Intro.1). It is largely based on fifteen months of participant observation, conducted in 2009 and 2010. Though I entered the field as an anthropologist, I brought with me my undergraduate training from MIT, where I had earned a bachelor of science degree in aeronautical and astronautical engineering. Due to this degree in "rocket science," I was already part of and thus had easy access to the network that my ethnographic work sought to examine. My informants trusted me to participate in the research I was simultaneously observing. I worked with university astronomers in their offices and at a Chilean observatory. I joined Mars scientists in their NASA laboratories and as they traveled into the Martian-looking landscape of the American West. Through interviews, involvement in research projects, conference attendance, chats over beers and pisco sours, and email exchanges, I traced



Intro.1 A readers' guide to the universe: map depicting the Milky Way galaxy, the Sun's position in the Orion arm of the galaxy, and the primary bodies of our solar system. This book spends significant time on Earth (third planet from the Sun) and slightly smaller Mars (fourth planet). Note in the middle inset that the 1,000-plus planets orbiting other stars thus far detected are in a relatively small portion of the galaxy. This is the region of exploration afforded by our current technologies, namely the Kepler Space Telescope (see chapter 4). Image credit: Michael Rossi.

how planets are changeable objects, made more meaningful and relatable with each new data set, scientific paper, and conversation. The work of creating planetary place is similar to the anthropologist's own desire to make the strange and alien familiar. The planetary scientists I write about in this book are literally world-builders. They are invested in questions of what it is like to be on other worlds. The ease with which they can imagine such being ultimately makes this book also a story about the changing ways of being in this world.

To provide background for understanding the practice of today's planetary scientists, I will elaborate on the development of this multidisciplinary field and offer a framework for thinking about planets as both scientific objects and worlds. To think at the scale of worlds requires the employment of what I refer to throughout the book as "the planetary imagination." After laying the foundation for this concept, I introduce how place can aid in bridging the planetary scale of such an imagination with our smaller-scale experience of being in the world. I conclude this introduction with an overview of the tour through the galaxy that this book will take and the terrestrial locations that will facilitate this journey.

"The New Interdisciplinary Science of the Solar System"

The field of planetary science originates in the early years of the American space age, when setting foot on other planets seemed a likely future. In 1962 Elsevier began publishing a new journal, *Icarus*, to document "the new interdisciplinary science of the solar system—which is emerging to claim its own identity at the cross-roads of the allied disciplines of astronomy, geology, geophysics, meteorology, geochemistry, plasma physics, and biology" (Kopal and Wilson 1962, i). The journal established the "planet" as a central object of study, trumping disciplinary divisions in favor of gathering together a diversity of views that could make sense of the astronomical category to which Earth, in the post-Copernican world, belonged. The preface to the first volume of *Icarus* described the mythological inspiration for the journal's title. Readers were not to be reminded of Icarus's fate but inspired by his dream.[2] Quoting revered astronomer Arthur Eddington, "Icarus will strain his theories to the breaking-point till the weak joints gape." And though he might not have reached his destination, "we may at least hope to learn from his journey some hints to build a better machine"

(iii). *Icarus* established the beginning of an ambitious scientific journey, inviting contributors to take risks so that the field could succeed. Scientists did indeed rally behind this new discipline, and by the end of the decade members of the American Astronomical Society had organized within it a subgroup called the Division for Planetary Science.[3]

Shortly after *Icarus*'s first issues circulated among the scientific community, Carl Sagan, then a young assistant professor of astronomy at Harvard, was making a name for himself as both a dynamic teacher and an engaging public speaker. He gave public lectures at the Harvard College Observatory titled "Planets Are Places." This was a new way of viewing the night sky, one in which planets were not points of light identified alongside constellations but, as one of his first graduate students put it years later, "worlds in their own right" (quoted in Davidson 1999, 170). To imagine planets as worlds became easier as the decade progressed and probes were launched to Venus and Mars and Project Apollo made the Moon into a destination. Sagan remained an advocate for imagining planets as places and did so while serving as an associate editor of *Icarus* from its conception and continuing on as an editor-in-chief beginning in 1968.

This first decade of *Icarus* contained more articles about the Moon than any other solar system object, as astronauts and cosmonauts raced to be the first on its surface. However, from the mid-1970s until the present, Mars came to dominate the journal's pages, thanks initially to the successful Mariner and Viking missions of the 1960s and 1970s. Even in the lull between Viking and the next successful Mars surface mission, Mars Pathfinder (launched in 1996), there were enough data on and interest in Mars to keep discussions about it alive in the pages of *Icarus*. In 2009, after more than a decade of successful robotic missions, a record ninety-one articles about Mars were published in *Icarus* (which has remained the premier planetary science journal).

When the field of planetary science was established, scientists assumed that it would be devoted to the solar system. Though there had always been talk and speculation about planets orbiting other stars, there was no robust way to detect such objects. In the 1970s a half dozen articles in *Icarus* addressed the feasibility of detecting exoplanets (or "extrasolar planets" as they were initially called) and how Earth-like planets might be found. It was not until the 1990s, however, that astronomers were finally able to prove the existence of exoplanets. Scientists found the first few around pulsars,

violent stars that bathe their companion planets in X-rays. In 1995 Swiss astronomers announced the discovery of a planet around a star very similar to the Sun. After decades of wondering if exoplanets could be detected, the affirmative answer asked, in turn, "How many are there?" and "What are they like?" In October 2013 astronomers confirmed the detection of the one-thousandth exoplanet, and the number grows steadily as astronomers continue to scour our small corner of the Milky Way galaxy.

With this abundance of exoplanets, so has grown their presence in *Icarus*. Though nowhere near as prevalent as those about Mars, there have been consistently more than a half dozen articles about exoplanets per year since 2000. In astrophysics journals, however, articles about exoplanets steadily increased after the 1995 discovery, averaging more than 30 articles a year from 2005 to 2007, doubling to more than 60 in 2008 and 2009, and holding steady in the 100–120 range from 2010 to 2014.[4] These increases in exoplanet and Mars publications reflect an overall growth in the field of planetary science.

Today, planetary science is an international undertaking. Though my field sites were primarily American and focused on the work of American scientists, international collaborations were common. Not only did scientists from Europe and Asia frequently visit my interlocutors' institutions, but several graduate students and postdocs whom I met at American universities were themselves foreign nationals. Astronomers also frequently travel to facilities in South America, and my own research took me to an observatory in Chile. Investment in planetary science tends to be heavier in nations that have or are developing a space program, but so many data sets are available online that even a researcher or a country without direct access to a satellite or telescope can potentially make a research contribution. Planetary science indeed stretches across our own planet.

Planet as Both a Scientific Object and an Everyday Thing

But what, exactly, is a planet? Is the category—around which I have drawn together my field of study—robust enough to describe objects as diverse as Earth, Mars, and exotic exoplanets? I initially explored this question while puzzling over the circumstances of Pluto's 2006 reclassification from "planet" to "dwarf planet" (Messeri 2010). After an astronomer discovered an object thought to be larger than Pluto orbiting farther from the Sun, the

International Astronomical Union (IAU) moved to create a standardized taxonomy for objects in our solar system. In making explicit what is and is not a planet, the committee in charge of writing the definition necessarily prioritized some scientific interests over others. Astronomers additionally complicated the process of crafting a definition when voicing concern for the public sentiment and the distress some schoolchildren might experience if their favorite planet was suddenly no more (semantically speaking). "Planet" operated as both a scientific and a cultural object.

As defined by the IAU, a planet is a round object orbiting the Sun that is large enough to have either captured nearby debris as satellites or expelled the debris to other orbits. Pluto failed to dominate its orbit and thus was not a planet. This reclassification had little effect on scientific practice. Scientists studying Pluto refer to themselves as planetary scientists (not dwarf planetary scientists). Though exoplanets are not planets by the IAU definition, as they do not orbit the Sun, they are still referred to and understood as planets. Whether studying Pluto, Mars, Jupiter, or exoplanets, scientists use "planet" without hesitation to describe the objects with which they work.

Historian of science Lorraine Daston, in *Biographies of Scientific Objects* (2000), outlines the realist and constructionist approaches to thinking about scientific objects. The realist situates an object as discoverable, as something always existing but not always known. The constructionist, in contrast, depicts objects as inventions; as things molded from a historical and local context. In other words, is a scientific object something that has meaning—that even exists—outside the cultural and historical practices of scientists? A realist answers yes. A constructionist disagrees. Daston offers a middle road: scientific objects are both real and historical. Pluto, for example, was discovered and acquired meaning in 1930, though it surely existed before discoverer Clyde Tombaugh's announcement. As a realist object it has orbited the same path for millennia but was only constructed as a planet until 2006. Whereas one initially studied Pluto to understand more about the icy outer planets, one now looks to Pluto as an example of its neighboring dwarf planets. Scientists adjusted Pluto's ontological status, and in response its epistemological utility shifted.

The reason for Pluto's changed positioning is the result of scientists' reinterpretation of "planet." Planet is the scientific object that I interrogate in this book. I am not offering a Dastonian biography of a scientific object but a series of encounters with different contemporary practices organized

around entities that scientists think of as "planets." "Planet" challenges what it means to be a scientific object in several ways. Daston opposes scientific objects to quotidian, everyday objects. Quotidian objects "are the solid, obvious, sharply outlined, in-the-way things. . . . They are all too stable, all too real in the commonsensical meaning of 'hard to make go away.' . . . In contrast to quotidian objects, scientific objects are elusive and hard-won" (2). Planets, however, are both quotidian and scientific. Earth is part of our daily experience, implicated as a planet, thanks to photographs from the Apollo mission.

Yet exoplanets (as opposed to Earth) are more similar to the "elusive and hard-won" scientific object. They are real only insofar as their visualizations are believable (as discussed in chapter 3). Hans-Jörg Rheinberger prefers the term "epistemic things" when considering scientific objects. "Epistemic things" lead the scientist down a path of questioning, as they "embody what one does not yet know" (1997, 28). "Planet" acts like a heuristic, in that knowledge of well-studied planets guides the scientist's understanding of newly detected planets. To label these detections "planets" transforms them from mysterious astronomical objects about which any number of questions could be asked to the focus of a field of inquiry with a well-defined research agenda. The concept of planet also guides research when scientists apply quotidian information about Earth (what a stream looks like) to make sense of an inscrutable scientific object (e.g., a satellite image of a Martian feature). "Planets" hold power as scientific objects or epistemic things precisely because they are at the same time quotidian and scientific.

The final, and most important, way "planets" are unique among scientific objects comes from the experience of *being* on Earth. To inhabit Earth is to be in a place, to move between places, to create and destroy places. Planets, I argue, are more than objects. They are imagined as *places* amenable to habitation (either by humans or other beings). Scientific practice transforms planets from *objects* into *places*, and this movement is an essential way of knowing and doing planetary science.

Planetary Imaginations

To be on Earth is both to dwell in a locality and to be connected to a planetary system. But how is Earth, in all of its vast geography, understood? Imagining Earth as a planet and a globe is not a new phenomenon (see

Cosgrove 2001). However, planetary imaginings seem to be on the rise. Producers of popular culture, for the past several decades, have been telling narratives of our planet that are often focused on global disaster. The silver screen has destroyed or threatened to destroy the Earth through natural disaster, alien invasions, or, as with the 1998 movie *Armageddon* or the more recent 2011 *Melancholia*, a threatening yet impartial extraterrestrial meteor or planet. News stories on climate change, the geographically amorphous "war on terror," and the "global financial crisis" appear on the front pages of newspapers and the homepages of websites, inviting citizens to think on a planetary scale. The Internet itself offers constant connectivity with a network distributed (though not evenly) across the surface of the Earth.

Scholars in the social sciences and humanities have also recently begun thinking about "the planet." Gayatri Spivak (2003) introduces the term "planetarity" as a way to conceive of escape from globalization and its "imposition of the same system of exchange everywhere" (72). Planetarity, perhaps because it appeals to a word associated with "nature" (planet) rather than "culture" (globe),[5] serves to remind us that we are guests of Earth. It is humbling and therefore, one hopes, saving. Similarly, Paul Gilroy in *Postcolonial Melancholia* labels the first part of his book "The Planet" and also chooses to use "the planetary" instead of "the global" as his indicator of scale to suggest a "contingency and movement" that he finds lacking in the concept of "globalization" (2005, xv). Whereas "globalization" suggests an expansive flattening, "the planetary" resurrects a sense of finitude accompanied by the reality of unequally distributed wealth and resources. It is on this uneven terrain that Gilroy situates an "anti-racist" solidarity (75). Yet the planetary simultaneously conjures a solidarity of species—one threatened by environmental and biological offenses that spread agnostically between territories.

Awareness and debate over "planetary crises" (Masco 2010) has only intensified since Spivak and Gilroy wrote of the planetary. Theorizing the planetary is finding ever more traction with the idea of the Anthropocene (see Chakrabarty 2009). Yet the very etymology of the Anthropocene, which scientists have suggested as a name for the current geological epoch in which human impact is noticeable on a planetary scale, risks a reprioritization of the human over the planetary. Bruno Latour (2014, 2015), for one, is wary of this recentering and writes, in a register similar to Spivak and Gilroy, that the Anthropocene should instead enable us to recognize that

the Earth is itself an actor with agency.[6] This offers a vantage point from which to think of humans as "planetary subjects rather than global agents" (Spivak 2003, 73). And for Latour, nonhumans are also planetary subjects, rendered on equal footing with humans.[7]

But what are the implications of thinking on the planetary scale? Is it even possible to make sense of dynamics occurring within dimensions so much larger than our daily, human experience? On film, these large-scale dramas are told by focusing on one protagonist (and the protagonist's family). Though there are shots of the impact of the planetary phenomenon on other places and people, the action of these films unfolds in a local, intimate setting. It is difficult to tell a planetary story, and this difficulty is present in the scholarly works I have just cited. Frameworks are offered, but the concepts of planetary and planetarity are left purposely broad and flexible. This is not a weakness of the texts but suggests that analysts are still searching for salient ways to address phenomena of a planetary scale.

I would like to propose that one reason "the planetary" causes us to stumble is because it requires that we grapple with *intangible modes of being*, ways of being that at first blush seem disconnected from *place*. At the same time, place itself is undergoing a change. No longer is place local, but Earth itself becomes a singular locality (a paradox I will return to in the next section). And no longer is place necessarily material; rather it is something that can exist in cyberspace, populated with online worlds. I argue that the planetary scientists who make up the ethnographic center of this book have, out of professional necessity and personal desire, figured out how to cope with and make sense of the planetary scale by reconnecting with the concept of place. How might their invocations of place be useful for other theorists seeking to understand phenomena on a global scale? In other words, what does place *do* and how does it allow us to understand the planetary?

The Earth's surface is almost 200 million square miles. The troposphere, the region of the atmosphere in which weather occurs, extends seven miles above the Earth's surface. The stratosphere extends to 31 miles, followed by the mesosphere and the thermosphere, which climbs to 440 miles. At what point the outermost layer of the atmosphere, the exosphere, becomes "outer space" is a matter still contended. To invoke the planetary is to necessarily wrestle with this expansive geography. As I learned from my scientist interlocutors, place is a powerful tool for pinning down this enormity. It

invites familiarity by suggesting that our knowledge of local, recognizable places is possible at a larger scale. For planetary scientists, as I will show, place-making at a planetary scale resists homogeneity. Instead, scientists strive to differentiate features on what, at first, might appear as uniform spheres and describe planets as changing and evolving worlds. They create new kinds of landmarks, like atmospheric "hot spots," that exist on this scale. In so doing, the planetary becomes something that can be navigated, whose dynamics can be observed, and from which lessons can be learned. Place transforms the geographically alien into the familiar.

Creating place also transforms the planetary from the perceived to the experienced. A place-based orientation, rather than passively gazing at the globe from the outside, allows for an imagination of being on/within/alongside, of experiencing, the planet. This is an active relationship between subject and planet, which for planetary scientists becomes foundational to how they come to know their planet of study. The kind of place they can imagine being on potentially opens up new questions that can be asked about the planet. Experiential ways of knowing become productive avenues for thinking about things on a planetary scale. This is made possible because of place.

When we think of place, we imagine territories that span a few feet, maybe a few blocks, or even a few miles. We do not typically imagine a place many millions of square feet in area. Yet planetary scientists have become quite comfortable with stretching place to encompass the planetary. In so doing, they provide a new interface for considering the planetary, one that has been professionally productive for scientists and perhaps can also be meaningful for social scientists and humanists who similarly grapple with planetary phenomena.

Each chapter of this book teases apart an aspect of what I here call the "planetary imagination." This is not a singular, static, or even robustly definable imaginary but a phrase I use to capture holistic conceptions that scientists have of the planets they study. The planetary imagination includes scientific understandings of the planet and conceptions of planetary pasts and futures, as well as notions of what it would be like to be on and live on other planets. The planetary imagination is yet another way of talking about the placehood of planets, the topic to which I now turn.

The Problems and Promises of Place

Like planetary science, this book brings different disciplines to bear on a central topic. "Place" has been studied in a variety of ways, and most relevant to my theorization is the work of anthropologists, cultural geographers, and scholars in science and technology studies (STS). For anthropology and STS, place is explanatory, used to make sense of cultural expression or productions of scientific facts. Geographers have more often than anthropologists and STS scholars investigated the ontologies of place and place-making. For all three fields, place is a tricky category because it is weighed down by colloquial meanings and associations, making the analytic potencies of the term sometimes hard to parse. The challenge is to liberate place, to question its assumed relationships to other categories and to see how far place can travel—if it can extend into the cosmos.

Cultural geographers have offered distinct and meaningful formulations of "space" and "place" as analytic categories (Tuan 1977; Buttimer and Seamon 1980; Merrifield 1993; Harvey 1993). In the standard formulation, space is universal, empty, and a priori, while places are meaning-filled subsections of space. This distinction is problematic as space, then, becomes associated with the global, the objective, and the masculine, while place is essentialized as a local, feminized subjectivity. In one attempt to curtail these connotations, scholars have deconstructed the space/place dichotomy, doing away with place and advocating for space as the analytic term de rigueur (Soja 1989; Massey 1994). However, like others, I find the term "place" helpful (Relph 1976; Sack 1997; Casey 1993) even as I find the connotations troubling. Rather than excising the term from the literature, I seek instead to destabilize it. Place, as I use it throughout these pages, is not a static and singular term but is multiple and varied, constantly being made and altered (see also Massey 2005b). Place is social (Lefebvre 1974), historical (Harvey 1989; Kern 2003), and political (Zukin 1993; Cresswell 1996). Place is a process (Pred 1984).

To suggest, as I do, that place can be used to describe the planetary scale frees it from associations with the local and in fact makes it a term that can trouble the relationship between local and global in ways that complement Spivak's and Gilroy's intellectual projects. Philosopher Edward Casey (1996) resurrects the importance of place, and its fraught relationship with locality, by uncovering its intellectual grounds. The Enlightenment, Casey

argues, subsumed place beneath and behind space, with Kant in particular espousing the primacy of first understanding the general and the global before delving into the local. As the general became tied to space, place was relegated to the local and ultimately understood as a secondary way of knowing.

How, then, to reframe place as something more than local (and thus also as a primary way of knowing)? Casey does so by affirming that spatiality is not something that exists in the mind but is experiential. It is only through experience that one can come to know anything, and experience always begins in a particular place: "There is no knowing or sensing a place except by being in that place, and to be in that place is to be in a position to perceive it" (18). By this he means that the fundamental act of being is an act of being in place. It is from place that all other understandings flow. The global only makes sense because of our knowledge of the local. A planet is comprehensible only once it is understood with the specificity afforded by understanding it as a place.

In anthropology, place has similarly been obfuscated by or made secondary to other categories, most often culture. As Akhil Gupta and James Ferguson (1992) point out in their critique, this has led to almost a century of anthropologists assuming that specific, bounded places are containers for culture. This presumption of place has made it possible for anthropologists to leave "home" and travel to and study "other" cultures, a spatial distancing similar to the temporal distancing Johannes Fabian (1983) describes. Neutralizing (and naturalizing) place made it easy for anthropologists to overlook the interconnections, overlaps, and multiplicities of cultures. Setha Low (2009) suggests that this produces a hesitancy to make place a central concept. Low offers that analyzing the embodiment of place allows for the mobility of place and connects the global with the local (see also Low and Lawrence-Zúñiga 2003). Ethnographies of "the West" and multisited practices also seek to unsettle the notion of static, spatial containers by questioning the categories of us/them and here/there (Marcus 1995; Marcus and Fischer 1999). But in scaling up place to a planetary level, a vantage point from which culture looks comparatively inconsequential, "home" is no longer Cambridge, Massachusetts, but Earth.

To be clear, my project finds the dynamic between "here" and "there" productive, but "there" is a category mutually constructed by the scientists I study and myself. While there is not a geographically bounded commu-