



Footprint

An Itinerary

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Abstract

The footprint is one of the fundamental artifacts of walking. As both metaphor and material imprint, it signifies mobility and occupation, inquiry and imperialism, absence and presence, trace, and impact. Written as a series of narrative itineraries, the essay explores the contradictory forensics of the footprint. It examines a set of cultural and material histories through the Apollo 11 spacewalk, early hominin tracks at Laetoli, Hindu and Hopi conceptions as well as monument politics in the United States. The migration of the footprint well in front of the sign of the walker into a primary metaphor for our times raises questions about the ways in which histories are used to guide our steps into the future. As it marches forward, the footprint seems to get less capacious and more consumptive. Even as we find the image of footprints on a stretch of sand tranquil and dreamy, we worry about our carbon footprint and its implication for the future of the planet. The essay asks what the implications are of making the human foot bear responsibility for the planet.

Keywords: Human foot, walking, Southwestern United States history, territoriality, ecological footprint

1.

The first human footprints on the moon, made just over fifty years ago, are likely to last for millions of years. The moon has none of the tempestuous volcanism, tides, and waves that characterize our own blue sphere. In its airless, waterless environment, there is little to disturb those imprints. *What were your inner feelings?* asked the eager press of the astronauts of Apollo 11, uncertain how to phrase their question. *Did you feel you were stepping on a piece of the earth, on something like a desert perhaps or was it clearly another world?* (New York Times, 1969b) It's easy to understand the curiosity and confusion. After all, what is a small step, let alone a giant leap, when it's not on the ground beneath our feet?

The first photographs of the lunar surface appeared in the *New York Times* ten days after the moon landing of 1969 under the headline *Footprints on the Moon* (New York Times, 1969a). They show the U.S. flag and a mess of footprints around it. Although there was some discussion as to whether planting a U.S. flag might be construed as an overreaching territorial claim, a burgeoning national pride overcame such objections. Space flight and NASA's related technological ambitions were fueled by the Space Race of the Cold War. The Soviet Union's competitive advantage mounted in 1961 when cosmonaut Yuri Gagarin became the first human to orbit the earth. President John F. Kennedy's declaration before Congress that year to land 'a man on the moon' and return him safely to the earth galvanized the efforts of the U.S.'s relatively young space agency. In his 1962 address to Rice University in Houston (more often remembered as the 'we choose to go to the moon')

speech) Kennedy avowed, 'we shall not see it governed by a hostile flag of conquest, but by a banner of freedom and peace. We have vowed that we shall not see space filled with weapons of mass destruction, but with instruments of knowledge and understanding' (Kennedy, 1962). The only way these vows could be fulfilled, he went on to add, was if the U.S. was first to get there. Primacy was undoubtedly the flag's claim.

Congress passed a bill after the fact stating that the planting of the flag was only a symbolic gesture of national achievement not one of appropriation. Getting the symbolism into a photogenic position required some doing. There was no way that a flag could flutter on the airless moon—to ensure that the star-spangled banner yet waved, it had to be wired (*Flag Day – Flying High: The Stars and Stripes in Space* 2013). The enduring symbolism of the accompanying footprints, however, has required neither manipulation nor congressional reassurance. To be accurate, they are bootprints. In close-up, they appeared perfectly cast, delineating the horizontal treads of the astronauts' overshoes. Buzz Aldrin, one of the two moonwalkers, acknowledged that their feet sank in a little on the moon's surface. Where the surface was flat, the foot penetrated a scant quarter or half an inch but near the crater rims or on the slopes, it could be several inches (New York Times, 1969b). The resulting strong impression, strangely at home, signified a contact whose bold magnitude was thrilling.

To describe how the prints were made, an astrogeologist associated with NASA, the appositely named Gene Shoemaker, used a familiar earthly image: much like sand on a beach, he said, the lunar surface had some strength (New York Times, 1969a). On this tensile layer, therefore, feet wouldn't sink in, and prints disappear as they might in a liquid. Rather, they would leave the sort of marks that have imprinted themselves as indelibly on our imaginations as on the sands of time—appearing on the surface of Tranquility Base as if on a tranquil terrestrial seashore. The moon itself would spin us back in time to the first cosmic ricochets that created the solar system, its arid airless world providing geological evidence from planetary infancy. Earth too bears the scars of this time, but the natural forces of eruption and erosion have significantly transformed its surface.

footprint

We are now well acquainted with the image of our blue and white, watery, cloudy planet seen from outer space. Among the most memorable photographs from the Apollo 11 mission was one of Earth with wisps of clouds over its continents and seas, looking uncannily as familiar as a globe spun on a schoolroom desktop. Recalling the view from the moon years later, Neil Armstrong remembered seeing both Greenland as an expanse of icy white and the unmistakable contours of Africa with the sun glinting off a lake (Armstrong, 2001). Right in that line of sight, just under a decade later, the footprints of our own early sojourn on this planet were unearthed. Paleoanthropologist Mary Leakey and her team excavated a set of footprints of our hominin ancestors at Laetoli, near the Olduvai Gorge of Tanzania.

The footprints, wrote Leakey, had the 'rounded heel, uplifted arch, and forward pointing big toe of the human foot' (Hay and Leakey, 1982, p. 56), unfaltering evidence of early bipedalism. Found amid many tracks of animals and birds, the three sets of prints, dating to about 3.6 million years ago, ran about 73 feet in a straight line. They seemed to suggest a group walking close together—two walking in tandem with the footsteps of the second placed within that of the leader, and another smaller set of prints alongside. All of them would have been smaller in stature than the modern human, ranging between 4 ft. 1 in. to 4 ft. 7 in. As they walked, the smallest set seemed to stop and turn briefly before moving on, which Leakey remarked 'gives the whole thing a very human aspect' (Boyce, 1979). We can only speculate about what happened at this juncture, in this pivot of hesitation that feels as familiar to our feet as the directness of the forward pointed big toe. Was it a sudden onrush of caution or uncertainty? Or a wistful retrospect at the traces left behind before the group walked forward through the annals of evolution into the genus *homo* and out of Africa? Or was it simply an instant arrested by the sight of the silvery moon on which one day, another set of deep and determined prints would mirror those being left below?

About three decades later, in the late 2000s, another set of footprints was discovered in Ileret, Kenya (Bennett et al. 2009). Dating later, to about 1.5 million years ago, these are as yet the earliest prints found of genus *homo*, a foot that most closely resembles the modern human appendage. However, fossil evidence from East Asia, attributable to *homo erectus*, and dating even

earlier to 1.8 million years ago, demonstrates that our human ancestors had long since migrated across the globe (Wilford, 2009). Bipedalism was once believed to have released our crafty hands and given us a bigger brain to go with it, but it appears to have preceded both. Mary Leakey acknowledged that no tools have been found in the vicinity of the Laetoli prints even though the walkers clearly had their hands free. The proximity of the footprints to each other suggests, in fact, that they were very probably using their arms and hands to hold each other (Leakey, 1981).

The creation and preservation of the human footprints at Laetoli alongside those of other animals such as hares, giraffes, elephants, and birds happened in a Goldilocks moment of a few weeks at most between the dry season and the onset of rains. As with the moonprints, whose making Shoemaker described, the surface had to be simultaneously soft and cohesive. If the sand was too loose, it could register the light step of a bird's foot but a heavier one such as that of an elephant would soon start to collapse on the sides. If the substrate was too wet, it would retain the imprints of bigger, heavier animals but a lighter step would not sink in, nor would it register the rainprints that are also embedded in the Laetoli tuff. What captured the prints for millions of years was the result of the earth's volatility, impressed as they were into a thin layer of ash from a volcanic eruption most likely about 15 miles away. Volcanic ash has the texture of fine or medium grained sand. Rain had fallen on the ash, creating the ideal substrate for the prints to form deeper impressions, and this mix had then congealed almost like plaster. Before they could be washed away or otherwise eroded, they had been buried by succeeding layers of ash which preserved and protected them without adhering too closely so that eventually the material would separate enough from the footprints to render them visible (Hay and Leakey, 1982).

Volcanic terrain is, in fact, the ideal counterpart to the lunar surface. Before the Apollo mission, the rocky volcanic landscape of Northern Arizona was selected to serve as the astronauts' practice grounds. The area was no stranger to extraterrestrial contact. It hadn't been that long since Gene Shoemaker had demonstrated that a large bowl-shaped crater near Flagstaff was the result of a collision with a meteor. Not far from Meteor Crater, NASA engineers blasted the ground at Cinder Lake to create a pock marked moonscape with cinder

cones and hundreds of craters of different depths. Lunar orbiters were sent up periodically before the mission to photographically survey the surface of the moon, especially the potential landing sites. Using this imagery and their knowledge of cratering mechanics, the scientists of the U.S. Geological Survey were set to reproduce this terrain. First, they raked the surface, so it was smooth. Then, they set off explosive charges to create a 10-acre landscape analogous to the lunar one the astronauts would encounter which would give them a sense of having 'been there before' (NOVA, *To the Moon*, 1998b). Beyond providing familiarity, it also served to educate the astronauts who were primarily pilots and engineers not scientists so that they could approach the lunar environment knowledgeably. It was Shoemaker who was largely responsible for ensuring that there was both a scientific program in this man-on-the-moon venture and that it had the televisual component that was to leave a lasting impression on the minds of viewers across the world (CBS News, 2019). He was among the astrogeologists who worked with the astronauts, teaching them how to identify geologic formations in this crater field and prepare for the other lunar features they might encounter when they took their first unearthly steps.

Buzz Aldrin missed the cues from his feet on the moonwalk. Weighing a sixth of his earthly weight with his foot landing neither long enough nor often enough on the surface, he found it hard to control his movements, slow down or change course. Movement and direction had to be anticipated ahead of time (*New York Times*, 1969b; NOVA, *To the Moon*, 1998a). Footprints are made in a critical conjuncture of pressure and impact, movement and propulsion against the composition and properties of the substrate. In the striding human foot, the heel hits the ground first, usually leaving the first deep impression. As the body shifts its weight forward, the lateral sides of the feet make their mark until they surrender it to the balls of the feet, the metatarsal heads. The toes exert their pressure, and the final 'lift-off' is achieved as the big toe pushes off the ground. If the surface is soft yet tensile, and the atmosphere relatively calm, the walker leaves a trace. Many stories are contained in those traces; born of casual confidence, force, curiosity, desire, hesitancy, strain. The human stride, whose account is so often subservient to the hand, has made its own mark on our history. The fruits of our handiwork quite justly enjoy the focus of considerable

attention. On the other hand, the products of our footfall are much harder to grasp, most discernible perhaps in the vast range of our migrations. But while the trace of our hands—the fingerprint—has been appropriated by the disciplinary apparatuses of the state, the footprint has been resolutely ambiguous, interpreted equally in terms of its impact as its sense of initiative. Simultaneously enigmatic and evocative, signifying both presence and absence, forceful yet transient, the footprint reveals an itinerant evidentiary history.

2.

There are other footprints on the land made unearthly for the astronauts. At the time of the first European *entrada*, it was territory inhabited mainly by Pueblo peoples. For Hopi, this was a land that had come into being through the material legacies of ancestral migration and settlement. As they tell it, when their ancestors emerged from the underworld into the Fourth Way of Life of our time, the lord of the Fourth World, Maasaw greeted them. He taught them how to live on the land, how to form clans, and how to live alongside other beings. Instructing them to search for the center of their world, he enjoined them to make footprints as they travelled. From the umbilicus of their emergence, which some say is in the Grand Canyon and others much farther south, the ancestors walked to the world's farthest corners, looping around until they made their home on the mesas of Northern Arizona. They learned the land with their feet, and as they did, they heeded Maasaw's injunction, *ang kuktota*, along there, make footprints (Colwell-Chanthapongh and Ferguson, 2006; Kuwanwisiwma and Ferguson, 2004; Kuwanwisiwma, Ferguson and Colwell-Chanthapongh, 2018).

It wasn't just their feet that left traces; these footprints included the places they brought into being as they travelled onward to their present homes. All across the Fourth World are the signs of their migration—ruins, potsherds, petroglyphs, shrines, trails and trail markers, sacred springs and other sites that mark their journey and the places in which they dwelled on the way. One such dwelling is in a cliffside in Southern Utah, where the Bears Ears buttes rise above Cedar Mesa, well to the north of the Hopi mesas of Arizona. Here, the old Pueblos once watched the moon eclipse the sun and plunge the earth into shadow

(Boslough, 2017). Here, they transcribed that celestial sight onto an earthen wall in the crescent and circular pictographs that give the site its name, Moon House, and thereby imprinted onto its surface their own lunar experience.

To Hopi, these are *kukveni*—footprints—that assure the descendants of their makers that the land has been traversed as instructed. Hopi elders and scholars say that the covenant with Maasaw to make footprints obliges them to be stewards of these lands (Kuwanwisiwma and Ferguson, 2004). The potsherds, petroglyphs and trail markers are not archaeological artifacts of a bygone world or even memorials to a past but footprints in a world that is alive in the here and now. These are lands that entered human time through a history of movement rather than settlement. The songs, stories and rituals of the Hopi encode this history not only connecting places and events across time but also across distances (Colwell-Chanthapongh and Ferguson, 2006).

Such footprints are not just the symbols of commemorative imagination, they are meant to be re-inscribed and re-invoked through the actual tracing of steps and trails. The actions that descendants of the ancient Puebloans undertake preserve, we might say, not only the footfalls of the past or the steps being taken in the present but also the footprints to come. Hopi has a term for the act of looking for footprints: *kukhepya*. Hopi archaeologists and the archaeologists of the southwest who collaborate with them say that it is through *kukhepya* or looking for footprints that Hopi people recognize, understand and value their territory (Ferguson, Berlin and Kuwanwisiwma, 2009). Of course, this territory extends beyond the limits of the reservation into which they were corralled; the footprints include places along their ancestral migration routes that stretch beyond Arizona to other parts of the U.S. (such as the Moon House on Cedar Mesa) and even into Mexico.

The areas through which the clans migrated were colonized and settled as part of the Spanish empire's ambitions in the so-called New World. In the 16th century, they formed part of the larger ambit of New Spain, a vast domain covering parts of both North and South America that was under the Spanish imperium. After the Mexican War of Independence which liberated Mexico from Spain in 1821, they became part of Mexico until the U.S. annexation of Texas prompted a new round of hostilities a few decades later. The treaty of

Guadalupe Hidalgo in 1848, which ended the Mexican American war, led to a new apportioning of lands. With the treaty and the Gadsden Purchase thereafter, the U.S. gained all or part of today's Arizona, California, Colorado, New Mexico, Utah, and Wyoming and expanded its territories by over half a million square miles. Within a few decades, the Hopi reservation had been created in north-eastern Arizona by presidential executive order. It has shrunk even from its first arbitrary boundaries and today, the footprint it occupies is roughly 1.5 million acres or about 2,532 square miles. Other indigenous communities located farther south found that the new borderline between the United States and Mexico established by the treaty cleaved their territories.

Today, the U.S. border itself has a sizeable footprint, extending beyond the established boundary line. Up to hundred miles beyond the border, well north of designated ports of entry, Customs and Border Protection operate a system of checkpoints and patrols to create a border zone of surveillance. Within this zone, agents have extended search and seizure powers with the authority to stop, question and detain people they suspect of being undocumented migrants or of committing other immigration violations. Along the almost 2000-mile border between the two countries, a series of discrete barriers have been erected as 'tactical infrastructure' to thwart ease of movement across the border. Colloquially called the 'border wall' and even 'border fence', these barriers are rarely at the actual borderline itself but rather placed farther back in U.S. territory. By these border walls, Border Patrol continually scour the terrain for the tracks of border crossers, often dragging tires behind patrol vehicles so as to create a smooth surface on which fresh prints can be swiftly discerned. To evade detection, migrants themselves will sometimes wrap their shoes with fabric to avoid leaving footprints ('Personal Interview with Border Patrol Agent, Brownsville Texas' 2015).

Kukhepya takes on new urgency when the re-inscription of footprints through regular journeys and ritual pilgrimages is disrupted. The incorporation of Pueblo lands into Spanish and Mexican colonial territory and then into the U.S. state has disturbed their physical traces even when they continue to live in narrative and ritual. Trails have been obscured, eroded, merged into the roadway system, or otherwise taken over by the state or by private owners. Archaeologists report that some elders feel that identifying and documenting

trails so that they can be managed through the U.S. heritage or historic preservation compliance procedures is essential since they can no longer be looked after through routine use (Ferguson, Berlin and Kuwanwisiwma, 2009). Footprints that are legacies of movement geographies, whether trails, natural features, markers, or former villages must therefore be solidified as national monuments, if they are not to risk complete erasure.

In 2016, after consultation with the tribes who regard it as an ancestral footprint, a presidential proclamation was issued by the Obama Administration designating Bears Ears a national monument. The very next year, another presidential proclamation from the next administration, that of Donald J. Trump, reduced its size to two small discrete parcels, diminishing protected land by 85%. In so doing, more of Bears Ears land was laid open to uranium mining and other extractive interests. Environmentalists, archaeologists, paleontologists, and indigenous groups rose in protest. In December 2017, an inter-tribal coalition of the Hopi, Zuni, Navajo, Ute, and Ute Mountain Ute Tribes filed a complaint against the Trump Administration to block further action. Among those who were quoted in the complaint was the vice-chairman of the Hopi tribe, Alfred Lomahquahu who said, 'Cedar Mesa is a part of our footprints, a path that tells a story. ... Those who have lived before us have never left' (*Hopi Tribe et al vs. Donald J. Trump et al*, 2017, p. 23). The fate of Bears Ears still hangs in the balance although a new review is being undertaken by the Biden Administration as of this writing.

Where the footprints of the country's first human inhabitants are under threat, the foot of the last conquistador has not been secure either. In 2017, as the Bears Ears Monument was radically slashed, another fractured monument emerged from the shadows. This was a bronze foot, intended to be weighty and everlasting, severed from a statue of Don Juan de Oñate—the Spanish conquistador who established some of the earliest European settlements in what was to become New Mexico. In 1598, Don Juan led a group of soldiers and colonists north from Mexico to look for silver, gold, and other treasures. The terrain and climate were unfriendly, and the quest for precious metals futile but Oñate pressed on with scant disregard for his followers or for the others they met on the way. The Spanish entered new territories under the *encomienda* system where they exacted labor and tribute from those who lived there to

support and finance their conquests. Toward the Pueblo peoples who refused or resisted these preposterous demands, Oñate responded with such brutality that he was later hauled up before the Spanish Crown and convicted. His worst excesses were at Acoma Pueblo in New Mexico where he and his men slaughtered about 800 people and captured hundreds of men, women, and children. About two dozen men over the age of twenty-five were subjected to additional punishment—each one had his right foot cut off.

Competing conceptions of historical memory have shaped the figure of Oñate (Brooke, 1998; Seefeldt, 2005). In the intervening centuries since his invasion, the narrative of the founding of the United States has narrowed to the English settlements of the eastern seaboard so that the Spanish histories of the country, which date to a century before, have been obscured. Even as polyglot cultural worlds remain strong in the south and southwest, they have also been constructed as part of a borderland in which some long-term residents find themselves marginalized and rendered as foreign. In a struggle to define a place in the conception of nation, in a demonstration of Spanish heritage, and against the backdrop of an increasingly Anglicized narrative emanating from other parts of the country, efforts began to coalesce around the *cuarto centenario* or four hundredth anniversary of Oñate's *entrada*. In anticipation, in the mid-1990s, a statue of Don Juan was erected at Alcalde in the Española Valley of New Mexico where the conquistador had established the earliest settlements.

Just before the anniversary year dawned, in the dark of night on December 29, 1997, the statue's right foot was cut off. A letter arrived at the offices of the Albuquerque Journal North saying that it had been done on behalf of the 'brothers and sisters of Acoma Pueblo' and 'in commemoration of the 400th anniversary of his unasked-for exploration of our land. 'No one at the Oñate Center which sponsored and housed the statue had even noticed the amputation. When the newspaper called to confirm, the director had to go out to check that this had really happened' (Trujillo, 2008). Had no one been notified, the statue would have joined the legion of bronze men on horseback in cities across the world whose names most passers-by can't summon up even

as the legacy of their impact continues to be felt. But the severing of statue's foot made visible the contentious legacies of the Spanish footprint on the bodies, backs, and histories of the region.

It was this foot that returned in 2017. One of the surgeon-activists contacted the Cheyenne-Arapaho filmmaker Chris Eyre telling him that the foot was still in his possession. Eyre arranged clandestine meetings with the 'foot thief' for a couple of reporters. We learn from their articles that the appendage is about two feet in length and rather heavy (Bennett, 2017). A photo of the severed foot also appeared in the *New York Times* (Romero, 2017b). It lies on its side atop rumpled black fabric against earth and scrub, the balls of the foot caught in a stirrup, the bronze toe and ankle aglow in the slanting light while the heel and spur are cast in shadow. It is a foot encased in a boot, of course, the stirrup and spur reminding us that it was the horse's hoof hitting the earth that reinforced the thrust of the conquistador's boot.

Repair of the statue was quick although there were debates about whether it might not be better to leave the leg amputated. The sculptor was eager to see the statue made whole, lamenting the fact that more people came to see it after the amputation than ever did before. The furor of the debates around the commemoration eventually subsided but Oñate has continued to be a symbolic flashpoint. In September 2017, on the occasion of an *Entrada* pageant in Santa Fe, the statue's left foot was painted red and tagged to remember the 1680 Pueblo Revolt (Hummels, 1998). In the mid-2000s, in Texas, the city of El Paso planned to erect a gigantic 36-foot statue of the conquistador as part of a proposed downtown sculpture walk through history. City officials had to relocate it to the airport and were forced to re-name it, more generically, 'The Equestrian' (Propp, 2004). Nonetheless, it did not escape defacement with graffiti and paint during the nation-wide protests in 2020 against racism and police brutality. These protests re-ignited debates about Confederate monuments as well as other statues and symbols in which racist and colonial violence is embedded (Gilbert, 2020). In June 2020, the Oñate statue at Alcalde was removed to storage, pending public discussion as to its fate (Land, 2021). For a statue with an unusual abundance of feet, it seems that, for now, all of them are up in the air—appropriate indeed for a land in which footprints are about traversals rather than pedestals.

3.

Traces on a border landscape are not the footprint's only treachery. In fact, the footprints that concern people today are equally if not more likely to be carbon footprints, digital footprints, building footprints, or global footprints. The meaning of the footprint has migrated well in front of the sign of a walker. Journalist and New York Times columnist William Safire called it 'the March of the Metaphoric Footprints'. According to him, linguists had traced the origins of this trope to 1965 when it was used to signify 'the proposed landing area for a spacecraft' (Safire, 2008). What unites these metaphoric footprints is the overwhelming pressure of their impact and occupation. In fact, as it marches forward, the footprint seems to be less capacious a term than consumptive. It takes up space rather than travels across it.

Among the early metaphors was the ecological footprint coined in the 1990s by ecological economist William Rees and his then doctoral student Mathis Wackernagel. It measures the natural resources required for any single activity in order to calculate the impact of humans on the world. On one side is demand—the total ecological assets such as plant foods, livestock, fish, and timber needed to produce the natural resources consumed by a population as well as to absorb its waste, especially carbon emissions. On the other is supply—the availability of productive resources such as cropland, grazing land, fishing grounds, built-up land, forest cover, and carbon demand on land. The ecological footprint assesses the land and water required to sustain a population and a material standard indefinitely. The sum total of ecological footprints of human populations is the human footprint on the planet (Wackernagel and Rees, 1996).

Even as a metaphor, the ecological footprint retained its human scale and some of the physical and phenomenological attributes of a footprint such as weight, pressure, and impact on the ground—it was characterized as a measure of the 'load' of a given human population on natural resources. When Rees and Wackernagel first tried to describe the concept, they took their readers on a walk around what they called a 'fair earthshare' to show them what it might feel like to inhabit a finite world—a leisurely walk around one's fair share of the earth would apparently take only 10 minutes. Their footprint is spatial: measure

a hectare and mark it with flags, they suggest, and then see how long it takes to walk around it. Or imagine you're standing in the center of a square field that represents an average earthshare; you'll find you can see the boundary less than 75 meters away (Pasek, 2019, p. 108). Earthshares are not distributed equitably so some people can and will hardly move while others boldly stamp across the world. In fact, by their reckoning, if everyone on the planet lived like an average North American, we would need three Earths to live sustainably (Wackernagel and Rees, 1996).

The ecological footprint has largely been overtaken by the carbon footprint which measures the total amount of carbon dioxide or other carbon compounds emitted as a result of the consumption of fossil fuels by the activity of any entity. Decoupled from the ecological footprint's connection to land and water, the carbon footprint is not tied to place. Nor is it only tied to either human or animal bodies. Rees and Wackernagel did allow that such diverse items as tomatoes and bridges could have ecological footprints based not only on the resources that were used to create or transport them but also indirectly in terms of the kinds of lifestyles they would enable. The carbon footprint is even more transcendent—everything has a footprint—and it is less spatial. Although it conveys a general sense of impact, this does not appear as a visible or tangible effect in space or on a surface.

Still, its attraction seems due, at least in part, to the agency it appears to give individuals in its calculation. This agency has a perverse origin. The phrase was popularized by a campaign designed by advertising and public relations agency Ogilvy and Mather between 2004-2006 for the oil and gas company BP. It sought to divert attention from the impact on the climate crisis of BP's fossil fuel extraction by shifting attention onto individual responsibility (Solman, 2008). This was not a novel strategy—researchers analyzing the public and internal documents of ExxonMobil have demonstrated how the company has systematically shifted responsibility for climate change from itself onto consumers while presenting reliance on fossil fuels as necessary and inevitable (Supran and Oreskes, 2021). Within two years of the BP campaign, carbon footprint was the Oxford English Dictionary's UK word of the year and since then, it has seeped into everyday consciousness as a series of injunctions and prescriptions for individual daily life that will somehow stay the gargantuan

forces of corporate action. Even as these corporations continue with business as usual or engage in emissions trading with carbon credits and offsets, many anxious and conscientious people keep track of the carbon footprints of their own activities and try to reduce or mitigate them. It doesn't require much of a search engine to bring up some sort of carbon footprint calculator.

This nervous on-line self-examination spills its own crumbs, adding to a trail of cookies and other data from overall internet activity that creates a digital footprint for each person on the web. The life span of digital footprints rivals their lunar kin; as long as the cloud exists, the footprints of our virtual adventures and misadventures will remain. These footprints, whether passive—that is, inadvertently furnished—or active—for instance, on social media—have come to stand in for the identities of people themselves. Data mining and the algorithms generated on the basis of our footprints create virtual shadows that can become more significant than their human originals—consider the effect of an on-line indiscretion on future employment or worse still, relentless surveillance by indefatigable electronic monitoring systems ostensibly for security purposes.

All metaphoric footprints retain a troubled and curious relationship to the individual, placing as they do the burden of extractive histories and technologies on the uplifted arch and forward toe of a human foot. But what are we to do now that the lithe and curious material trace has given way to the weighty and anxious metaphor? The footprint has never been entirely innocent, of course; it has always been an object of contradictory forensics. The footprints of the early striding hominins in African ash release ancestral energies of movement, companionship, courage, and curiosity just as those of Aldrin and Armstrong on the moon evoke wonder, imagination, and exploration. But each of those steps carries with it the histories of human occupation, imperialism, territoriality and impact, a legacy of treading upon others as much as treading on the world.

As the footprint grows stouter, heavier, and more rigid, its monumentality invites desecration and defacement. Has the term become too loose and wayward to salvage any political promise? Or does the inherently enigmatic character of the footprint militate against too swift a foreclosure of imagination? What if we

resisted the temptation to dismiss the footprint as much too messy a concept but instead took it up as invitation to work through contradictions without reconciliation? We can look to other itineraries, other lineages of the term, other material manifestations wherein the footprint is light not leaden. We could return to simple mechanics which demonstrate that a footprint is formed by the foot pressing into the ground *and leaving it*. A footprint is inherently mobile, not static. No foot leaves a trace if it doesn't rise. The print of the foot demands its absence. It is a paradox that the footprint must risk if it is to survive.

4.

In a time before this time, says the ancient Sanskrit text Bhagavata Purana, the cosmic order was in upheaval (Subramaniam, 2016). When the mighty king Mahabali extended his sway over all the worlds, the power of the gods waned. As he performed a sacrificial ceremony, a mendicant dwarf approached the ritual area. At such an auspicious time, no request could be declined so Mahabali was prepared to offer alms and generously so. The little man declined his largesse, asking only for three paces of land. The request was modest, even laughable coming as it did from this diminutive man, but the king granted his wish. Stop, counselled his mentor, discerning that there was more at stake here than met the eye but now that it had been given, the king wouldn't retract his word, even if his future was in jeopardy. Smiling, the dwarf took his first step. With it, he covered the earth for he was none other than the god Vishnu in another incarnation. His second step filled the skies. Where shall I place the third? he asked. The devout Mahabali, duly chastened, bowed his head to receive the divine foot that would push him to the underworld. Thus does a lowly footprint assert its unassailable power.

On its face, this is a lesson in humility. The dwarf avatar brings hubris down to earth and restores a cosmic equilibrium. But other interpretations are subtler. Even as the king grants the request and the dwarf takes the first two steps, it is a lie that is exposed: The earth was not Mahabali's to give, nor could he possess the heavens. The arrogance that believes in their ownership and possession must surrender in the face of the truth. But wait, the story doesn't end there either because Vishnu's intervention itself is not without guile. Mahabali was a just ruler, beloved of his people, but he was an *asura*, a class

of demigod opposed to another group of divine beings called the *devas*. His dominance had roused their jealousy. Vishnu had acquiesced to the *devas'* pleas for intercession and was working his cunning to secure their success—it was this stratagem that Mahabali's mentor discerned when he cautioned the king. Was this act of divine duplicity a mythic depiction of very real histories—the suppression of local populations as new settlers from the northwest entered the Indian peninsula around 1500 BCE? Some think so, seeing in the demonization of *asuras* and other anti-gods, often depicted as dark, lusty, and power-hungry beings, the deep-seated strain of casteist ideologies that continue into the present. Once more, the evidence the footprint offers in the dwarf avatar is ambiguous as divine domination appears to supplant the foot's pedagogic touch. But the suppression of Vishnu's foot is not unleavened. Mahabali was not relegated to permanent darkness so that in some traditions, he reappears annually before his people at harvesttime to much celebration and fanfare.

There is an even earlier conception of the three strides of Vishnu that predates its appearance in the story of Mahabali and the dwarf. In this telling, with his first step, Vishnu covers the earth—in doing so, he creates it, making room for all who dwell here. With his second he makes the sky—the air, ether, space—and with his third he goes beyond our vision to where the god himself dwells. We cannot see this last divine step, but the earth and skies with our sun and moon are visible and what we do with that vision is up to us. These three mythic strides suggest that every step is a creative act that brings a world into being. Each step we take must make space for others. A footstep that makes rather than takes is the one that leaves a footprint. A true footprint then cedes ground to those who come after.

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