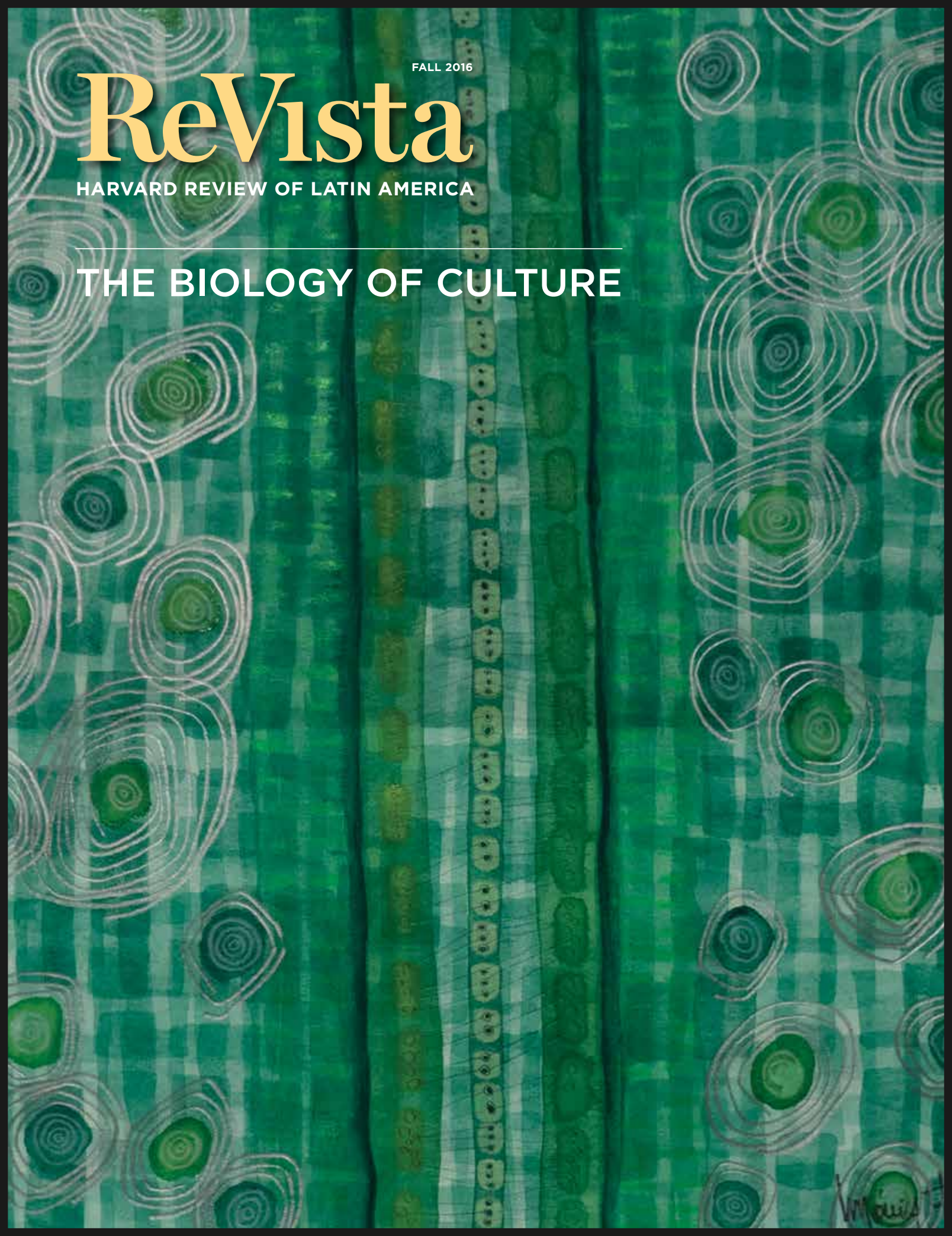


FALL 2016

ReVista

HARVARD REVIEW OF LATIN AMERICA

THE BIOLOGY OF CULTURE



Questions and Answers (sort of)

I'm about to go out to lunch with some friends from Washington (yes, the Venezuelan place again). I just know they will ask me what the next issue of *ReVista* is. My friends and colleagues are used to hearing about offbeat themes: garbage, sports, the Internet, the sky above and the earth below, natural disasters.

Sometimes I get asked how I get my ideas. I tell them about my long list. Some ideas come from things I read; some come from talks or news events; some come from readers; some come from colleagues and professors.

My colleagues and friends often inquire how we manage to get the great visual images for issue after issue when we don't pay our collaborators or photographers. I tell them *ReVista* is aimed at building community, that it's a collective exploration of many different topics, and besides, it provides a great item for a portfolio.

And now I can tell them about our first ever "Best of *ReVista*" photo contest that provides a cash award to the winners in professional and emerging photographers categories (see p. 46 for this year's winners and honorable mentions).

The questions always bring the conversation back to the topic of the next *ReVista*. But when I tell my friends and colleagues this issue is on the biology of culture, there is inevitably a pause. A long one.

I can't quite remember when I first heard the term "biology of culture." It may have been when Brian Farrell, now the director of the David Rockefeller Center for Latin American Studies, gave a talk on "Why We Animals Sing." He wasn't my boss then, just a distinguished professor of biology in Harvard's Department of Organismic and Evolutionary Biology and the father of my long-time intern Gabriela Farrell (who has now graduated!)

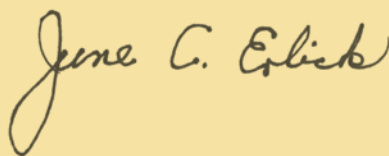
I was curious about the subject and his eloquent talk got me hooked. But I'm not sure it's the first time I heard the term. It may have been when I learned he was teaching a course on the subject or when he gave another talk.

Every time I heard the term, I thought I understood it: the fascinating deep relationship between science and the humanities or, as he describes in this issue "the almost unfathomable, cumulative impact of an intimate, daily connection of humans to their environment over tens of thousands of years." That's the direction DRCLAS is going in, a medley of science and humanities.

So I was thrown aback when a professor friend looked at me with a worried eye and asked about the biology of culture, "Is that determinism?" And I knew I was hooked when I launched into a passionate mini-lecture about how the biology of culture is the exact opposite of determinism.

Now when my friends ask, "What is it?" I tend to say, "Oh, you're going to get to read about coffee and chocolate and healing baths and all sorts of interesting stuff, but read Brian Farrell's 'First Take' first. He can explain it a lot better than I can!"

So read on, reader, and enjoy this issue. You will learn a lot. I did too.



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HARVARD REVIEW OF LATIN AMERICA

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Above photos: Sachamama Center, Peru; Richard Schultes with a Shaman examining plant materials in the Colombian Amazon, courtesy of the HUH libraries; A gall on southern beech tree formed by Darwin's cyttaria. Photograph by Giuliana Furci, Fundación Fungi.

"The cover art for this issue is from a series of watercolors entitled 'You never know,' by Dominican artist Monica Ferreras de la Maza, and each piece represents a dimension of personal awareness. The series title from this contemporary artist is remarkably apropos for our theme bridging arts and sciences because the one thing that is true of science is that we never know. All of science is of varying degrees of uncertainty. Nobel Laureate Richard Feynman once said 'I think it's much more interesting to live not knowing than to have answers which might be wrong.'" —Brian D. Farrell

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ON THE COVER

About Love IV

By Monica Ferreras de la Maza

The Biology of Culture

BY BRIAN D. FARRELL

WE ARE NATURE.

This is the idea behind this issue of *ReVista*, to explore the connections between the arts and sciences through the lens of the biological aspects of human culture. Biological research is science, and cultural studies fall within the humanities. One obvious area of overlap concerns our connections to the environment through the plants and fungi used as food, as domestic materials and as spiritual facilitators. Contributors to this *ReVista* include two DRCLAS Visiting Scholars (Sampeck and Zimmerer) and a DRCLAS Graduate Student Associate (Daniels), as well as Harvard faculty (Pfister, Farrell), other Harvard affiliates (Africa) and a Guatemalan textile expert (Reiche). It seems apropos that we begin with an emphasis on our connections to nature, particularly through plants. A future issue may explore other ways in which the marks of a long prehistory are manifest in everyday culture.

Julia Africa's contribution suggests that there is a measurable health value beyond nutrition in the cultural practices explored by the other contributors, particularly the emphases on use of plants through scents, touch, taste or sight, all of which are combined in the practice of forest bathing, known in Japan as *shinrin-yoku* and in Scandinavia as *friluftsliv*. Aromatherapy has this much in common with the Haitian ritual bathing with aromatic herbs, the Andean improvised selection among dozens of potato tubers to plant a field, the selection, drying and grinding of cacao, and the Guatemalan immersion of deepest blue dyes. All involve a primarily sensual experience in a ritualistic context, reinforcing the sense of participation in something larger. This is at the core of religions, according to William James, the strength of belief of participation in something larger, older and more important than one's self, a feeling that is reinforced by sensory input from smell, sight and sound.



Taino stone zemi.

Knowing more about these intertwined elements of biology, nature and culture can only increase our appreciation and with it, the positive effects on our lives.

The arrival of people from Asia to the Americas more than 10,000 years ago sets the time frame within which they first discovered the uses of the unique biodiversity they encountered, then applied selective breeding where appropriate, and finally developed a rich cultural milieu centered on their relationships to their new environment. The plants they domesticated included the tiny tubers of ancestral potatoes that through generations of selective breeding increased in size and diversity to finally numbering over 4,000 different kinds, each with a special quality valued by their breeders. Same for chile peppers. Corn, cacao, peanuts, cassava and innumerable beans and squashes are just a few more of the results of this history. On the other hand, many fungi used as food in southern temperate Chile were not domesticated but do have close relatives in northern temperate regions including Asia. These are surely independent discoveries of

their uses on each side of the equator, but the willingness to explore and consume fungi is a cultural value that may well have persisted through the thousands of years of slow migration across the tropics from the northern temperate zone to southern temperate Chile (the wonder is why some cultures have lost this value).

People so closely in tune with their environment would surely experiment widely with plants and fungi they encountered, and no doubt some of these particular species proved to have the psychoactive effects famously documented by Richard Schultes, extending the natural environment to the spiritual world.

The particular examples outlined in these contributions to *ReVista* only hint at the almost unfathomable, cumulative, cultural impact of a intimate, daily connection of humans with their environment over tens of thousands of years, and are only a very few of the fruits of this long history. Imagine what cultural wealth was lost when the vast majority of indigenous peoples disappeared from the Americas, a wealth only hinted at in the very few remaining codices of the Aztecs and Mayans.

Knowing more about these intertwined elements of biology, nature and culture can only increase our appreciation and with it, the positive effects on our lives.

Brian D. Farrell is the director of the David Rockefeller Center for Latin American Studies. He is also a Professor of Biology in the Harvard Department of Organismic and Evolutionary Biology.

FROM CHOCOLATE TO POTATOES



Kathryn E. Sampeck *Cacao Biology, Chocolate Culture A Superfood* • Karl Zimmerer *Agrobiodiversity as Jazz Improvisation, Foodscape Change and Continuity* • Donald H. Pfister *Shaping Landscapes, Cuisine and Commerce*



Cacao Biology

Chocolate Culture A Superfood BY KATHRYN E. SAMPECK

CACAO, A TREE WHOSE SEEDS PEOPLE use to make chocolate, has long been a way for people to understand the world. For pre-Columbian Mesoamericans, cacao linked people to each other, the plants, animals and places around them, and to the divine, the environment seen and unseen. In a panel from the Dresden Codex, one of the few pre-Columbian Mesoamerican books that survives today, the Maya god of sustenance K'awil is seated, holding a bowl containing cacao seeds. The text indicates that "First or Honored Maize's sustenance is cacao" (<http://www.mayacodices.org/frameDtail.asp?almNum=326&frameNum=1>).

In Mesoamerican terms, this makes cacao a superfood! Maize is and was the crucial staple for Mesoamericans, the foundation of the world. What sustained this foundation? Cacao.

This interpretation of environmental relationships of and through cacao was equally vibrant for newly arrived colonists in the 15th and 16th century. The first encounter with cacao happened during Christopher Columbus's fourth voyage, when the expedition happened upon a trading canoe off the Yucatán coast. The Maya vessel held a dizzying array

of goods; of all this bounty, cacao stood apart from the rest. Ferdinand Columbus, Christopher's son, described how the canoe held "many of those almonds [cacao seeds] that those of New Spain have for money, which they seemed to hold in high esteem, because when these things of theirs were placed in our ship, I noticed that if just one of these almonds dropped, they all immediately bent to recover it, as if an eye had fallen out, in that moment it seemed that they did not remember themselves, being taken away from their canoes as prisoners into the ships amid people so ferocious and strange as we are compared to them" (translation of Italian aided by historian Matteo Binasco). Only the merchants' fear of losing cacao was greater than their fear of the potentially dangerous newcomers, triggering a panicked recovery of what the strangers so thoughtlessly fumbled. It was the first lesson in what cacao was worth.

This pedagogical value of cacao grew even more over the course of the 16th and 17th century. Early colonial medical treatises described and depicted in meticulous detail the cacao tree, its flowers, fruit and seeds. In her 2011 anthology, *Prints and the Pursuit of Knowledge in Early Modern Europe*, Susan Dackerman argued that early modern Europeans appreciated drawings and prints for their scientific and practical knowledge as much as their aesthetic or moral value. Systematic knowledge of the biotic world simultaneously addressed interests in medical understanding, economic strategy, personal utility and the blossoming of science. Historian Londa Schiebinger, in her 2004 book, *Plants and Empire: Colonial Bioprospecting in the Atlantic World*, noted how early modern bioprospecting "worked hand-in-hand with European colonial expansion" such that "their inventories, classifications, and transplantation...[were] the vanguard and in some



Panel from the Dresden Codex shows Maya god of sustenance, K'awil. Opposite page: *Theobroma bicolor* (also known as pataxte) fruit. Pataxte is the wild progenitor of domesticated cacao and is also edible.



Theobroma cacao flower bud.

Cacao produces best by receiving pollen from a different tree; minuscule midges are pollinators of cacao, but also possibly aphids, ants, thrips and wild bees.

cases the ‘instruments’ of European order.”

Recording and classifying the biome was a project that instilled order in colonizers as much as indigenous residents. A crucial concern for recently arrived colonists was how the new place would affect their wellbeing. Early modern ideas of health were based on the premise that the healthy body was a balance of four humors (fluids): black bile, yellow or red bile, blood and phlegm. Historian Rebecca Earle, in her 2012 book *The Body*

of the Conquistador: Food, Race and the Colonial Experience in Spanish America, 1492–1700, argued that for 16th- and 17th-century Europeans, food was “the single most important factor in shaping human health.” Food provided necessary humoral opposites to restore constitutional balance: “a change in diet, like a change in environment, could transform an individual...the human body was thus in a state of continual flux...bodies, far from being hermetically sealed off from the outside world, were continually open

to the impact of their external environment.” These early treatises tried to determine the place of cacao in the wide world as well as within this effort to maintain a balance in this individual humoral scheme.

Cacao biology is also a balancing act: the right amount of sunlight and shade, enough but not too much moisture, and help from tiny insects to pollinate its flowers. Cacao produces best by receiving pollen from a different tree; minuscule midges are pollinators of cacao, but also possibly aphids, ants, thrips and wild bees. These wild rainforest insects need microenvironments that encourage them to thrive. Rainforest animals help create insect breeding grounds. For example, peccaries create mud wallows to cool themselves, a damp and fertile setting for midges to flourish. The sweet and fleshy cacao fruit is a favorite of American



Blossoming *Theobroma cacao* flower bud.

primates, particularly howler monkeys. Bits and pieces of partially eaten cacao fruit dropped by foraging monkeys help attract midges to the tree's flowers; immature midges (microscopic, bristly yellow worm-like larvae) develop in rotting material such as empty cacao pods, and primate foraging also disperses uneaten seeds.

One of the first scientific expeditions that focused on ecology—a symbiotic plant and animal world—was a late 17th-century study that included cacao. The city of Amsterdam awarded Maria Sibylla Merian a grant to travel to Surinam with her daughter Johanna Helena to study and record insects and their plant and animal habitats there. Already an established artist and scholar, Merian arrived in Surinam in 1699 and over the course of two years made sketches of local insects, animals and native and introduced

plants. Her masterwork, *Metamorphosis insectorum surinamensium*, is spectacular in its intricate detail, groupings of insects with plants and animals, and depictions of imperfect states: diseases, rot, and developmental stages. The 1719 edition printed in Amsterdam held in the Houghton Library is an elephant folio-sized masterpiece, with gilt page edges and gilt lettering in the title page. The 1719 edition has a delightfully illustrated frontispiece and an additional 12 illustrations, one of which includes cacao, that the first edition, printed in 1705, does not.

Merian showed how the flawed is beautiful, and that beauty can bring deeper understanding. It was an aesthetic pedagogy that called attention to what was often rejected, dismissed, unnoticed or denigrated.

Her observations, however, were

couched within a system of economic as well as aesthetic value. Historian Janice Neri, in her 2011 book *The Insect and the Image: Visualizing Nature in Early Modern Europe, 1500-1700*, observed that “it was in this milieu of preparing, circulating, and selling naturalia that Merian learned to see the natural world as composed of beautiful objects that could be bought and sold for profit... objects of exchange that could travel between continents and within cabinets; the techniques she developed for processing the natural world were the outcome of her immersion in the practices and culture of seventeenth-century natural history, but were also embedded within the practices of the global trade in commodities that came to serve as the foundation of the economic prosperity of early modern Europe.” At the same time, Merian observed the bitter cost of this prosperity. Merian

made social and cultural observations that were as keen as her botanical and entomological ones.

As part of her aesthetic pedagogy, Merian also paid attention to the social setting of plants and animals, recording local uses for plants as well as “the indigenous names of the plants, because they were still in use in America by both the locals and the Indians.” Her social record was a frank critique of Dutch planters’ treatment of natives and black slaves: “The Indians, who are not well treated when in the service to the Dutch, use the seeds [of the plant *flos pavonis*] to abort their children, so that their children will not become slaves as they are. The black slaves from Guinea and Angola have demanded to be well treated, threatening to refuse to have children in this their state of slavery; nor do they have any; indeed they sometimes even kill themselves on account of the usual harsh treatment meted out to them.” Coercion and constraint along lines of gender were inextricably, physically part of Merian’s own work: the guild system in Europe prohibited women from painting in oil. She instead painted vibrant works of watercolors and gouache.

Just a few years before Merian would arrive in Surinam, the Archbishop of the Diocese of Guatemala, Pedro Cortés y Larraz, surveyed the state of its parishes through personal visits as well as questionnaires circulated to priests in his jurisdiction. Like Merian, Cortés y Larraz was interested in meticulous recording, but for more directly economic, moral, and social reasons, yet cacao was at the heart of some of these observations. He made three trips to the Izalcos region of what is today western El Salvador between 1768 and 1770. In the 16th century, the Izalcos was an unsurpassed producer of cacao—the homeland for the cacao beverage known as chocolate. The native Izalqueños held on to their lands and managed the work on them because Spaniards wanted them to continue to produce astronomically high yields. In his 1770 *Descripción Geográfico-Moral de la Diócesis de Goathemala* (Moral and Geographic Description of the Diocese of

Guatemala), Cortés y Larraz complained bitterly that residents of Caluco, one of the principal Izalcos region indigenous towns, were choking off their best productive potential, leaving cacao trees untended, to the point that people were suffering from malnutrition. Cacao ecology required willing participants, which meant that protest through neglect made cacao a way to resist.

Ecologies of cacao were in a symbiotic relationship with colonial ecologies of gender, labor and commerce, a nexus of cultural relationships that also included classification of types of people. During his 2016 Nathan I. Huggins lectures for the Hutchins Center for African and African American Research, Ben Vinson III spoke about the formation of Spanish American social classification schemes, what he termed *castizaje*. Colonizers in places like Mexico employed such broad, varied, sophisticated and precise terminologies for classifying types of people that they surpassed that of British and Dutch colonies. The emergence of what eventually became the caste (*casta*) system and racial thinking had its foundation in moral concerns, particularly the religious anxiety over maintaining the purity of Christian blood (*limpieza de sangre*). The intimate and carnal relationships that blood mixing implies made it also, as Vinson observed, a product of great fluidity; the concept of caste could live, contract, stretch, and grow, enabling it to survive as an idea and eventually merge with the modern Hispanic concept of race as it developed in the 18th and early 19th century. Like Merian’s botanical works, caste paintings depicted evocative, imperfect, yet classified social ecosystems of place, person, and material worlds. These efforts to visualize social control in fact captured colonial metamorphosis. The cultural metamorphosis captured by *casta* classification was a kind of mythological reverse engineering of social species—to say what people should be, then make them fit that classification, a usually awkward and often unworkable retrofitting.

Social balance was difficult to maintain



Ecologies of cacao were in a symbiotic relationship with colonial ecologies of gender, labor and commerce, a nexus of cultural relationships that also included classification of types of people.

in the face of a rapidly declining indigenous population. Both free and enslaved people of African descent were increasingly important not only as agricultural labor in cacao orchards, but also to provision daily needs for indigenous Izalqueños in subsistence, supplies, and even in spiritual life. During the 17th century, major cacao production centers shifted

to regions farther south in Central and South America and an almost exclusive reliance on enslaved labor. The spread of cacao and chocolate ecologies to more places was fertile, making chocolate available to more and more people, but propagated also a bitter social and economic system.

Among all American plants, cacao called special attention to a healthy balance and thoughtful regard in environmental relationships. Cacao was an eye of the storm of colonial desires for profit and order and countercurrents of the dark and brutal forces of social inequality and resistance to them. Early treatises of “exotic, elegant, and ordered spectacles of nature,” as Neri phrased it, showed how cacao held the potential to promote wellbeing in the world in people’s bodies and in their lives, to teach poise during a precarious and tumultuous time. In a 2003 research note “On the Paired Variants of TZ’AK” (www.mesoweb.com/stuart/notes/tzak.pdf), Peabody Museum research associate and epigrapher David Stuart emphasized how in Mayan concepts and writing, “certain things or substances cannot naturally exist without their respective partners.” In this sense the signs do not simply represent Levi-Straussian “binary oppositions” in nature, as is often supposed, but rather paired and complementary illustrations of a conceptual whole. Likewise, the conceptual whole of colonial understanding of the world was not just of plants and animals, but also the dynamic social metamorphosis of gender, labor and race. Cacao offers a vantage point for understanding these different elements of a colonial ecology of knowledge.

Kathryn E. Sampeck, a 2016 DRCLAS Central American Visiting Scholar, is an Associate Professor of Anthropology at Illinois State University. The Secretary-elect for the Archaeology Division of the American Anthropological Association, she is also delighted to be a Non-resident Fellow, Du Bois Research Institute, Hutchins Center for African and African American Research.



Mature cacao flowers. Opposite page: Cross-section of a *Theobroma bicolor* cacao fruit pod.



The open-air markets of Latin America illustrate agrobiodiversity.

Agrobiodiversity as Jazz Improvisation

Foodscape Change and Continuity **BY KARL ZIMMERER**

YELLOW AND PURPLE MAIZE, A MULTITUDE OF assorted beans, sculptural manioc and a plethora of potatoes are a vivid illustration of the biodiversity of foods in the open-air markets of Latin America. Even in the supermarket era of the early 21st century, I love to marvel at what we call agrobiodiversity, shown in the visual variety of the market's staple grains and tubers, as well as the lush fruits and vegetables and assorted other products. I walk through the market, smelling the mix of flowers and spices and tasting samples of potatoes and sauces—a highly

sensory experience.

Such agrobiodiversity is complex. Imagine the reality of more than 4,000 local varieties of Andean potatoes, with about eighty varieties harvested from a mere handful of fields. Yet in my abundant talking with vendors, farmers, cooks, consumers and chefs, this agrobiodiversity begins to make sense.

That's what I do as a research scientist and professor, interweaving the environmental, ecological and social sciences in the field, lab and classroom. My projects with growers and consumers range from

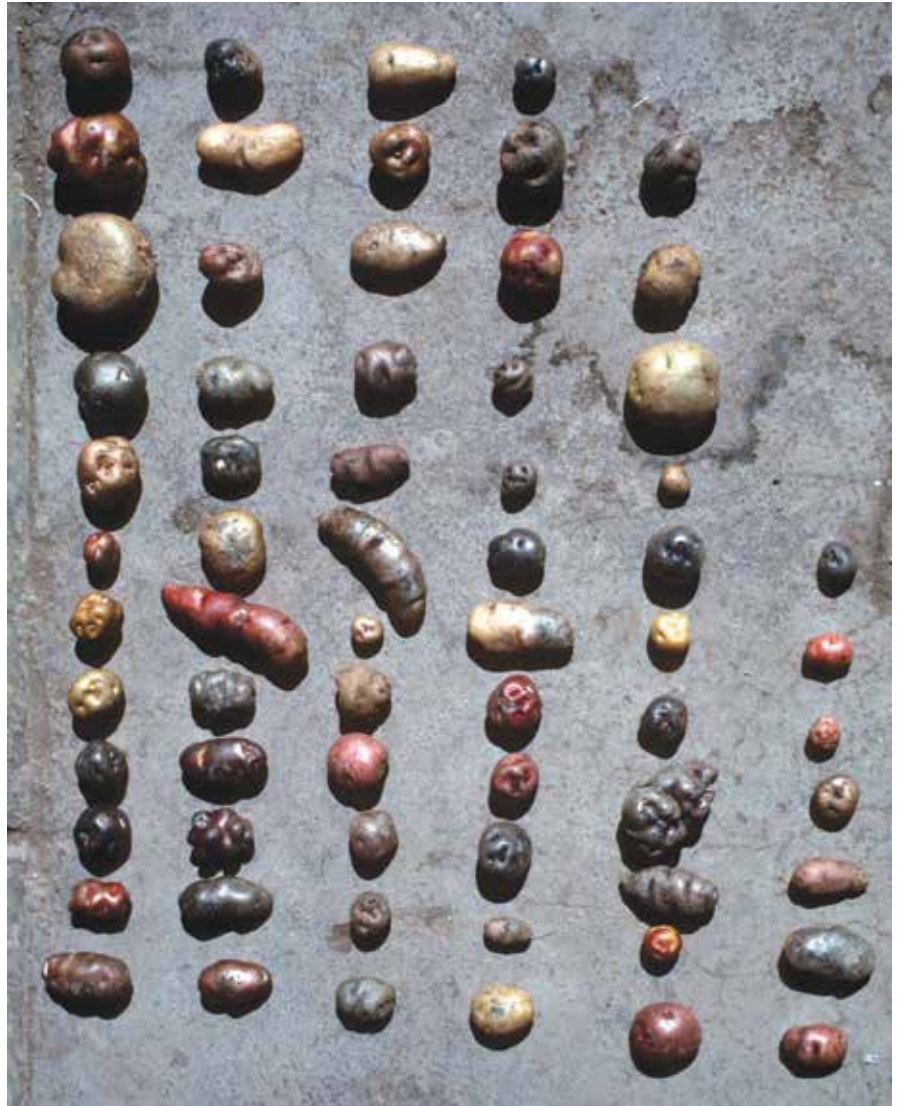
ones including Andean potatoes and the important “minor” edible tubers and grains to the complexes of maize, beans and manioc. My investigations encompass Peru, Bolivia, Ecuador and other parts of South America as well as Mexico, Central America and the Caribbean—and beyond. Now in my third decade of these activities I relish every chance to explore further the worlds of foods and their environments.

Widely recognized as a global center and hotspot, Latin America is home for much of the world's agrobiodiversity.

The landscapes of food production and consumption—foodscapes for short—are undergoing rapid change. This high priority challenge crosses classic disciplinary boundaries and has led me to new research as a visiting scholar at Harvard’s David Rockefeller Center for Latin American Studies (DRCLAS). My research project—“Foodscape Sustainability: Spatial and Environmental Planning in the Anthropocene”—is motivated in part by scientific proposals that the accumulating magnitude of global environmental changes caused by human beings has never happened before. Scientists say it’s exactly this level of human environmental impacts that now requires the re-classification of our current geologic epoch to the Anthropocene—“the epoch of humans.”

Interdisciplinary knowledge is a key to understanding biology-and-culture interactions in the Anthropocene. The way I view interdisciplinarity in general is to regard the academic disciplines as homes. Interdisciplinarity is akin to travel or sojourning. Just as most of us need to have both home and travel in our lives, this combination is uniquely vital to biology-and-culture approaches. To advance my research on Latin American foodscapes amid current changes, for example, I’m designing an interdisciplinary conceptual framework with Harvard’s Graduate School of Design. This framework seeks to understand the continued role of foodscapes amid the transformative dynamics of expanding urbanization and the way the countryside is now forming a continuum with the city.

Ever since I got my doctorate in geography at the University of California, Berkeley, interdisciplinarity has been a foundation for my work, focusing on human-environment interactions and the cultural biogeography of food plants, principally where the diversity occurs in space and time and how it interacts with cultures. My approach selectively integrates from the fields of ecology, anthropology, planning and design, as well as the human health and nutrition fields. I’m currently evolving this approach



Andean potato agrobiodiversity reflects influential cultural logics.

further as I co-lead agrobiodiversity researchers from multiple disciplines in the Europe-based International Agrobiodiversity Workshop. In this workshop, we are posing key questions and identifying innovative ways to fill gaps and advance current scientific knowledge—all of which has relevance for Latin America.

The integration of interdisciplinary knowledge is essential to understanding the biology of culture. This integration takes many forms. The unity and convergence of diverse ways of knowing—what E. O. Wilson terms consilience (“jumping together”)—is especially inspiring. While the integration of different kinds

of knowledge varies among interdisciplinary approaches, Wilson’s consilience is a valuable ideal in any such venture and particularly one aimed at agrobiodiversity and foodscapes.

SEEDTIME: COUPLED SYSTEMS AND JAZZ IMPROVISATION

Policy-relevant science and scholarship are addressing core questions about agrobiodiversity. Is agrobiodiversity currently viable and, if so, how and why? How and why is it valued by food-growers and consumers? Are some aspects of current food agrobiodiversity important to certain cultures? How can we support

and strengthen this viability? Present-day agrobiodiversity reflects both cultural and intrinsic biological values, as well as resource usefulness in such contexts as food supply, climate change and concerns for human and nutritional health.

Much biology-and-culture research puts emphasis, for good reason, on the immediate adaptive functions of agrobiodiversity, ranging from the agronomic (produces well) and ecological (withstands drought) to culinary culture (furnishes favored foodstuffs, often ones that are highly flavored). Such adaptive functions can correspond to the sustainability-enhancing “virtuous circles” of the coupled human-natural systems model known as the CHNS. This model, which accounts for the interactions of human societies and environmental systems (such as agrobiodiversity), has been advanced by sustainability scientists such as Bill Clark, the Harvey Brooks Professor of International Science, Public Policy and Human Development at Harvard’s Kennedy School. Determining these immediate functional capacities and linkages is critical. But, as Clark and others point out, it’s not the whole story—the work requires identifying broader and longer term patterns of biology-culture interactions.

What I’m finding in my new DRCLAS research is that the concept of culture must be expanded in coupled-systems models of agrobiodiversity. This growing evidence suggests the interdependence of agrobiodiversity on a significantly richer and fuller set of cultural activities that encompass art forms and landscape skills. To illustrate these new insights I’ll highlight the biology-culture interactions surrounding Andean potatoes, a staple food complex and cultural mainstay in western South America.

Andean potato agrobiodiversity occurs between Colombia and northern Argentina and Chile, with the major concentration in Peru and Bolivia. It’s made up of four domesticated species and more than three dozen closely related wild counterparts. The cultivated species are further divided into more than 4,000

local varieties called landraces. Each of the local varieties is individually named; many are staple foods, and the growing and consuming of Andean potatoes is culturally significant. Taxonomic and genetic studies continue to shed new light on their differences and similarities, but culturally they are perceived as unique. The continued occurrence and co-evolution of Andean potato agrobiodiversity depends on as many as eight to ten million smallholder farmers, many of them indigenous Quechua and Aymara people.

Local producers and consumers prefer native Andean potatoes and certain local varieties. “Provides yields notwithstanding problems” and “the best to eat,” they explained to me over and over again. Such well-defined adaptive functions are key to how and why growers and eaters continue to value potato agrobiodiversity up and down the Andes.

A closer look also reveals individual behaviors are linked to powerfully influential cultural logics. For example, in long-term research we’ve consistently found single-field mixtures of the 20-30 local varieties, or more. Yet a quarter to a half of these varieties are typically chosen by farmers as mixtures of seed tubers, rather than being selected individually for specific adaptations. How is this agrobiodiversity being culturally selected in the seed mixtures that each year continue to account for more than 4,000 Andean potato varieties?

Addressing this question takes us to the selection and planting of the seed tubers. Here varietal mixtures are at least partly handled en masse in fields and storehouses where farmers, mostly women, choose and plant their potatoes. While having some variety-specific intent—they commonly say, “I’m always certain to seed *chequefuru*,” or other favored local varieties—their seed decisions are rapid, efficient and also often based on a gestalt-like impression. They have an immediate and perhaps innate sense of the overall composition of the colors and shapes of seed tubers that are piled together.

“These mixtures are customary for the mixed-potato field” explain many grow-

ers about the recurring range of varietal diversity. Choosing the mix of seed tubers also relies on the sense of what is proper, right and beautiful. This combination of qualities associated with the selection of seed tubers, and hence agrobiodiversity, led some time ago to my first published model that referred to these practices as the moral aesthetics of foodscapes. My current research is expanding this view considerably.

Most importantly, my research and those of colleagues Stef de Haan, Steve Brush and Connie Almekinders in the International Agrobiodiversity Workshop are posing new questions about how agrobiodiversity practices may be incorporated into major cultural idioms. One notable parallel is weaving, which like Andean potato-growing and seed are widespread and visually stunning. Andean textile-making relies on the selection of different thread colors through rapid picking-up motion, known as *pallay* in Quechua, that culturally is closely analogous to the choosing and determination of the varietal mixtures of seed tubers.

Selection and cognitive-based decision-making in weaving is based on considerations of color and shapes or designs. Color-based selection is used in choosing both seed and thread through a process that has been likened to improvisation, rather than itemized pre-calculation. This comparison to improvisation and specifically to jazz music, an apt metaphor proposed by Andean weaving specialist Ed Franquemont (B.A. Archaeology, Harvard, 1967), is deeply resonant also with the seed-selection processes of Andean potato agrobiodiversity. Split-second decision-making is used to build varietal diversity as the tubers are added to seed piles.

Visual knowledge and skill for the building of stonewalls is another example of such a holistic way of making choices. Current and past expertise undergirds continuing extensive stonewall-building in the Andes. Stones of different shapes and sizes are incorporated into walls through processes of bricolage that resemble the multi-variety seed piles of Andean

potatoes, including the new variants that emerge from botanical seed and become integrated in the patterns within as well as among fields. The Quechua concept *charqusa* is applied to both potato fields and certain types of stonework. In developing these interpretative insights on agrobiodiversity as jazz improvisation I'm fortunate to work with the Harvard art and archaeology group specializing in Andean culture and visualization.

Cultural idioms offer subtle yet compelling analogies that underscore agrobiodiversity's deeply entwined biological and cultural dimensions. Mutual interdependencies must be strengthened to reduce the risks of agrobiodiversity decline. This relationship also suggests a new restatement of the debate between Wilson, who favored evolutionary explanation based on well-defined adaptation and his Harvard colleague, Stephen Jay Gould, an outspoken critic of so-called adaptationism.

FOODSCAPES: CHANGE AND CONTINUITY

The expanding importance of agrobiodiversity is not confined to the confluence of culture and biology. It extends throughout landscapes where food and the environment now occupy conspicuous places at the table of high-priority issues in Latin America and globally. These new foodscapes are being imaginatively and meticulously created by celebrity chefs, sophisticated certification initiatives concerned with healthy foods and environmental sustainability, and NGO initiatives. Renewed interest in food systems that prioritize agrobiodiversity is being generated by grower and consumer groups as well as by social movements like Latin America's Living Well activists. No doubt idealistically, proponents of such foodscapes hope to produce the dietary staples consumed by large numbers of people, including periurban and rural populations that now number disproportionately among the world's poor.

In Lima, the Peruvian Institute for Nutritional Research (IIN) is located on the Avenida La Molina near the International Potato Center (CIP). Working with



Weaving relies on cultural decision-making.

an IIN-directed team with CIP collaborators, we are currently developing field-based research in Huánuco to couple the concerns of health and nutrition, on the one hand, and with agronomic production, agroecology, and agrobiodiversity, on the other hand. There's hope this pair of priorities once considered antithetical—as etched in *ReVista's* 2001 Food issue—can become further joined.

It's a formidable challenge to fuse the so-called consumer and producer polarities of food. The agrochemical

and monoculture-dependent agribusiness sector and the global industrial food system have enlarged significantly since 2001. But this currently dominant foodscape is neither predestined nor homogenous. I strongly believe that new biology-and-culture perspectives are vital to developing viable alternatives to unsustainable agricultural and food systems.

Today's foodscape transformations are being fueled by rapid urbanization and major environmental changes. Throughout Latin America, and the world, the movements of people, ideas, and investment interconnect the urban and rural as never before. These urban-rural connections and environmental changes are transforming foodscapes in Latin America and elsewhere, leading to new challenges and opportunities.

Shortages of affordable seed suited to local growing conditions, for example, is spurring citizen science and cellphone-supported networks of seed exchanges in many areas. My new research in these projects, aimed at supporting seed networks and agrobiodiversity in areas vulnerable to climate change and food insecurity, extends from countries in South and Central America to Africa and Asia. These initiatives and many others require innovative research, teaching, ideas and policy. Such effort to expand and enhance the sustainability of foodscapes must be able to draw on a new generation of biology-and-culture approaches.

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Fungi and Forests

Shaping Landscapes, Cuisine and Commerce **BY DONALD H. PFISTER**



WHERE WE LIVE, WHERE WE COME FROM and the organisms that surround us shape our culture. What we eat or do not eat often hints at our deepest ancestral roots. The peoples of the world have been characterized as being either mycophilic, those who use and incorporate mushrooms and other fungi in their cuisine or mycophobic, those who avoid them. Southeast Asia, Italy, the Slavic countries, areas of the Amazon and Mexico are among the regions recognized to support cultures that are mycophilic but much of the English-speaking world is traditionally considered to be mycophobic. Some have argued that these biases are deeply rooted in religion and migration patterns. A recent study concluded that both tradition and external input in Europe, such as trade and cultural exchange, are strong factors shaping modern mushroom consumption behavior. Given the mix of indigenous populations, high historic and recent immigration and the development of exotic tree plantations in parts of South America, particularly in Chile and Argentina, the Southern Cone provides a rich context for reflection on concepts of native, foreign, wild, exotic and introduced as related not only to consumption of fungi but also to

trees, forests and people.

An ancient use of mushrooms as food in Chile is documented through archeological study but one of the first reports by a European of fungi as food seems to be that of Carlo Giuseppe Bertero, an Italian who settled in Chile in 1827. He gave a common name to this edible fungus, *dignénes*, said to grow on a species of the southern beech, a tree in the genus *Nothofagus*. Trees of this genus form a large part of South America's temperate forests. Bertero wrote that indigenous people ate the *dignénes*, but he himself found the fungus disagreeable. Charles Darwin encountered and collected a similar *Nothofagus*-inhabiting fungus in his travels to Tierra del Fuego on the *Beagle* in 1833. They were eaten by "the poor people," he reported. He noted that the taste was sweet. The fungus Darwin collected was later named *Cyttaria darwini* while *Cyttaria berteroi* was the name given to Bertero's fungus. Ultimately these were joined in the genus *Cyttaria* by several other species all from southern South America, Australia and New Zealand. All the cyttarias occurred only on *Nothofagus*.

Darwin wrote, "In the beech forests the trees are much diseased; on the rough excrescences grow vast numbers of yellow balls.... When young they contain much fluid and are tasteless, but in their older and altered state they form a very essential article of food for the Fuegian. The boys collect them, and they are eaten uncooked with the fish."

The cyttarias are known by several common names in the Americas, such as *llao-llo*, *pan del indio*, *digüeñe*, *dihueñe del ñirre*, *pinatra*, *caracucha*, *quideñe*, *lihueñe* and *dapa*. Their quality as food has been analyzed and it is comparable to other mushrooms. The deeply embedded tradition of collecting these fungi has continued and they are found in markets and high-

end restaurants. Today the cyttarias are a sustainably harvested cash crop for rural populations. The fungus rarely seems to kill the trees even though infected branches and trunks become burlled and distorted as noted by Darwin. These fungi have not been grown on artificial media or away from the living host plants. To continue the harvest, native *Nothofagus* forests must be sustained.

The species of *Nothofagus* have been, and still are, trees of importance for timber and fuel; the burls, produced on the infected trees, are carved for implements and souvenirs. These trees are mycorrhizal; that is, fungi associated with their roots promote tree growth. These mycorrhizal fungi belong to several taxonomic groups including those that produce mushrooms and truffles. Aside from the cyttarias, several fungi traditionally have been eaten in Chile and some of these are mycorrhizal—for example, *Ramaria flava*, *R. subaurantiaca*, and *R. botrytis*, all called changle or chandi; *Boletus loyo*, loyo; *Gyromitra antarctica*, chicharrón, which despite being considered poisonous is collected for export to Europe where it is eaten after cooking; and *Grifola gargal*, gargal, a wood-rotting fungus. In the Northern Hemisphere we eat *Fistulina hepatica*, another wood-rotting fungus; in the south they eat a cousin, *Fistulina antarctica*. All of these, whether wood rotting or mycorrhizal, are dependent on the integrity of the native *Nothofagus* forests.

The idea that fungi perhaps were long part of culinary tradition is highlighted by the fact that loyo was the name under which *Boletus loyo*, described in 1912, was known by the local inhabitants and gargal, likewise, was the indigenous name for the *Grifola* mentioned above. It was formally described only in 1969. It is a sister to the Northern Hemisphere's hen-of-the-woods, *Grifola frondosa*. The fact that these prized



Above, clockwise: *Suillus*, unidentified, *Fistula Antarctica*, *Lactarius deliciosus*, unidentified, unidentified, *Suillus*. Opposite page: Man with mushroom. Opposite page: David Espinoza, a student of mycology from Chile, admiring *Boletus loyo*.

edible mushrooms received local names long before scientific names were proposed confirms the position in which these fungi were held in these areas.

Regions in the Southern Cone have experienced dramatic landscape/land-use changes. *Nothofagus*, *Araucaria* and *Fitzroyia* forests have been converted to agriculture purposes and native forests across

the region have been cut and replanted with Northern Hemisphere pines and *Eucalyptus* species from Australia. The introduced trees employed in these plantations are also mycorrhizal. These non-native trees have carried with them their own, non-native, fungi, several of which are desirable edibles.

The plantations in Chile have particu-

larly been developed around pines and notable among them is *Pinus radiata*, the Monterey Pine. It is restricted to relatively small populations in its native range in California. It is fast-growing, reasonably disease-free and yields high quality lumber and pulp for paper production. It is one of the most widely grown trees across the southern hemisphere both in the New and

the Old World. The mycorrhizal fungi that have been introduced with this pine, and others, such as Lodgepole Pine, are important as exports in Chile and Argentina. For example, the slippery jack fungus, *Suillus luteus* (callampa negra, callampa de pino, callampa del pino oscura) fruits in profusion in pine plantations. One estimate of harvest is of up to three tons per hectare. It was described from Europe, is found in North America and is obviously highly dispersed. The slippery jack is economically important as a major export commodity. The dried mushrooms are sent to the mycophilic regions of Europe and North America. *Suillus granulatus* (callampa del pino clara) and *Lactarius deliciosus* (callampa rosada) both northern invaders, are also harvested for export. The pine plantations support a timber and pulp industry but they also support a booming mushroom export business.

It is paradoxical then that not only have the plantations directly displaced native forests but the pines also threaten to invade native forests and grasslands. The aggressive spread of introduced conifers is a major threat to ecosystems in temperate South America. Some of their success as invaders can be attributed to the advantages gained by forming fungal associates.

In scientific nomenclature there are often hints about the use or importance of the organism in its name. The name *Lactarius deliciosus* leaves little doubt about its edibility. *Boletus edulis* is the choice edible mushroom, known around the North Hemisphere under a variety of common names—*porcini*, *steinpilz*, *herrenpilz*, *belyy grib* and *cepe*—and *edulis* certainly discloses the trait a mycophile would seek. I counted more than forty uses of *edulis/edule*, *esculenta/esculentus*, and *deliciosa/deliciosus* in species names of fungi from the northern hemisphere. Yet, only a single record of a South American species bearing one of these epithets exists. Carlos Spegazzini described a fungus as *Peziza edulis* (now known as *Rickiella edulis*), a fungus from Paraguay collected in 1880 by Benjamin Balansa. We know that *Rickiella edulis* occurs only in specific regions and forest types of Paraguay, Argentina and

Brazil. There is no mention in the formal description of its edibility but obviously the name suggests it. The original specimen label notes “comestible.” It remains a mystery if it was eaten or who might have eaten it. Gerardo Robledo (Universidad Nacional de Córdoba, Argentina) has collected this fungus and reports that in his experience, there is no indigenous fungal knowledge among the Guaraní people of this region. They do not use fungi; indeed fungi are avoided. They are mycophobic.

The morels, species belonging to the genus *Morchella*, are also forest-dwelling mushrooms although they do not form mycorrhizae. These are among the most desirable of the culinary fungi and they too are a major export commodity in Chile. The biology and distributions of the morels in this part of the world are not well understood. Several species are involved and their taxonomy has not yet been completely resolved. They fruit prolifically in the south where some species become abundant after *Nothofagus* forests have been intentionally burned. This destructive practice has a major negative impact on ecosystems, air and water quality, and, of course, on forest sustainability. On February 10, 2015, the governor of the province of Palena, Miguel Mardones, declared in the press that the fire that consumed 830 hectares of native forest was purposefully set to trigger an increase in morel yields. A major campaign has been mounted to discourage burning. In our lab we are trying to determine which species are being collected and to discover if, by understanding their life histories and geographic origins, we might further support the morel-gathering economy without promoting destructive burning practices.

There are dynamic interactions of many sorts in the intricate ecology of southern South American forests, influenced as they are by trees, people, and fungi from around the world. Trees introduced in plantations and their accompanying fungi have real economic value, but at the same time, many native forests and forest ecosystems are threatened. The introduction of non-native trees has changed how we



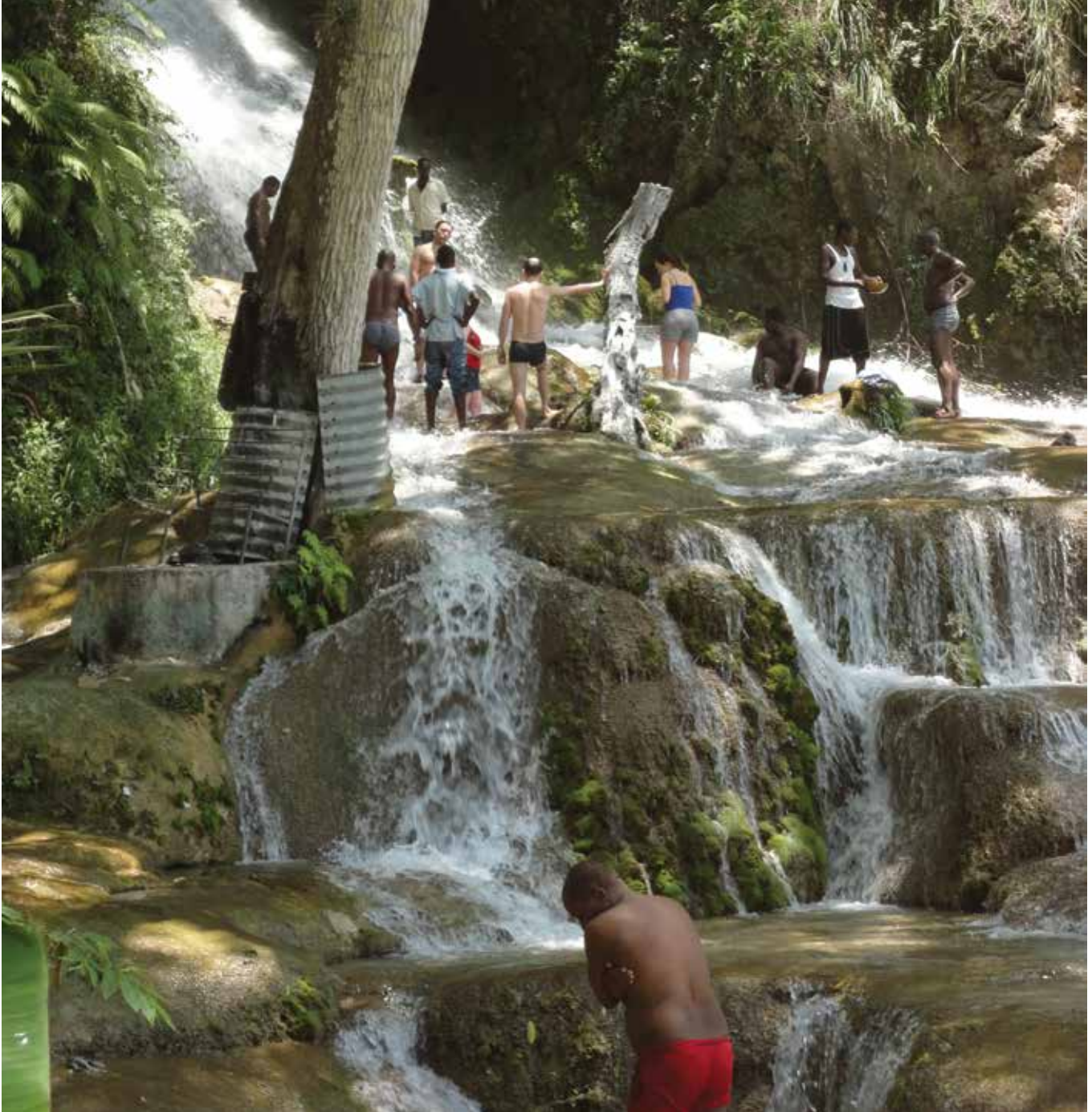
Giuliana Furci, Director of the Fundación Fungi, Santiago de Chile, with *Grifola gargal*.

see the countryside; landscapes have been altered in appearance and in composition. Familiar vistas have been modified. These new arrivals superimpose change on indigenous cultures as well. Some indigenous fungi in the native forests traditionally have been used as food and form an important part of the local economy. Economically, trees and forests, both indigenous and introduced, are valued. But, we know as well that the trees of the native forests support fungi, critical to tree and forest health, that are found nowhere else in the world. The interactions of trees, fungi and people touch upon nearly every facet of life in this wonderfully rich and diverse region.

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HEALING, SACREDNESS AND BEYOND



Julia Africa Living with Landscapes, The Primacy of Nature • Kyrah Malika Daniels The Coolness of Cleansing, Sacred Waters, Medicinal Plants and Ritual Baths of Haiti and Peru • Olga Reiche Indigo in Guatemala, Textile Dye and the Biology of Culture • Brian D. Farrell The Biology of Consciousness, From William James to Richard Schultes



“Two in the city”: Fuente de Neptuno fountain in Santiago de Chile.

Living with Landscapes

The Primacy of Nature **BY JULIA AFRICA**

IN MANY PLACES IN AMERICA, ASIA AND Europe, your doctor just might pen a “park prescription” urging green space use or send you to a “forest bathing” spa that touts nature’s health benefits. Yet in Central and South America, despite the strong presence of eco-tourism, the targeted use of time in nature as a complimentary therapy to improve health seems less common. While this may reflect different attitudes towards the environment, healthcare, development

or disease transmission (e.g. Zika), it also represents a missed opportunity.

Humans have evolved through adaptation to their surroundings; cities are both relatively recent and often somewhat stressful. We can attempt to create more soothing “habitat” for modern populations through the incorporation of natural design cues such as exposed wood, stone and water in the built environment. Cities provide an abstract reflection of what we know about where

we are and how we came to be. The character of the land shapes inhabitants through climate, structure, materials, sustenance and spirit.

Psychoanalyst Erich Fromm and later Harvard biologist E.O. Wilson developed the term biophilia to capture the “innate tendency to focus on life and lifelike processes” (Wilson, 1984). As Stephen Kellert writes, “the successful application of biophilic design fundamentally depends on adopting a new

consciousness toward nature, recognizing how much our physical and mental wellbeing continues to rely on the quality of our connections to the world beyond ourselves of which we still remain a part” (Kellert, 2015). Honoring our reliance on nature as resource and refuge is critical in an era of volatile social, economic and environmental change; accordingly, cultural resilience is firmly rooted in the natural characteristics of place. Biophilia thus bridges urban form and local biome—the naturally occurring community of flora and fauna such as a forest or tundra. It provides language and practice through which we situate our experience of “place” through nature.

What kinds of green matter, to whom, and under what circumstances? Research suggests that higher levels of green vegetation offer real benefits to human health in the form of decreased mortality rates, improved opportunities for physical activity, reductions in exposure to harmful environmental pollutants, increased social engagement and improved mental health. Tools like the US Forest Service’s iTree can be used to help quantify the contribution of urban canopies to metrics that influence health like air pollution reduction, carbon sequestration, decreases in ambient temperature and improvements to adjacent building energy efficiency. We are still learning about the more subtle environmental features that support wellbeing; urban planners, landscape architects and public health officials are exploring how to compose a scene or vista that is maximally “effective” (defined, in this case, as a natural setting that evokes positive physiological and psychological responses in most viewers). Most empirical research has been conducted in Asia (Japan, Taiwan, Korea) and the West (Europe, Australia, and the United States), but the eco-reserves of Latin America provide potential sites for compelling investigations into the influence of culture on environmental preferences.

Environmental preferences arise from a variety of interconnected factors. We

are, first and foremost, bound by our bodies; five primal senses (sight, hearing, touch, smell and taste) orchestrate our experience. It is important to remember that other cultures don’t necessarily divide the sensorium along these lines. Many sensory assessments occur at an unconscious or semi-conscious level, providing a quick appraisal of the landscape for attributes that would contribute to a sense of safety and wellbeing. An indigenous healer in Peru, for instance, referred in the 1978 book *Wizard of Four Winds* to “a sixth clairvoyant sense [that] opens up when all five other senses have been stimulated through the use of hallucinogens and other ritual elements,” providing visions of things that have happened in the past or may happen in the future. Culture often privileges one or more sensory pathways. Indigenous Australians, for instance, navigate long distances via “songlines” that detail landscape through language, rhythm and melodic contour; without the benefit of written language, sound assumes primacy. Chemoreceptors detect blood-borne hormones and drugs, including bioactive aerosols called phytoncides that are released by trees and credited with reductions in blood pressure, improvements in mood, and increases in natural killer “T” cells. The modern practice of “Forest Bathing” in Japan relies on this paradigm, suggesting that hikers are literally bathed in compounds that promote health and well-being (“salutogenic”) just as they might be in a more traditional “onsen” or mountain hot spring. Magnetoceptors detect magnetic fields, which is principally useful in guiding migratory routes that rely on the Earth’s magnetic field but may also provoke responses in people to geological substrata. Most Balinese, for instance, sleep with their heads towards northeast where the sacred Mount Agung lies; this orientation is called *kaja* (versus *kelod*, towards the sea). The primacy of landscape is so great that people who lose their sense of direction are said to have lost their minds. These examples

of synergies between sensory faculties and landscape features underscore how culture, language and belief shape our physical experience of the environment. Further interpretation often focuses on gross structural features (depth, prospect, intensity of color, variety of texture, presence of trees, flowers or water) or mathematical patterns in nature (fractals, Fibonacci sequences) that make some types of plants or scenes more easily intelligible and, the logic goes, appealing. Preferences also change based on age, gender and physical health. But it would be folly to render landscape preference as so rooted in evolution, biology or even mathematics that it escapes the strong influence of culture. Indeed, while we may be primed for biophilia, the expression of our affinity for nature is situated in our lives as individuals embedded in a cultural context.

The use of water is a common biophilic design feature with cross-cultural appeal that can provide sensory refuge and restoration in cities. Water’s many incarnations—ocean, river, creek, pond, wetland, marsh, vernal pool, brook, bay, estuary, dew, cloud, rain, mist, humidity, sleet, snow, rainbow and fog—are critical for sustaining life (ours as well as flora and fauna that we depend on for survival) and provide soothing sensory cues (ambient humidity, refracted light, the sensation of the passage of time). Early cities used fountains or pumps in communal areas to supply water for drinking, cooking and bathing; the legacy of Spanish or Portuguese plazas, generally abutting cathedrals or missions, remains in the older districts of Latin American cities today. The sound of moving water is thought to be fractal in nature, with “regular irregularities” that effortlessly engage and soothe the mind through rhythmicity and complexity. The dominant sound produced by water stems from vibrating bubbles. Bubble size determines resonant frequency, with bubbles from 1.5 to 150mm producing sounds within the 20-20,000Hz range that is audible for humans. Complex natural sources such as steams, pouring

water, rivers, rain and breaking waves generate huge quantities of bubbles and a statistical approach is required to model the sounds produced. The ideal urban water noise would both mask disruptive low frequency noise (from traffic) and restore a sense of tranquility; curiously, the relative tranquility of a water sound intervention has more to do with its character (tonal frequency) or physical presence than with its capacity to obscure the noise of surrounding traffic.

But sound is never just sound. In fact, all sound is received in the auditory cortex, encoded in multiple spectrograms with different degrees of spectral and temporal resolution, and stored as multi-resolution “topographic maps.” This spatial representation of sound is referred to as the ‘tonotopy’ of sound. Specialization of different cortical fields that process natural sounds rely on the trade-off between spectral and temporal precision; different “views” of the spectrogram may be preferable for different goal-oriented behaviors (hunting versus foraging, for instance). One unexplored dimension of spectrograms is what role (if any) the neural basis for shape preference may play in tonotopy and environmental affinity. Curves, non-parallel contours and fractals have well-established appeal visually. Curves and contours elicit higher neural activity and attract eye movements more so than straight contours (with 0 curvatures or parallel contours with 0 angles of convergence) (Amir 2011), while fractals with an order of complexity between 1.3-1.8 (e.g. the branching structure found in the Acacia tree) are most compelling and, potentially, restorative (Ryan 2014). We also understand that experience of sound has a shape: beyond neurobiological spectrograms, a babbling brook might be fractal, a rolling wave parabolic, and wind tidal. The interface between the shape perceived visually, heard sensorially, interpreted and encoded neurologically provides a realm wherein design plays a critical if poorly characterized part. When considering the importance

To design well with water, we can look towards the recent trend of uncovering and restoring buried streams and rivers in cities.

of tonotopy—that is, how sound is systematically represented in the brain, and how sound perception then contributes to interpretation of visual cues in a dynamic feedback loop—I am not aware of research which uses fMRI or EEG technology to demonstrate how sounds (natural or otherwise) can be used to shift the “mapping” of dense, sensorially crowded spaces into something more spacious or comfortable. To the extent that the introduction of natural sounds triggers favorable memories or associative frameworks of embodied experience that counter the immediate surroundings through distraction, displacement, or masking, they may favorably improve the dynamic impression of physical comfort and space in cities.

Although waves breaking on a beach and cars moving on a freeway have similar spectral and temporal characteristics perceived as a “constant roar,” visual input determines their reception. In one study (Watts, 2009), researchers logarithmically averaged a 65dBA audio track that merged recordings of a freeway and beach respectively and then used fMRI data to assess neural responses to two scenes that shared the same audio track (beach and freeway merged) but were visually distinct (beach vs. freeway) and considered tranquil (beach) vs. non-tranquil (freeway). Under identical auditory but different visual input circumstances, the authors used “effective connectivity” as a primary outcome, analyzing the degree of connectivity between the auditory cortex and other areas of the brain as a marker of integrated (sensory, cognitive and affective) perceptual experience. They found that a

tranquil visual input (beach image) with sound enhanced audio-cortical connectivity whereas the non-tranquil condition (freeway) with sound resulted in reduced auditory thalamo-cortical connectivity. Here we see that the thalamus acts as a protective “filter” for audiovisual integration, acting as a “gatekeeper” in early cross-modal interactions and down-regulating attributions perceived as stressful. Enhanced perceptual connectivity is related to perceived congruence between visual and auditory cues, suggesting that the synergies embedded in a biophilic design environment is partially modulated in early stages by the auditory cortex. For urban planners, the impact of this finding is clear: in settings with stressful auditory input (in this example, traffic noise), the use of natural features can help mitigate the sensory burden on residents, but the soothing sound of water is most effective if it is also paired with the sight of “natural” water (in this example, an ocean). A fountain in a plaza, encased in ornately carved cement and populated by school-children’s boats or spare change cast hopefully into the shallows, may not be enough. To design well with water, we can look towards the recent trend of uncovering and restoring buried streams and rivers in cities. These infrastructure projects are notionally concerned with restoring the native hydrology of a place to improve resilience when facing floods or counteract subsidence, but their benefits—when coupled with the potential for providing critical wildlife corridors—extend to the health and well-being of surrounding residents. Indeed, this vision of biophilic design progressively integrates the layered needs of the land, the city and the individual, arriving at a compromise that is more equitable and healthy for all concerned.

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The Coolness of Cleansing:

Sacred Waters, Medicinal Plants and Ritual Baths of Haiti and Peru

BY KYRAH MALIKA DANIELS

CLEANLINESS HAS LONG SERVED AS A FORM OF religious devotion—to be *cleansed, purified and sanctified* grants one access to sacred spaces and certain ritual experiences. At times, cleanliness may allow one to transcend earthly dimensions, freed from mortal messiness. Religious bathing rites include some combination of consecrated waters, blessed liquids and oils, and medicinal plants (e.g. flower blossoms, herbs and leaves). The practices in Haiti and Peru illustrate the bio-cultural phenomenon of using divine waters and plants in ritual bathing both for those who come in search of deliverance and healing, and for those who seek good fortune and protection.

Sacred baths most often use water, plants, smoke/fire, and mud, comprising all four of the natural elements. There are also “leaf baths,” which involve rubbing leaves, flowers and herbs on the body. Alternatively, one may be cleansed with smoke from burning leaves, embers of charcoal or sanctified wood. Ritual baths may also include submersion in muddy basins, such as Haiti’s Basin Sen Jak mud pits during the Ogou celebrations in July.

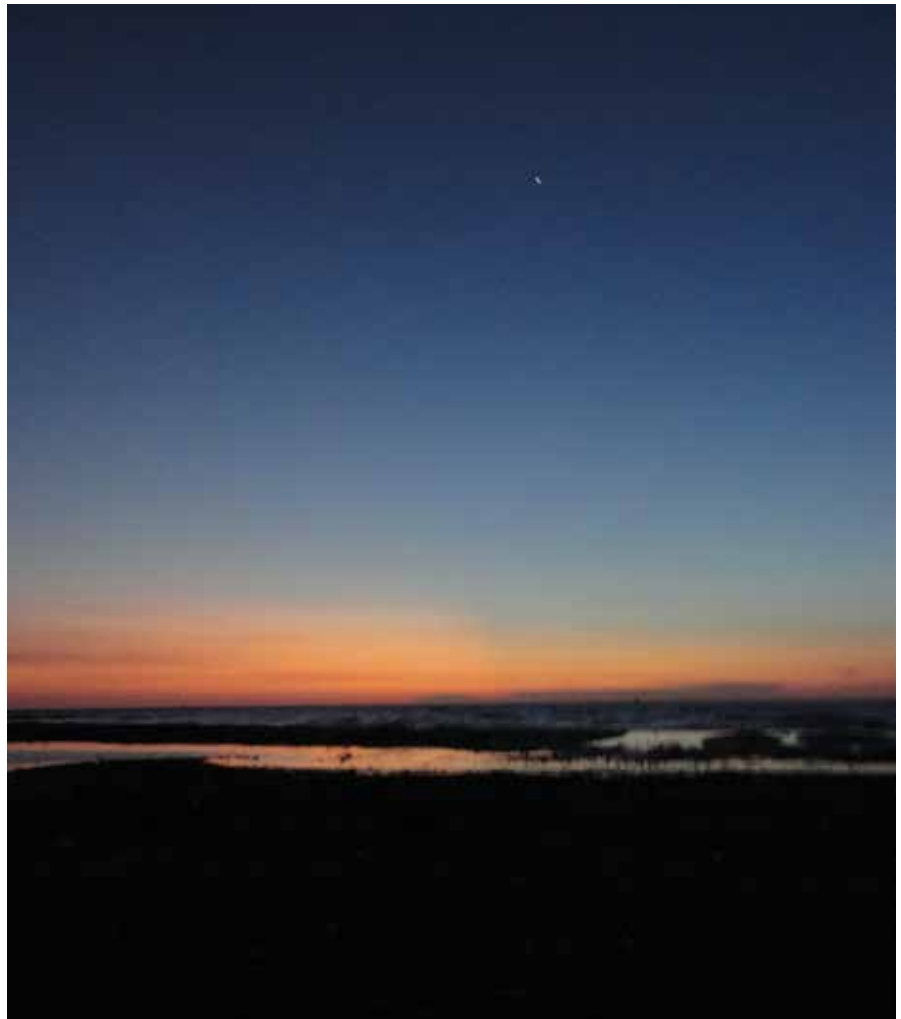
Frequently, Afro-Caribbean bathing rites make use of essential oils, perfumes, and liquor. In Haiti in particular, the imbibing of *kleren* (moonshine) and the application of *palmaskriti* (castor oil) to the body serve as especially potent cure-alls. These sacred oils and medicinal plants may be used to diminish soreness and enliven lethargy (such as *palmaskriti*), remove negative energy from one’s path (such as *parsley*) or establish life’s balance and restore harmony to one’s relationships (in a white bath that often includes white flower petals). Healing ceremonies may include rituals to rid one’s body of disease, to protect children from harm, to sanctify a public space, to repair social rela-

tionships within a family, and to honor a community’s elders and recently deceased through funerary rites. Even with such ritual bath diversity, however, without exception, all sacred baths must be accompanied by prayer, intentionality and ritual action.

DIVINE DLO (WATERS) OF HAITIAN HISTORY

There is a place where the river meets

the sea in northern Haiti, and where recently ordained Vodou priests and priestesses come to pay tribute to the spirits following their initiation. Known as Gran Salin, the small fishing town arguably receives most income from religious tourism. Haitians and Vodouizan make pilgrimages to Gran Salin for several reasons. Many rivers are considered sacred, but Gran Salin is also a natural site where freshwater and salt water collide, where



Gran Salin, Haiti where the River Artibonite meets the sea (April 2015).

the denser salt water “sinks” and the fresh-water remains “afloat.”

Machann Dessalines, another mythic and revolutionary historical site, features a *grôt*, a small cave-like fort with a human-made pool, *Grôt Dessalines*. The cave



Sacred symbols known as *vévé*. Below, *Grôt Machann Dessalines*.

serves as a devotional site for the Vodou spirits *Ezili Freda* and *Simbi*—respectively, a spirit of amorous affection and great wealth and a spirit of rivers, coolness, and healing. Devotees typically come in need of healing and may experience visitation by the spirits, submerging themselves in the healing waters of the sacred pool.

The sacred waterfall of Sodo is one of Haiti’s most widely visited pilgrimage



sites by Haitians and foreigners alike for help addressing their physical illnesses, social problems and psychological conditions. Pilgrims, including Vodouizan who mostly trek to the miraculous waterfall, and Catholics who visit the church where the Virgin Mary was said to appear, travel to Sodo for the annual July 15 festival. Then, every stepping stone of the waterfall’s ledges fills with devotees being ritually bathed with sacred waters and plants. They begin by scrubbing with soap in preparation for their “leaf bath,” when a combination of various medicinal plants (particularly basil), possibly accompanied by soap or another lathering agent, will be rubbed on the bodies. After rinsing their bodies in the cool waters, officiating priests and priestesses instruct patients to toss their clothes into the waterfall so that they might cascade down the chutes, taking with them any negativity from the person’s condition. Patients then don fresh clothes as they emerge from the sacred waterfall. The psychological and physiological impact of such an act cannot be understated, as one experiences an ultimate release of a former “unhealthy” or imbalanced, unwhole self.

GREEN CLEANSE: LEAVES OF UPLIFT AND RELEASE

Sacred leaves become especially important with the baptismal rite of *lave tèt*, literally the washing or cooling of the head as the baptismal stage of initiation in Haitian Vodou. This washing of the head ensures that the devotee’s spirit becomes cleansed and that she begins to cultivate an intimate relationship with ancestral spirits. Later stages of initiation also include extensive bathing rites, usually including water cooler than room temperature. This coolness evokes the soothing application of a gentle pomade or balm. With various ingredients in each bath mixture, the waters may feel sticky or slimy—sweetly-scented or sour-smelling. Most importantly, the small bits of leaves and flower blossom that stick to one’s skin following a ritual bath must never be rinsed or wiped off the skin.

At times, commonplace plants such as



Ritual baths in Sodo.

basil perform mystic work. With origins in Asia and the Middle East, basil has been used medicinally for nearly 5,000 years for such diverse ailments as sore eyes, diabetes and diarrhea. Hence, it continues to be prescribed by Vodouizan for physical health conditions as well as problems of spiritual imbalance.

PERU’S SERPENTINE MEDICINE & RUSHING WATERS

With a similar attention to the use of plants, the closeness of Peru to the Amazons has fostered a deeply intimate relationship between indigenous nations and the rainforest. Often regarded as a divine being unto herself, the rainforest is considered host to sacred waters and medicinal plants often used in indigenous religious traditions. *Ayahuasca* (spelled in the Quechua language as *ayawaska*, with *aya* meaning “spirit, soul” or “corpse” and *waska* meaning “rope” or “woody vine, liana”) is perhaps the best known—and possibly the least understood—medicinal plant of the indigenous Americas. Regarded as a sacred medicine by indigenous nations across the Amazon, the spirit of the plant known as *Mama Ayahuasca* is often depicted as a female serpentine spirit. The hallucinogenic brew comes from a plant mixture of the *Banisteriopsis caapi* vine and the *Psychotria viridis* leaf. When conducting healing ceremonies, healers or “shamans” known as *curanderos* or *curanderas* prescribe the medicinal plant to perform healing work along with intense tobacco purges and psychedelic visions as *ayahuasca* restores one’s spiritual energy



Top to bottom; ritual hand bath following funerary fite. Waterfall in Lamas, Peru. Visitor floating in waterfall pool, Haiti.

reserves. Patients may come to ceremony with a wide range of conditions, just as they do in Haiti's Vodou healing rites.

The *curandera* begins the first day of the ceremonial week by preparing a brew of *mapacho* (wild tobacco), often mixed with sap from the *lupuna* tree as a purgative. The ayahuasca itself, a thick, dark-colored, bitter-tasting brew, may cause vomiting, nausea and diarrhea, considered part of the spirit's necessary expulsions for ceremony. Such a purge is understood to expel, at times violently, any negative forces in one's system, physical as well as spiritual. Typically, *ayahuasca* is administered on the third, fifth and seventh day so as to provide patients time in between ceremonies for their bodies' rest and restoration. During these "down" times, patients are encouraged to engage in mostly light activity and to spend time in or around bodies of water.

The rainforest's sacred waterfalls, clear pools and rushing rivers are widely known for their healing properties. During *ayahuasca* treatments, those who can afford transportation may visit nearby waterfalls or rivers as a soothing, healthful activity. The heavy, pounding streams of waterfalls and the initial shock of a waterfall's "chill" may be precisely the energizing forces needed to revitalize people experiencing lethargy or listlessness. With the intensity of the water motion, waterfalls sustain biodiversity in their surrounding areas, producing what some scientists call a "vertical wetland." Waterfalls also tend to be situated in enclaves of clean air spaces, creating a refreshing and energizing place of repose.

BATHS OF CLEANSING, MASKING, AND FLOURISHING

Typically, *curanderas* may prescribe any one of three ritual baths for ayahuasca healing ceremonies: 1) *baño de limpieza*, a ritual herbal bath, 2) *baño de barro*, a mud or clay bath, and 3) *baño de florecimiento* or *baños flores*, a flower bath. The first ritual bath, *baño de limpieza*, is a "cleansing" and purifying bath, often with medicinal plants. This bath often takes place the day before or the day following

the first night of ceremony and is designed to dissipate negative energies and unproductive thoughts. Along with the tobacco purge and the first ayahuasca treatment, it is understood that such a bath will help to dislodge any emotional and spiritual imbalances. The second bath usually takes place after the second ceremony, and traditionally involves mud or clay from the rainforest. The uses of clay and mud baths vary between traditions, but researchers agree that clays can serve as anti-inflammatory and detoxifying substances, and that certain natural minerals found in mud can help provide relief from aches and muscle pain. When applied to the body while standing, clay or mud baths cause patients to be still—a chance to cultivate a deep meditative state. Known for their extractive properties, mud and clay baths have been heralded by some *curanderos* as having the ability to draw out negative energy from patients. When washed off, the thick, hardened clay softens and often feels like the peeling of a layer of skin on the body. Following the stiffness of the mud-pack, patients may feel freer, more limber. Extending the physiological experience to a psychological one, we can imagine the ways that both the body and mind feel more unbound than before.

The third and final bath, "a ritual flowering bath," is said to attract good luck, wealth and well-being. With a combination of potent, fragrant blossoms, it greatly resembles the "white baths" of Afro-Atlantic traditions. Much like Vodou spiritual elders, the Peruvian *curanderas* instruct new initiates to leave the remains of their ritual baths on their bodies, so too do Peruvian ayahuasca *curanderas*. While the sticky blossoms and herbs remain on the skin, they continue to bring good luck and positive energy until they naturally fall off of their own accord.

Often, *baños de limpieza* come first and *baños flores* at the end of the retreat, though patients undergoing more extensive spiritual work who do the plant diet may be prescribed flower baths more frequently. The *curandera* will decide what baths are most necessary for a patient's condition. Similarly to how sage smoke

cleans and removes negative energy, the *baño de limpieza* serves as a total, initial cleansing. The *baño de florecimiento* then acts as the sweet-smelling smoke that should follow a ritual clearing to usher in uplifting energies of positivity and prosperity. In ayahuasca traditions, ritual baths open communication between people and the *plantas maestras* (master plants, or spirits of the plants), so that devotees may pursue their own healing and spiritual growth. Again, we see an interesting counterpart of Vodou's *lave tèt* bathing ritual as a gateway for devotees to receive messages with greater clarity from the spirits.

COOLNESS AND CLARITY

Even though Haitian and Peruvian ritual bathing traditions demonstrate many differences, we note several important

themes of similarity: cleanses that involve moving (not stagnant) sacred waters; the application, and at times ingestion, of medicinal plants and flowers; and the act of being bathed by a spiritual elder to cultivate greater intimacy in relationships with ancestral energies and the spirits.

Among the biological properties of ritual bath ingredients, the healing properties of water (saline and mineral), earth (the medicinal plants and flower blossoms), as well as fire and air (clarifying smoke and sweat lodges), must not be understated. Indeed, as botanists and religion scholars, as devotees and chemists, as cultural insiders and religious outsiders, we would do well to pool our collective knowledge about the healing properties of ritual baths. This would allow us to gain a fuller understanding about Africana and

Amazonian bodies of knowledge regarding the natural world and consider multiple cultural approaches to health and wellness. As art historian Robert Farris Thompson said, "...coolness has to do with *transcendental balance*." In this sense, ritual baths do far more than cleanse the body—they heal the psyche and energize the spirit as well.

Kyrah Malika Daniels is a Ph.D. candidate in African & African American Studies, and received her MA in Religion at Harvard in 2013. Her dissertation focuses on sacred arts and religious healing in Haiti and the Democratic Republic of Congo. Her work has been published in the *Journal of Africana Religions* and the *Journal of Haitian Studies*.



Visitors enjoy a river in Peru before ritual bath.

Indigo in Guatemala

Textile Dye and the Biology of Culture **BY OLGA REICHE**



Dyeing fabric.

THE KING OF DYES AND THE DYE OF KINGS, indigo—that amazing blue dye—is native to Guatemala. Although it is a common belief that the Spanish brought indigo (*añil*) to the Americas with the conquest, there is pre-Hispanic anthropological evidence that tells us otherwise. This evidence demonstrates that the Mayas used indigo to create Mayan blue, a pigment that they developed in the late pre-Classic period, 1900 BC to 200 AD. The color can be found in pottery, murals and archaeological remains throughout Mesoamerica. In the 1500s, Fray Bernadino de Sahagún in *Historia general de las cosas de Nueva España* and Francisco Hernández in *Historia natural de Nueva España* (A Natural History of New Spain) mentioned the extract of the pigment from the plant by its common names from the period.

I'm fascinated by the possibilities of using indigo and other dyes deeply rooted in nature and history as viable options to synthetic dyes. I've spent more than thirty years experimenting with these dyeing techniques, and it's how I make my living. I have to admit indigo is my favorite dye.

The indigo-producing plant, a mem-

ber of the *Indigofera suffruticosa* Mill and *Indigofera guatemalensis* Monc species, originated in the Americas, as recounted by Paul C. Stanley and Julian A. Steyemark in their 1946 book, *Flora de Guatemala*.

The plants were grown in Guatemala and El Salvador, and indigo became a successful export product in 1760, creating a powerful economic elite. The Kingdom of Guatemala, the administrative center for the Spanish empire in Central America, became the fiscal hub for this trade, although indigo was exported directly from El Salvador and some of it from other Central American countries. El Salvador bartered indigo with Guatemala for textile and foodstuffs.

During the indigo boom in the late 1700s, the Kingdom of Guatemala exported yearly up to two million pesos worth of dye to Europe. By comparison, it took an unskilled field worker twenty days to earn a single peso. The boom was fueled by the cotton boom and the growth of the European textile industry. But Europe began to import indigo from India towards the end of the century, slowing the exports from Central America. The exports collapsed

after the appearance of synthetic dyes in the international market when the chemist William H. Perkin accidentally made the color purple in his laboratory.

However, indigo continued to be produced for the Central American market. The dye is used for the traditional indigenous wrapped garments known as *cortes* or *refajos* woven by indigenous women on pedal-propelled looms brought to Guatemala by the Spanish in colonial times. The use of this natural dye declined drastically in the 1960s even in the local markets, when the “tint,” as indigo is known, became available in synthetic form. This synthetic dye is still used today in the same manner as the natural one, and is still highly valued.

But natural indigo is experiencing, something of a comeback now, and cultivation of the crop has been reactivated in both Guatemala and El Salvador since the late 90s. Some of these attempts to revive the use of natural dye have been economically beneficial, but others have met with less success. El Salvador is now exporting indigo to Europe, Turkey and the United States.

Today, with the increasing number of regulatory rules and laws that see many synthetic dyes as posing health risks, including some dyes that have been banned as cancer-producing, the market for natural and sustainable dyes is growing, presenting new opportunities for Guatemala and Central America.

Olga Reiche, a Guatemalan of German and Quechí descent, has spent more than thirty years working with indigenous artisans on product development and marketing, producing her own line of naturally dyed and recycled products, and teaching locally and internationally. Her concern for environmental and artisanal sustainability is a driving force. She is the author of Plantas Tintóreas de Guatemala.

The Biology of Consciousness

From William James to Richard Schultes BY BRIAN D. FARRELL

“I am neither a theologian, nor a scholar learned in the history of religions, nor an anthropologist. Psychology is the only branch of learning in which I am particularly versed. To the psychologist the religious propensities of man must be at least as interesting as any other of the facts pertaining to his mental constitution. It would seem, therefore, that, as a psychologist, the natural thing for me would be to invite you to a descriptive survey of those religious propensities.”—William James (*On the Varieties of Religious Experience*. Longmans, Green, & Co. 1902).

Substitute the word biology for psychology, and you’d have my consideration of consciousness—my own curiosity in writing about that subject parallels that of James about religion. His words, written more than a hundred years ago, have a sounding resonance with what and how I—as a biologist—have come to understand the realms of consciousness: *“In my belief that a large acquaintance with particulars often makes us wiser than the possession of abstract formulas, however deep...”* Therefore, in this work at least, William James, widely regarded as the father of American psychology, was what some would today call a phenomenologist (a concern with observations, case studies and the like that may be contrasted with purely theoretical approaches).

Trained in medicine, William James first taught physiology at Harvard and had absorbed Darwin’s view of evolution and in particular, the observation that ubiquitous random variation sometimes leads to evolutionary innovations. James was a scientist but did not favor what he termed *scientism*—the position of some fellow intellectuals who demurred from discussing certain subjects (presumably such as religion) as being outside their discipline, and unscientific (he named H. G. Wells and Bernard Shaw, among oth-

ers). James thought broadly, and yet saw that all human behaviors are probably ultimately grounded in biology.

In offering some biological particulars, I wish to connect William James’ perspective on religion and consciousness with the work of another Harvard professor concerned with the particulars of human spiritual life, Richard Evans Schultes, known as the father of ethnobotany.

His lifelong work was documenting the indigenous uses of plants and fungi throughout the Americas, including in religious rituals. He began his Harvard career with an undergraduate senior thesis on the Kiowa peyote rituals in the southwestern United States, moved on in later years to identifying the species termed Ololiuqui (morning glory seeds containing LSD) and Teonánacatl (*Psilocybe* mushrooms) by the ancient Aztecs in Mexico, using images depicted in the few remaining Aztec codices, and finally, spent many years exploring the Amazon forests of Colombia and beyond, with shamans documenting ayahuasca rituals, and collecting tens of thousands of plant specimens now deposited in the Harvard University Herbaria.

Schultes wrote about his discoveries in scientific articles, influencing popular authors from Aldous Huxley and William Burroughs to Carlos Castaneda and Timothy Leary, who would then introduce them through books, magazine articles and interviews to the popular culture of the 1960s. Aldous Huxley (grandson of Darwin’s champion, Thomas Huxley), had perhaps the greatest influence through his book detailing his experiences with mescaline, the active compound in peyote, that had been described earlier by a German scientist as useful in studying the unconscious mind.

Probably nearly as influential as Hux-

ley were a New York banker, R. Gordon Wasson and his spouse, Russian-born physician Valentina Pavlovna, who dedicated time and resources throughout their lives to documenting the uses of mushrooms by cultures worldwide. In 1957, Wasson traveled to Mexico with a photographer and recorded the *Psilocybe* shaman rituals, introducing the term *magic mushrooms*, and revealing their effects on perception to the beat and counter-cultural movement through a popular article published in *Life* magazine.

The link between James’ “religious propensities” and the use of consciousness-altering materials lies in the brain, so I will draw on recent work on the neurobiology of consciousness by Michael Graziano, Professor of Psychology and Neuroscience at Princeton University, *Consciousness and the Social Brain* (Oxford University Press, 2013).

One reason to be concerned with the biology of consciousness is the effect on our personal health. Remarkably enough, the power of conviction, or positive thinking, on health was also recognized by William James, who called this the *mind-cure*, and he attributed the remarkable longevity and vigor of a friend stricken with breast cancer to her ebullient approach to life and all around her. Today, we know that the placebo effect can be strong enough to produce results close to those of treatment, as evidenced for example, by control groups that receive sham surgery. As Jackson Pollock responded when he was once asked whether he was inspired by nature, “I am nature.” *We are nature*.

Sometime around 500 B.C., Hippocrates proposed that the brain is the source of the mind. The term *consciousness* itself was later defined by the English philosopher John Locke as the “percep-



Richard Schultes with a Shaman examining plant materials in the Colombian Amazon.

tion of what passes in one's own mind." Long the domain of philosophers, the concept has since expanded to include the fields of psychology, neurobiology and behavior. All these disciplines agree that consciousness draws on our senses for information about the world outside of our minds, a world that provides the context for imagining our own place within it as well as the minds of others. As William James noted, consciousness is not a thing but a *process*.

Awareness is an important aspect of the process of consciousness. We are aware of the information coming from

our senses, and of our bodies and memories, and we know we are aware of these things. We are also aware of the minds of others. There is nevertheless much that is subconscious, however, things of which we are not aware, and this is what William James viewed as psychology's greatest discovery. As Graziano observes, awareness is a description of attention, and attention is a data-handling feature of neurons in a brain. We can also pay attention to input without necessarily being aware of the act, in that our neurons are continually registering information without our being conscious of

it. Awareness is therefore a more or less rough sketch of attention, apparently evolved for processing complex and competing signals.

Consider the cacophony of sounds around you right now—sounds of traffic, footsteps, air-conditioning or fans—depending on where you happen to be. We pay little attention to most of these, much of the time, and none at all in the moment that a voice calls our name or the phone rings. A familiar video of selective attention shows that onlookers watching players passing a basketball do not even notice a gorilla dancing in the background. The diversity and range of our human senses are just what is required to make our way. We have no particular need to see ultraviolet light as does a bird or butterfly, or to sense electrical impulses like a fish. Nevertheless, even within our limited ranges of detection, the information from any one of our five senses, if unfiltered, would quickly overwhelm our attention.

Focused attention allows us to direct our neural resources towards processing one source at a time, enhancing depth of analysis, though at some evident cost of breadth of perception. One way to minimize this cost, of course, is to ignore some important stimuli only at the moment, but save the memory for processing later. Graziano believes that consciousness emerges from the neural machinery for selective attention. Recently, he has developed the Attention Schema Theory (AST) that posits that animals have evolved selective attention through sophisticated mechanisms for deep processing of some signals while ignoring others, and that consciousness is the result of the gradual evolution of such a system. Many examples of selective processing can be found at all levels in the nervous system, and overwhelming evidence now exists that consciousness is present in varying degrees across a wide range of animals, from frogs and lizards to birds and mammals.

Even in simple nervous systems, Graziano points out, neurons operate like candidates in an election, each shout-

ing its message, trying to suppress the others; only a few winning signals end up influencing an animal's behavior. For example, selective signal enhancement in the retinal cells in the eyes of most animals permit detection of edges that in turn enables distinguishing the outline of forms. Receptors involved in touch and hearing use signal enhancement in similar ways.

To enable selective attention among signals within and between senses, vertebrate animals have a special brain area, called the tectum, that is a central controller, coordinating and orienting the various sensory organs, eyes, ears and nose, towards important stimuli—perhaps a loud noise or sudden movement, and enabling what is called overt attention. To control the head and eyes, the tectum constructs an internal model of the world, a simulation that allows input and enables predictions. The tectum permits directed control of the major limbs and keeps track of where they are with respect to the outside world. When a frog moves its head, it expects the perspective of the outside landscape to move as well. It's like a virtual reality simulation in the brain that allows a frog or fish to control its movements in the environment. Fish and frogs know where they are in the world. The energy cost in processing so much information is high, but evidently worth the price in terms of catching prey or avoiding predators. As Graziano points out, the frog has a pretty good internal model of itself, and, of course, we are more than frogs in many ways.

The first vertebrates to fully colonize dry land were reptiles, including the ancestors of birds, and these added another brain layer, the wulst, on top of the tectum as an enhanced controller. Rather than simply allowing a bird to react to outside stimuli, such as pinpointing a sudden sound or movement, the wulst allows lizards and birds to register a stimulus while also permitting a range of possible responses, such as fleeing, ignoring, or just remembering the moment for future reference.

Mammals have added a similar new

brain layer called the cortex. The main difference between the tectum and the wulst/cortex is that tectum points the sensory organs towards a stimulus while the wulst/cortex permits focused attention without necessary action. In a 2002 *Scientific American* article, "The Problem of Consciousness," Francis Crick (noted for co-discovering the DNA double helix) called this the spotlight of attention. The wulst/cortex can shift our attention from ourselves to a bystander, a jet flying overhead or any thought we wish, without overt movement on our part. In other words, the wulst/cortex permits virtual movement of attention from one thing to another.

The attention schema, using Graziano's parlance, are the neural machinery used for modeling the attentional state of others as well as ourselves. The cues used can be body language, gaze direction, facial expressions, location of salient objects and prior knowledge. Our inner experiences of attention are like a moving image projected on a monitor. The portrayal is real enough to allow us to navigate but is not the physical reality itself. Magritte's realistic painting of a pipe entitled "This is not a pipe," is a famous recognition of this duality. According to Karl Friston of University College-London, the brain works by limiting our perception so as to permit focus and attention. Perception and evaluation, then, are intertwined—we usually see what we expect to see (sometimes quite literally—at the retinal blind spot that fills in from adjacent signals). Magicians take advantage of this and fool us through distraction into either seeing what is not there or not seeing what is in plain sight. We do rely on sophisticated internal models of the world that can therefore be fooled but we can also learn.

Culture is ultimately biological because we are biological beings with memories recorded by neurons, and consciousness, attention schema and perceptions shaped by experience and influencing behavior that, in turn, can be remembered. Humans (and some other animals) can also manipulate consciousness with behaviors that influence our internal



Taino stone zemi representing the god of cassava, Yucahu. The zemis would sometimes be planted in fields in ceremonies for crop productivity.

physiology through exercise, meditation, exposure to outside stimuli or ingesting substances with physiological effects. Indeed, much research on consciousness has involved evaluating the effects of such influences.

As Schultes observed, indigenous peoples have been manipulating consciousness since prehistoric times, usually in the service of divination or religion. On Hispaniola, writing in 1496 on Columbus' request, Fray Ramón Pane recorded that the Taino would use a snuff of ground, toasted cohoba seeds (*Anadenanthera peregrina*), in ceremonies of healing or supplication to gods represented by carved stone zemis. This snuff is called *yopo* throughout South America where it is still used by indigenous peoples, including in the region from where the Caribbean Taino originated near the Orinoco River some four to six thousand years ago. Schultes reported its use by the Incas and archeological evidence of use from throughout Central and South America.

In the *Doors of Perception*, Aldous Huxley's 1954 influential volume, Huxley suggested that perception is widened by psychoactive substances, permitting access to a wider range of information concerning the world, and in particular, setting the stage for a return of the sense of awe, a sense that is key to William James' conception of religion. Indeed MIT Professor of Divinity Huston Smith wrote that Huxley's volume accurately depicted the use of psychoactive substances in ritual and religion by people

around the world and throughout history and that it is possible that some religious views had their origins therein, long since forgotten. To experience such religious revelations firsthand, Smith and beat writer William Burroughs participated in the experiments with hallucinogens directed by Timothy Leary and Richard Alpert, then of the Harvard Department of Psychology.

The use of plants and fungi in altering consciousness in religious and shamanic rituals no doubt operates through altering the cortex control of these filters of perception. Regardless of whether they actually enhance receptivity of clues helpful in diagnosing illness or are otherwise useful in interacting with the world, their use together with the sights, sounds and scents of ritual would be a powerful reinforcement of belief by the participants.

William James viewed such strength of belief as the basis of religion, a diminution of self and adoption of an attitude of respect for the universe with a degree of conviction that is, in itself, empowering. James thought this *faith* was the power of religion rather than the veracity of a doctrine or particular truth or model about the universe. He felt that this conviction was shared by other experiences that also subjugate the self in service of a larger body, enterprises as disparate as military service, music participation (see *ReVista*, Fall 2015) or scientific investigations. Viewed this way, the soldier has something in common with the religious, scientific and the artistic mind, each with a sense of awe of something grander than the self, a sense that is empowering.

Graziano suggests that awareness arises from the interaction between self and other, via the *attention schema*; this is the process of consciousness according to William James. Because the number of such relationships are as many as there are things of which one is aware, one's self-awareness is a moving point in a hyper-dimensional space of interactions.

However dimensional our personal space of awareness in terms of objects, it is multiplied by our relationships

with other humans. Our status as a pre-eminently social species may have long determined a peculiarly human degree of awareness. Indeed, E. O. Wilson has suggested that ethics and morality are evolutionary outcomes of natural selection for sociality. Our senses of right and wrong, he suggests, correspond to acts that benefit others over the self, a form of altruism that would be highly beneficial in a society comprised of small social groups that depend on cooperation for survival. Certainly our ability to gauge the emotional states of others—drawing on gaze, body language, tone of voice and prior knowledge—bespeaks an organism adept at social interaction.

Shared cultural values, such as standards of beauty (in symmetry, color and proportion, for example), quality of music (e.g., emotional content of minor and major keys), as well as allegiance and identity with any group from the family to tribe, neighborhood, country or ethnic group, for instance, all reinforce identity and the social aspects of awareness. There is increasing evidence that the neurological basis of empathy may underlie our great sociability. Empathy is thought to involve mirror neurons, neurons in an observer that fire in response to awareness of another's activity (involving the same neurons), such as music, dance or sports. Mirror neurons also operate in birds to coordinate duet-singing. Some animals, such as dogs, goats, crows and dolphins can judge the emotional states of others, including humans, by watching the gaze, enabling them to ask for assistance in some tasks, for example, or returning to move a coveted object that they are aware another may have seen them hide.

Understanding consciousness is one area in which the humanities and the sciences may do best to work together on research. Each side may discover and describe phenomena that may also be approachable by the other. In this way, William James brought consciousness from a subject only of philosophy to one of psychology. Researchers in human neurobiology like Michael Graziano at

Princeton, and those such as Harvard's Yun Zhang and Bence Olveczky who research other animals, are building bridges between psychology and biology.

The brain science discoveries are exciting to be sure, but are just the first scientific expeditions into territory first mapped by the humanities. The concepts of the arts, including social and political sciences, highlight phenomena of human culture and social interactions that science would not be able to predict. The future may hold an integrated approach to understanding, incorporating the approaches and phenomena today falling into one of the two great domains of knowledge, but at present we can strive to send each other messages in a language that is understood by both sides, *a lingua franca*.

We come back, in the end, to William James' view of pragmatism. The mind and the world are inter-related to such a degree that it is challenging to describe one independently of the other. James's view is that beliefs might better be judged by their "*fruits, not by their roots*." In other words, James was an experimentalist and thought that beliefs could be judged by their usefulness, just as any other hypothesis.

"All models are wrong, but some are useful." So observed the pre-eminent quantitative modeler, George Box. I might add that models can be useful in two ways, first as successive approximations to the truth, but also in providing a compass that lends overall direction through the world, a path forward. George Santayana, a contemporary of William James, criticized what he felt was James' uncritical promotion of superstition because believing was the most important thing. I think he missed the point. Nevertheless, awareness of the biological roots of the mind, conscious and subconscious, may also serve us well in empowering our own lives of discovery.

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BUILDING BRIDGES

Expecting the Unexpected

Looking for Lady Beetles and Their Parasites BY DANNY HAELEWATERS AND SARAH VERHAEGHEN



THAT MORNING, WE DECIDED TO work in a radically different way. No more collecting in the highlands of Chiriquí. No more collecting in the tall grasses around lakes where crocodiles lurk. We were determined to collect lady beetles, preferably those infected with ectoparasitic fungi, and for this we needed to get into citrus plantations. It was a Sunday, so it would be hard to call the landowners. We took the chance and drove to a good plantation, with a beautiful view of the mighty Volcán Barú, Panama's highest mountain.

Unfortunately, after five minutes—even though it was Sunday—the owner came by and chased us away. Luck was not on our side. We did some more driving until we saw an orange grove, and its owner. With us was Juan Bernal, professor at Universidad Autónoma de Chiriquí (UNACHI), who reached out to the owner in his friendliest Spanish and achieved the result we needed: we could jump over the fence, mingle with the many cows, and collect our lady beetles.

Somewhat hesitantly

because of the cows, we screened the first few trees. “Yes, I got one!” Finally. We thought this trip was cursed, since until then we had found exactly one fresh lady beetle. The good news was that this single specimen was indeed infected by *Hesperomyces virescens*, the parasitic fungus we were looking for.

Hesperomyces virescens is an ectoparasitic fungus that targets lady beetles (Coccinellidae). There is no common name for this fungus (a suggestion, anyone?), so we'll refer to it as *H. virescens* in the rest of this story. The fungus parasitizes a wide array of lady beetle species, in many different genera spanning even different subfamilies. Considering that such a small organism (the fungus measures 150–500 μm in length) is widely distributed, both in terms of hosts and geography, led us to speculate that it actually might be a diverse complex with multiple species masquerading as a single species. To test this idea, more than simple morphological data and tools are required. We need DNA from fresh material for phylogenetic

analyses.

Although the fungus grows on many different species, its “main” host species is *Harmonia axyridis*, an annoying invasive lady beetle that, for many reasons, is considered one of the major threats to biodiversity on a global scale. Therefore, knowing all about its pathogens, parasites, and parasitoids could be key to the biological control of this pest species.

This research idea brought us to Panama. The first part of the trip we hiked and climbed in the moist lowland rainforest on Barro Colorado Island, making use of the Smithsonian Tropical Research Institute (STRI) laboratory facilities, where we made late night observations of insects we collected during the day. We managed to find a lot of ectoparasitic fungi on leaf beetles (Chrysomelidae) from Barro Colorado Island; however, no lady beetles were found. Also, in the insect collection at STRI's Tupper Center in Ancón, we sought these little parasites of lady beetles; we found 12 infected specimens of a total of 212 lady beetles examined.

Dried material is not a good basis for DNA extraction, so we were getting more and more nervous, because we had only nine days left to find fresh lady beetles for turning this into a successful trip. The final part of our trip brought us to Chiriquí, where we stayed at Juan and Mary Bernal's place

and worked with Juan and his colleague, Rosa Villarreal, professor of mycology at UNACHI. Eventually five of us—ourselves, Juan, Rosa, and one of their undergraduate students, Leila—ended up that Sunday morning in the orange grove with the cows. No one could identify that first lady beetle we found. Later, in the lab, we determined that it in fact was a new host for *H. virescens*.

Interestingly, we did not find any *Harmonia axyridis* in Chiriquí. This might mean that this invasive species has not yet arrived in Panama. If this were the case, it gives scientists a unique opportunity to follow *in real time* the cascade of events that happen after establishment of the beetle and its parasite. Only through such observations can we fully understand the interplay between host and parasite. This work cannot be accomplished without collaboration. For this reason, we will stay in close contact with Juan and Rosa, thanks to a collaborative grant, which will further strengthen the work on these fungi both in the United States and in Panama. *Panama, we will be back!*

Danny Haelewaters, a Harvard PhD student, works at the Farlow Herbarium and the Pfister Lab.

Sarah Verhaeghen is a teacher at the Eerste Nederlandse School in Boston.

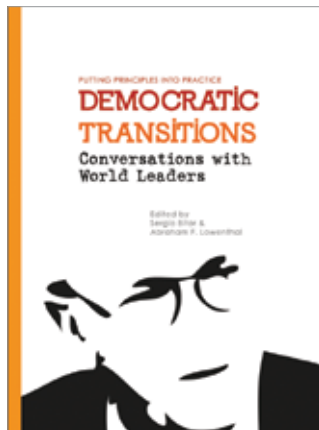
Looking Leadership in the Face

A REVIEW BY JORGE I. DOMÍNGUEZ

Democratic Transitions: Conversations with World Leaders by Sergio Bitar and Abraham F. Lowenthal. (The Johns Hopkins University Press, 2015).

The premise of this well-written and absorbing book is that political leaders matter decisively for democratic regime change. Sergio Bitar and Abe Lowenthal conducted face-to-face interviews with thirteen political leaders (twelve former presidents and one former prime minister) from nine countries who helped to end autocracies and craft democracies in their place in their respective countries during the last quarter of the 20th century. The leaders are Fernando Henrique Cardoso (Brazil), Patricio Aylwin and Ricardo Lagos (Chile), and Ernesto Zedillo (Mexico), along with leaders from Ghana, Indonesia, the Philippines, Poland, South Africa and Spain.

Bitar and Lowenthal emphasize that democratic transitions were not determined by "... structural, historical, and contextual factors by themselves," adding that leadership played an important role in deciding "when and how autocracies ended, or whether and how democracy could ultimately be fashioned. Critical decisions had to be made by political leaders in governments, parties, and movements, often among unattractive options" (420).



The book's masterful design makes it accessible to those who are reading about these issues for the first time but it is also a gold mine for scholars who work on these countries and these events. Nine chapters are organized by country (there is also a chapter on the role of women activists in democratic transitions in addition to the authors' thoughtful conclusion). The main element in each chapter is the edited transcript of long interviews with each of the thirteen political leaders. In order to make the interview understandable to general readers, each chapter has also a brief yet comprehensive essay, which places the political leader or leaders to be interviewed in the context of broader political processes leading to the democratic transition. Frances Hagopian wrote on Brazil, Genaro Arriagada on Chile, and Soledad Loaeza on Mexico. Each interviewee is introduced through a one-page biosketch. Each chapter features

a timeline of key events during the autocracy, the transition, and the challenges as well as consolidation thereafter; the timeline includes the interviewee but it focuses mainly on the wider political processes. Each chapter ends with a page of suggestions for further reading. A novice reader is consequently well equipped to understand the issues discussed during each interview.

The genius of Bitar and Lowenthal is especially evident through the questions they pose to each interviewee. Their questions are informed by their prior immersion in the evidence for each case and, for the Latin American political leaders, by their prior acquaintance with them, close in some instances. Perhaps for this last reason or perhaps because of my own interests, I find the interviews with the four Latin American leaders among the best in the book. The Bitar-Lowenthal questions, moreover, reappear, with only slight variations, in each of the interviews, thereby facilitating comparisons among the responses of the political leaders. For scholars, this constructed cross-interview comparative framework is especially valuable, as are the individual nuggets in the answers from each of the interviewees.

Bitar and Lowenthal draw their own lessons in the concluding chapter.

Nine chapters are organized by country (there is also a chapter on the role of women activists in democratic transitions in addition to the authors' thoughtful conclusion).

Several of those deserve to be highlighted. Luck matters. In Brazil, Spain, South Africa and the Philippines, the death of a key politician had a significant effect on the politics of the transition, just as the unexpected fall of the Berlin Wall in 1989 accelerated changes in Communist Eastern Europe and the 1997-98 East Asian financial crisis was the prologue to regime change in Indonesia. International context mattered everywhere albeit to varying degrees, most so in Communist Europe at the end of the Cold War but also significantly so in South Africa, Indonesia, and Chile. Formal pacts, which the transition in Spain made famous (Moncloa Pacts), turned out to be rare in other cases although "mutual approximation" among key adversaries, as Bitar and Lowenthal

call it, and often intense and prolonged dialogues mattered nearly everywhere.

Activists often find it very difficult to accept one of the key responses from their leaders, a challenge that Bitar and Lowenthal properly highlight: moving forward incrementally worked best and, in nearly every case, it required making deals that both democratic leaders and the activists detested; the leaders regretted these deals yet found them essential to achieve the change. Chile's Aylwin led the opposition to agree to participate in the 1988 plebiscite, which would prove decisive but had required accepting General Pinochet's constitution and Pinochet's rules for the plebiscite. In Poland, the democratic opposition felt compelled to agree to election rules for 1989 that guaranteed 65 percent of the lower-chamber seats to the Communist party regardless of the actual vote tallies; this agreement's consequences would open the floodgates of regime change. Brazil's Cardoso led the opposition to agree to work within the military regime's rules to contest the presidential elections in 1985, which led to his victory. Ghana's Kufuor rejected his own party's boycott of the 2000 election in Ghana, and he won it.

A theme throughout the interviews that Bitar and Lowenthal do not highlight in their conclusion is the role of interpersonal relations. Cardoso reports that one of his assets in his dealings with generals was that he came from a military family and

many of his ancestors had been generals themselves. Thabo Mbeki, in great detail, and F. W. de Klerk describe the process of the construction of interpersonal trust between adversaries during the secret negotiations that would culminate in the end of the apartheid regime; without such a process, the outcome might have taken longer to achieve. Indeed, as former President Ricardo Lagos ponders why the transition took such a long time, one of his principal answers is that it took a very long time to build trust between the Socialists and the Christian Democrats, necessary to work jointly to end the dictatorship, because the Socialists believed that the Christian Democrats bore a significant share of responsibility for the 1973 coup that overthrew President Salvador Allende, leader of the Socialist party. This variable, to succumb to social science in this sentence, did vary: The presence or construction of nonpolitical interpersonal trust led toward success, whereas the persistent absence of such trust delayed the change.

Bitar and Lowenthal anticipate this paragraph in a charming footnote, to wit, "We do not offer this essay as a contribution to political science theory, for which other methods and additional cases would be necessary." True, and that is one mild frustration upon reading this marvelous book. The authors deliberately choose successful cases and only successful cases. Thus we read about success in South Africa but

not about its absence thus far in neighboring Zimbabwe. We learn about success in Poland but not about its absence in neighboring Belarus. We might have learned some missing lessons by thinking counterfactually. Why did Chile not succeed sooner (it was the last of the South American military regimes to end)? Alternatively, why did post-communist Russia revert to an autocratic-enough regime but not neighboring post-communist Poland? Why has Indonesia outperformed Thailand in sustaining democratic constitutionalism when Thailand had had a more prolonged albeit intermittent encounter with democratic politics? The political science problem, "choosing cases on the dependent variable," remains pertinent. If we choose only successful cases, it is more difficult to distinguish between comparably plausible explanations for success because none has been also assessed with cases of failure.

A regret, rather than a critique, is that the authors eschew addressing one of the key concerns of the regime-change scholarly literature. "Leaders cannot by themselves," Bitar and Lowenthal write, "bring about democracy, but their contributions are essential" (416). But beyond this, and the expression quoted at the start of this review, they tell us little. Under what circumstances may what kind of leaders be more or less successful, or more or less important? The bottom-up and the top-down explanations of big historical events are never easy to

discern or to disentangle, but it would have been more satisfying if these two talented authors had worked at it more.

One of the book's key lessons appears in the last remarks in the interview with Ricardo Lagos. In response to a targeted summary question, Lagos explains why he devoted his life to this work and how he chose to proceed. Lagos argued, "understand that the starting point is that people fear going back to dictatorship and repression." A key goal, therefore, is not only to free the nation from the dictatorship but also to make it possible for human beings to free themselves from their fearsome nightmares. The method then followed. "In politics you do what you can, and you have to do so with passion, forcefully, so that people see that you truly believe in what you are calling for." He did and he succeeded. And in evoking all of these collective distilled experiences from some of the world's most successful politicians from recent decades, Bitar and Lowenthal also convey their passion for democracy forcefully, and they enable the college freshman and the scholar to understand better the events and processes that have shaped the world for the better in which we live.

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The Leopard and the “Tigrada”

A REVIEW BY KENNETH MAXWELL

A Ditadura Acabada

by Elio Gaspari (Rio de Janeiro, Intrinseca, 2016, 449 pp.)

The timing of the publication of the fifth and final volume of Elio Gaspari’s monumental history of the Brazilian military regime could not be more relevant. It is ironic that his new book—essentially the story of the government of General João Figueiredo (1918-1999) and the emergence of Tancredo Neves (1910-1985) as the civilian leader of the new civilian government—should appear just at the moment the democracy that emerged in Brazil out of the chaotic final years of the rule of the last of Brazil’s military dictators is facing its own existential crisis.

Many of the defects present in the process of creating the country’s democratic regime are every day more apparent at the moment of its potential decline. Even, amazingly, some of the same protagonists are still involved. The old generals have all now gone, to be sure. But the murky back-room deal makers very much remain. Elio Gaspari describes these machinations brilliantly in this new volume, as he did in his earlier four volumes on the origins and institutionalization of Brazil’s long-lasting military government.

This is an account written from inside the regime. It is based on years of prodigious research and detailed interviews with many of the participants, both mem-



Not a single member of the military nor a civilian has ever been held accountable in Brazil for the years of sometimes violent repression.

bers of the regime and their opponents. The book is based on unrivaled access to the documentation kept by key figures at the very center of the action, and a journalistic flair for following the multiple plots to their origins.

It is at times a shocking tale. Not a single member of the military nor a civilian has ever been held accountable in Brazil for the years of sometimes violent repression. Just as the military regime came to power with civilian support,

the transition to democracy also brought with it important civilian and political figures of the previous regime, such as José Sarney. Two signatories of the notorious AI-5 (the Institutional Act Number Five which closed the Congress for over a year, instituted censorship, gave the federal government intervention powers in the states and municipalities, banned political meetings, and suspended habeas corpus for political motives), participated in the new democratic government: Jarbas Passarinho was Minister of Justice under Collor’s government, and Helio Beltrão was the president of Petrobras during the government of José Sarney.

But once again the book demonstrates a recurrent paradox of Brazilian history: in the end, nothing is ever “really new” in the long-term trajectory of Brazilian politics. As Tancredi said in Luchino Visconti’s interpretation of Giuseppe Tomasi de Lampedusa’s *Il Gattopardo*: “*se vogliamo che tutto rimanga come è, bisogna che tutto cambi*” (if we want everything to remain the same, everything must change).

Elio Gaspari, who was born in Naples, Italy, arrived in Brazil as a child with his mother in 1949. She ran a bar in Copacabana and in Duque de Caxias, and they lived in Lapa. Gaspari studied at the YMCA (ACM no Brasil). He was expelled from the University of Brazil in mid-June

of 1964 at the instigation of Eremildo Viana, a notorious persecutor of students and faculty members. Subsequently Eremildo has appeared as a fictional participant (as an idiot) in Elio’s columns. Like any good Neapolitan, Gaspari does not forget his enemies.

But Elio Gaspari also remains committed to his friends. And one of his firmest friends was the late social columnist, Ibrahim Sued, to whom this final volume is dedicated. Gaspari worked for Sued from January of 1965 until he was arrested by the *fuzileiros navais* in mid-June 1969 and held for 59 days, first on the Ilha das Cobras, then in a collective cell on the Ilha das Flores. He was never threatened. But even though his interrogator made it clear that he would not face any physical violence, he did not believe it. At the time, Gaspari was a member of the PCB, the Brazilian Communist Party.

He owes his survival, and his release, to the intervention of Sued, who visited him both at the Ilha das Cobras, and at the Ilha das Flores. Later, Sued attended a seminar Gaspari gave at Columbia University in New York City. Gaspari was serving there as a prestigious Tinker Foundation visiting professor, a nice slap at Eremildo’s vindictiveness, as well as a vindication of those students expelled from the University of Brazil before they could complete their degrees. Gaspari’s debt

of gratitude to Sued was never forgotten.

Elio Gaspari, who was the DRCLAS 2004-05 Lemann Visiting Fellow at Harvard, began an important trend among Brazilian journalists when he wrote his first volume on the history of the military regime. In recent years, other Brazilian journalists have followed his path and written substantial works of history. But Gaspari's is an exceptional approach. He combines an almost cinematographic technique, with short dramatic chapters, divided overall into five parts, and beginning with the government of Ernesto Geisel (1907-1996). He examines Geisel's commitment to a political (but a carefully controlled and limited) opening of the regime. He then explores the subsequent rule of General Figueiredo, the successor chosen by Geisel, a man who combined, as it turned out, a disastrous propensity for crude gaffes, chronic ill health, and colossal misjudgments of character and of the capacity of the people he needed to carry out his programs.

Gaspari follows Figueiredo's period in office though what he calls the "explosion" of the economy, the "explosion" of the *planalto* (the Brazilian presidential palace), to the "explosion" of the streets, to the "construction" of Tancredo Neves. He ends with the untimely and unexpected death of Neves after he had been indirectly elected but before he could assume the presidency.

The book concludes with an epilogue describing 500 lives. This is a truly fascinating

overview, bringing the story of individuals up to the present. Thus we see what happened to the presidents, the ministers, the generals, those exiled after the coup, those *cassados* (those whose political rights were removed) by Geisel, the businessmen, the church, the members of military intelligence agencies, SNI (The Serviço Nacional de Informacao), CIE (The Centro de Informacao do Exercito), and DOI, the military officers who ran the *casa da morte*, those who ran the CISA and Cenimar (the air force and the navy's repressive organizations), those who ran the "porão," (the "underground cellar"... literally the torture dungeons of the regime), the military officers who participated in the anti-guerrilla campaign in Araguaia, and those young women, mainly students, who were held in the *Torre das Donzelas* in the Presídio Tiradentes, in São Paulo.

There is also a marvelously informative chronology with Geisel, Golbery de Couto e Silva (1911-1987), and Figueiredo, *Política, Economia, Sociedade e Mundo*, which does much to clarify the interrelationship between events, people, and political and international developments.

No one, in fact, escapes Gaspari's forensic attention. His epilogue is an amazing tale of multiple lives forever altered by the experience of the military regime. It is the story of a "hidden" Brazil, which many Brazilians know about of course, at least in part, but which many even today are very unwilling to fully acknowledge. The account

of the disaster of Figueiredo presidency is at the core of the story, and Gaspari deals with the growing problems and crises he so badly handled. They include Figueiredo's disastrous mismanagement of the economy, where three ministers "thought" they were in control, but none in fact was, and continue to the growing role of what Gaspari calls the "Tigrada."

The "Tigrada" is the growing disorder in the barracks, the out-of-control role of intelligence officers in bombings, and the increasing corruption among the families of leading military figures, including, it was claimed, one of the sons of General Figueiredo, as well as a son of the *éminence grise* of the regime, General Golbery, as well as deals with *empreiteiros* (contractors) in the German-Brazilian nuclear accord, and speculative deals involving contracts and major military figures.

Overall, Gaspari finds Figueiredo to be "*patético e errático*" ("pathetic and erratic"). "*Faltou à cena final de seu governo. Num gestou infantil, recusou-se a passar a faixa presidencial a José Sarney e deixou o Palácio do Planalto por uma porta lateral*" ("he even missed the final scene of his government. In an infantile gesture he refused to pass the presidential sash to Jose Sarney, leaving the presidential palace of the planalto by a back door"). But, in the end, he did end the period of military rule. This, Gaspari concludes, "*não foi pouca coisa*" ("was not a small thing").

But a theme which Gaspari uses to draw this story

together is the parallel lives of Captain Freddie Perdigão and Captain Heitor Ferreira, both junior officers at the beginning of the regime, one of whom became a leading participant in the most repressive aspects of Brazilian military rule, and the other, one of the leading participants in the regime's efforts to decompress and reform from within.

As a coronel, Freddie Perdigão Pereira moved in the underworld of the military repressive apparatus. He moved from the CIE (*The Centro de Informacao do Exercito*, the "Army's Center of Information" which was responsible for censorship, torture and repression) to SNI (The National Information Service, the main Brazilian intelligence agency). In 1982 he passed into the *reserva*, but continued for another five years in the service. He later became a friend of the *banqueiros de bicho* (the bosses of illegal gambling in Rio de Janeiro) in the Baixada Fluminense. He was accused of heading extermination groups. And his name was associated with the torture and forced disappearance of the civil engineer, journalist, and politician Rubens Paiva, the bombing attempt of Riocentro, and the assassination of journalist Alexandre von Baumgarten.

Baumgarten had been writing a book exposing the deal between the Brazilian military and Saddam Hussein (1937-2006) to supply "yellow cake" uranium to Iraq for its nuclear weapons program (Israel, however, bombed the Iraqi plant, putting Saddam

Hussein's nuclear ambitions, and Brazilian involvement in them, out of business). But Alexandre von Baumgarten knew too much, and he was assassinated because of this knowledge. Freddie Perdigão died in 1996.

Captain Heitor Ferreira left the military during the regime of Costa e Silva (1967-1969), but he was known as the "peão do rei," (literally "the peon of the King") He was private secretary to General Golbery, to President Geisel, and for a time to President Figueiredo. There is very little about the inner workings of these years that Heitor Ferreira did not know. He never gives interviews, though he has been a long-time prime source for Elio Gaspari.

This final volume brings Elio Gaspari's long years of work on the history of Brazil's military regime to a triumphant conclusion. It is a fascinating and sobering story, with many subplots and characters, all described with telling detail in succinct and elegant prose. It is a book few will put down. It contains much that is new and revealing. It is essential reading for anyone seeking to understand Brazil, and especially at this particular moment in Brazilian history.

Kenneth Maxwell writes a monthly column for *O Globo*. He was the founding director of the Brazil Studies Program at DRCLAS and professor of history. Previously he had been the Nelson and David Rockefeller Senior Fellow for Inter-American Affairs at the Council on Foreign Relations in New York City.

Latin American Foreign Policy: How Much Choice? A REVIEW BY CHRISTOPHER SABATINI

Review of Latin America in International Politics: Challenging US Hegemony by Joseph S. Tulchin, (Lynne Rienner Publishers, 2016, 235 pages)

U.S. studies of the international relations of Latin American states and inter-American foreign policy have traditionally been viewed (stuck even) through the prism of U.S. hegemony, in large part for good reason. Since the 1823 Monroe Doctrine, the United States treated the hemisphere as its special prerogative. As the overwhelming economic, military and political power, the Colossus to the North became the central factor shaping how Latin America and Caribbean states identified and asserted their national interests in foreign policy.

That scholarly approach to the international relations of Latin America and the Caribbean—while largely justifiable—precluded the development of more granular, comparative U.S. scholarship on the foreign policymaking processes and institutions in the region. Fortunately, as the shadow of U.S. power has waned in the hemisphere, the field has enjoyed somewhat of a boom. From single country case studies (such as *Aspirational Power* by Mares and Trinkunas on Brazil) to edited volumes on regional multilateralism (such as Pia Riggirozzi, and Diana Tussie's *The Rise of Post-Hegemonic Regionalism: The Case of Latin America*) to



analyses of reemerging extra-hemispheric powers' role in the region (such as Kevin Gallagher's *The Dragon in the Room: China and the Future of Latin American Industrialization* and R. Evan Ellis's *China in Latin America: The Whats and Wherefores*), academics, think tankers and policy analysts are turning their attention to the evolving dynamic of international and global relations in the hemisphere.

To this much-welcome flurry of research and publication, former director of the Latin American Program at the Woodrow Wilson International Center for Scholars, Joseph Tulchin has added his historical perspective. His book, *Latin America in International Politics: Challenging US Hegemony*, is an erudite, nuanced and sweeping view of the evolution of Latin American foreign policies in the context of U.S. power from independence to the present.

The focus of Tulchin's readable, well-researched, and ambitious book is the expand-

ing space for Latin American states to determine their national interests on their own and pursue them in their foreign policies—to use the social science terminology and the word Tulchin uses frequently, their “agency” in foreign policy. As he writes, “The relative absence of agency in Latin America and the process by which agency grows and evolves in different countries is the central thread of this book's narrative” (p. 8).

In discussing and summarizing the history of foreign policy formation and implementation in the region, Tulchin's training and approach as a historian really bears fruit. Indeed, much of the book—158 pages of the 191-page book—is dedicated to the history of foreign policymaking in the region, with only the final chapter focusing on modern-day agency after hegemony. Unfortunately, the later section is where the book tends to stray off and lose its focus, ultimately failing to deliver what the author promises in the first chapter: a more current, systematic analysis of how Latin American states have gained and are using their agency and its limits.

But what a great, original, insightful read it is until then. The author's strength is in tracing the history of the interplay between domestic concerns (such as state building in the early 19th century and later authoritarian ambitions and democratic pressures) and for-

eign policy, within and outside U.S. influence. Tulchin artfully laces together international theory and history, with themes of nation building, elite world views, institutional capacity, and anecdotes and insights. Rather than plodding through his argument chronologically, Tulchin skips back and forth in time to make larger arguments about the creation of an international community based on Western European-style rule of law, the interactions of elites and egos, national geopolitical ambitions, the development of scholar/practitioner networks on foreign policy, and efforts at regional integration. The structure makes the book all the more readable and powerful theoretically. All the while, Tulchin peppers his sweeping historical theory building with stories about the personalities involved and rare details such as quotes from memos and cables and inside conversations, clearly drawing from his own extensive research and (from the 1970s on) personal contacts and conversations with many of the central players. The result is a long overdue and original book on the history of international relations that stands atop the older literature (and some contemporary arguments as well) that have focused almost obsessively on U.S. hegemony and its negative consequences.

When discussing the present state of foreign policymaking in the region, though, the analysis trails off. The final chapter, in which Tulchin explores the scope for agency in contemporary hemispheric international relations, feels rushed. In the broad effort to tie together his excellent historical analysis to recent developments in 32

pages, the chapter loses its systematic approach, becomes repetitive, at times contradictory, and often lapses into unexplained generalities and platitudes. The result for the reader is the sense that there's a larger, important argument being made here that just keeps slipping through her fingers. For one, in the quest to uncover and detail agency in current hemispheric policymaking, Tulchin abandons structure. Because he desires to avoid ascribing everything to structure, Tulchin leaves aside the new (and old) global and regional structural factors that shape—and will continue to shape—foreign policymaking in the region. Issues such as the rise of commodity prices that empowered countries like Brazil and Venezuela economically and diplomatically, the rise of China and with it emerging global multipolarity, and the declining relative power of the United States and its economy are given short shrift. The chapter and Tulchin's argument could have been better served if these global and regional structural factors had been presented earlier, since they explain largely the extent of autonomy individual states enjoy in the region and the broader global context in which they define and pursue their agendas today. Instead, Tulchin takes us through a tour of individual countries' foreign policies, leaving some out, often diverging on several tangents (such as his discussions on human rights in Argentina), and never attempting across the countries to examine factors such as endowments, interests, ideology and state foreign policymaking capacity (say,

Chile versus Bolivia)—a rigor that would give us some broad comparative insight into foreign policymaking today.

Other issues are not given sufficient attention. Trade and the importance of business relations are only mentioned at the end and never as a driving factor in this new era of regional relations, when arguably—as with the commodities boom—they have played (and will continue to play) an important role in shaping foreign policies in the region. Pacific Alliance and the Trans-Pacific Partnership (TPP) are only given passing attention. Rather than describing the broader economic forces at play (some of them driven by large business interests, the so-called multi-latinas in these countries) Tulchin pays greater relative attention to the multilateral diplomatic bodies of UNASUR and CELAC. But in those cases, the author can't seem to make up his mind whether they will become important institutions or not. He also fails to mention how the emerging regional muscularity will affect drug policy, though he analyzes the issue in depth in previous chapters.

In the author's ambition to bring together all the potential changes, the final chapter also has a tendency to make assertions that leave the reader wanting more. Lines like, "the double revolution—globalization and the transition to democracy—established the conditions for policymaking process..." (p.162) or, when discussing the growth of a community of non-state networks, "Throughout the community, globalization brought dramatic increases in the diffusion of services, products and ideas"

(p. 165) are left without much explanation or analysis of *how* they have concretely affected policymaking. In the book's previous chapters similar factors would have received fuller attention in terms of examples and detail.

In some cases, the failure to back up specific assertions leads to later contradictions or curious claims. Such is the case when, on p. 187, Tulchin says that Latin American governments' "membership in international regimes today gives them opportunities to discuss the rules that govern exchange." This comes in the same chapter in which Tulchin discusses the failure to fully reform the Bretton Woods system, the emptiness of the Brazil, Russia, India, China and South Africa (BRICS) alliance, and the region's lack of voice over critical votes in the UN on Syria or Libya—leading the reader to wonder exactly what institutions and what rules he means. Similarly, the argument in the latter pages of the book that Cuba "continues to represent successful agency in a changing world" is belied by the country's dependence on Venezuelan oil and crumbling economy. Tulchin cites examples of recognition of Cuba's role in areas like health, but those are hardly consistent with the sort of real agency as he defines it earlier, and later adds vaguely "that may change in the next few years" (p. 190).

The book's analysis of current affairs and its attempt to build a new theory to encompass foreign policy in the hemisphere today suffers from the near complete absence of recent scholars and literature that have covered the same questions

Tulchin has set out to answer. There has been a wealth of new monographs, articles and books by a new generation of academics and think tank scholars such as Jorge Garzón Pereira, Andrés Malamud, Ted Piccone, Julio César Cassio Rodríguez, Sören Scholvin, Matias Spektor, Oliver Stuenkel and Harold Trinkunas that have examined the new foreign policies in the region, the geopolitics of Brazil's rise, and the evolution of regional multilateral organizations in Latin America that Tulchin

appears either to not be aware of or to have ignored (though he cites nine past works of his own). It's a shame, because the author/historian could have used this opportunity to bridge his experience and long view with this exciting new body of recent theory building.

At the end of the book, Tulchin turns to asking a series of questions. Among those: will "The nations of Latin America be prepared to expand their agency? Do they want to?" (p. 191). To be honest, I found myself wishing he would have

least helped me shape the answers to those questions. But the author hasn't sufficiently analyzed the structural or institutional context today that will shape those decisions. Focusing too much on agency, he makes it sound—throughout the final chapter and in these questions—as if it were within these states' sole power to set these courses. The shift is odd, since, in Tulchin's excellent previous chapters, he never would have framed the question the same way: as one only of agency. This lack of rigorous follow-through

in the final chapter ultimately leaves the matter of how and what has and will shape the agency of Latin American states today and in the future unanswered.

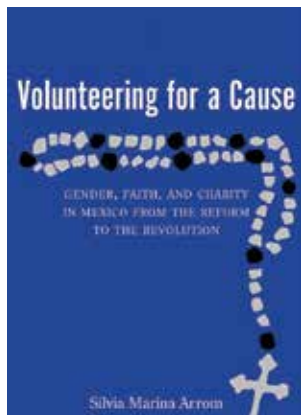
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Seeing the State from the Margins

A REVIEW BY SUSAN FITZPATRICK-BEHRENS

Volunteering for a Cause: Gender, Faith, and Charity in Mexico from the Reform to the Revolution by Silvia Marina Arrom (University of New Mexico Press, 2016)

What happens when researchers look quite simply for "other ways of telling the story?" Silvia Marina Arrom asks this question at the beginning of her deeply researched history of the male Society of St Vincent de Paul and its female counterpart, the Ladies of Charity of St Vincent de Paul, in Mexico. It is an entirely appropriate question. Few researchers study Catholic lay organizations. Those who do often represent the faithful and limit their "stories" to recounting names of illustrious founders, cataloging good works, and highlighting



volunteers' piety. Researchers who view religion more critically often dismiss religious philanthropy and its frequently female face entirely or discount it as a pre-modern manifestation of paternalistic charity. Arrom tells a different story. In it she provides fascinating insights into heretofore virtually invisible Catholic agents of welfare and their

role in religious and political mobilization in Mexico. Her account offers a crucial corrective to the triumphalist narrative of the secular Mexican state.

Mexico has been considered among the most anti-clerical countries of the global South. During the post-Independence era, the country experienced dramatic Liberal/Conservative conflict, much of it centered on state efforts to control the Catholic Church. These conflicts culminated in *La Reforma* (1855-1863), a period of dramatic anti-clerical legislation and governance. The 1857 Mexican Constitution and a trilogy of laws (*Ley Iglesias*, *Ley Juárez*, and *Ley Lerdo*) pummeled Catholic power by prohibiting civil and ecclesiastical corporate ownership or administration of real

estate, nationalizing church wealth, regulating parish fees, suppressing religious orders, separating church and state, establishing marriage as a civil contract, placing cemeteries and statistics under civil control, asserting freedom of religion, speech, and the press, and secularizing schools and charities.

La Reforma's 19th century anti-clericalism was followed by the post-revolutionary Mexican state's promulgation of the 1917 Constitution, which imposed similar regulations but with greater force.

The Catholic Church's response appeared reactionary. Following *La Reforma*, Catholic clergy and laity supported the Second Empire of Maximilian, thereby discrediting the church and the Conservative movement. Following the Mexican 1910

Revolution, Catholic forces gathered behind the Cristero Rebellion, a powerful counterrevolution which forced the secular state to take a step back. Even though these movements seemed to highlight continuing Catholic power, researchers often assumed that the secular, modern Mexican state's repeated assaults reduced the church to a mere purveyor of ritual and prayer. Yet Silvia Arrom demonstrates that far from disappearing as a result of Liberal assaults, the Catholic Church merely shifted its focus. In response to *La Reforma* and post-revolutionary repression, the Catholic Church actively promoted lay activism, and especially female lay activism. The male and female branches of the lay St. Vincent de Paul society were direct outgrowths of this new emphasis on laity and the opportunities the church granted the faithful. Women, especially those of the middle and upper class, engaged the space of Catholic volunteer service to enter the public sphere as agents of faith and social welfare.

The lay St. Vincent de Paul Society was a transnational endeavor, which traced its roots to a French association founded at the height of the French Revolution's anti-clericalism. The male branch of Mexico's St. Vincent de Paul Society was founded in 1845, just a decade before *La Reforma*, and its female counterpart, the Ladies of Charity, two decades later at the conclusion of *La Reforma* in 1865. The very foundation of the lay organizations and

their success offers a counter to the image of a powerful secular state decimating church power. With its aim of "promoting Christian charity, spreading the Catholic faith, stimulating the love of God and of one's neighbor, fostering the cult of Saint Vincent de Paul, and forming conferences of Saint Vincent de Paul" (p. 25), the associations grew in numbers, wealth, and strength, especially in peripheral regions outside the reach of the centralizing Mexican state.

The Society initially grew slowly, but the *Reforma* provided an impetus for rapid growth in terms of numbers, the social class of members, the breadth of works performed, and the geographic location of chapters. It also marked a fundamental shift in the gendered structure of the organization as a result of the foundation of the Ladies of Charity in 1865. Despite their later foundation, the Ladies of Charity rapidly outstripped male lay activism. "By 1895 there were only 1,536 men active in 121 conferences, compared with 9,875 women active in some 400 chapters" (p. 108). The Ladies of Charity operated in virtually every state of the country, while the men were concentrated in a central strip with focal points in Mexico City and Guadalajara. On the eve of the Mexican Revolution, the Ladies of Charity conducted more than 99 percent of home visitations, and their works accounted for 76 percent of Vincentian conference expenditures (p. 110). In the state of Jalisco, which

would become a mainstay of the Society and the Catholic Church, Ladies of Charity comprised 91% of the volunteers in the countryside (p. 150).

While Arrom details fully the powerful role of women in the Society, she does not agree with the widespread perception that 19th-century Mexican charity and piety were "feminized." Instead, she argues that gender complementarity contributed to the extraordinary success of the St. Vincent de Paul lay associations. In Arrom's account, men appear women's equals in their religious piety. Men simply "had many other ways to defend their faith, serve others, and reform the modern world" (p.113). Arrom supports her observation throughout the book by highlighting men's multiple roles in supporting the faith, which ranged from directing Catholic newspapers (p. 33), forming the Partido Católico Nacional (p. 112), and raising funds for the St. Vincent de Paul Society. Men raised nearly four times the amount of individual female donations. "In 1900 each male volunteer on average took in approximately 37 pesos for each woman's 10" (p. 117). In effect, men provided money, while women provided their labor.

Arrom most clearly illustrates the breadth of the Vincentian conferences' influence in her culminating chapter focused on Jalisco. With Guadalajara as its capital, Jalisco became the site of a "dense web of Catholic organizations" (p. 127) and, not incidentally, the bedrock

of the Cristero rebellion against the anti-clerical revolutionary Mexican state. In the 1860s, the male Vincentian volunteers from Guadalajara formed 32 percent of all Vincentian volunteers in Mexico, and the region came to account for a quarter of all male conferences founded in Mexico during the Second Empire. The Gentlemen taught Christian doctrine to indigenous people in rural villages, founded a school and a workshop for adults, and engaged in an abundance of good works. Yet the Ladies of Charity appeared in every way more "successful." Arrom recounts that the female volunteers contributed "to building the infrastructure for Jalisco's public health system" by supporting some twenty hospitals (pp. 148-149). They oversaw instruction in doctrine of boys and girls in Catholic schools and in Sunday school; they helped to found *cajas de ahorros* (or credit unions) to help workers save their earnings; they established libraries and rural study schools, thereby extending Catholic reach to nearby *rancherías* and *pueblos*. The male and female volunteers of the Saint Vincent de Paul Society thus offered a religious alternative to the secular welfare state, which may have been more effective because it was more extensive, more easily accessed, and more fully trusted.

Silvia Arrom describes the work of the Vincentian lay volunteers, especially that of the women, as "the work of ants." Through the labor of accretion, involving thousands of individual

acts of prayer and charity, the volunteers developed vast networks that had a profound impact on Mexico. Remarkably, the breadth of the St. Vincent de Paul volunteers' labor and impact appears directly in contrast to their virtual invisibility in the historical record. To uncover their history, Arrom, too had to engage in her own "work of ants" by traveling to multiple local and regional archives, scouring existing research, poring over "official histories," and then painstakingly reconstructing the history in the form of narrative and a wealth of tables and maps. By doing so, she offered not just the important story of the St. Vincent de Paul Society, but also a means of reconsidering the Mexican state and even the modern welfare state more broadly. While the book provides an outstanding account of gender complementarity and highlights social class, there is a notable absence of race. It is possible that the archival materials simply did not allow the author to "tell this story," and it will be up to future researchers to consider the ways that the largely middle and upper class, and presumably European-descent and mestizo women and men of the St. Vincent de Paul conferences encountered the people they served.

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A Political *Pas De Deux* in the Andes

A BOOK REVIEW BY JENNIFER CYR

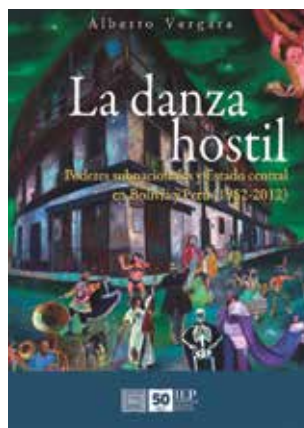
La danza hostil: Poderes subnacionales y Estado central en Bolivia y Perú (1952-2012) by Alberto Vergara (Instituto de Estudios Peruanos, 2015)

La danza hostil revisits an age-old question in political science: how is political power constructed (and reconstructed)? Alberto Vergara tackles this question by examining state/society relations in contemporary Bolivia and Peru. His explanation is both timely and insightful.

It is timely because the two countries have experienced remarkable upheavals over the past half century, yet thoughtful, theory-driven comparisons have been largely absent. Vergara's treatment of decades of political crisis fills a much-needed gap in the literature on Andean politics.

Additionally, the book represents an insightful re-imagining of recent Bolivian and Peruvian political history. Vergara characterizes the struggle for power in each country as a contentious back-and-forth between the state and the regions. Into this account he weaves in each the major moments of crisis and change from the 1950s on, situating each in the political *pas de deux* at the book's core. In all, the book represents a theoretically grounded and rich interpretation of the evolution of political power in the Central Andes.

Vergara addresses an important empirical puzzle—



one that is a reflection of his own deep knowledge of the two countries. Southern Peru, he notes, had an active, powerful regional elite through the 1950s. That same elite was essentially absent from politics in the country by the turn of the century. Elites from eastern Bolivia, by contrast, were practically non-existent on the political scene well into the mid-20th century, but they became a driving force of national politics by century's end. How, he asks, can we account for this dramatic contrast between the two countries? Why do we see the birth of territorial conflict in one country and its death in another?

The answer, Vergara contends, rests in the adverse but intimately linked relationship between the state (the country's *center*) and regional elites (its *periphery*). This relationship is defined in part by what Vergara calls a territorial distribution of assets (*estructura territorial de activos*). When a region is rich in natural resources and has

an important concentration of citizens, especially *vis à vis* the capital city, then it will have the demographic and economic resources to mount an offensive against the state and control what it can of national politics.

These assets make the eruption of territorial conflict possible. But resources, in and of themselves, are of little use without actors to exploit them. For Vergara, a cohesive elite is essential for erecting a successful challenge against the state. This cohesion is the byproduct of these leaders' ability to build an organizational apparatus and fashion a unified discourse. Ultimately, a territorial cleavage becomes nationally salient when a cohesive elite has a strong asset base with which to challenge the center. This occurred with the *cruceña* elite in eastern Bolivia, who forced their regional demands onto the national stage in the early 2000s, reigniting a territorial cleavage. A cleavage can be de-activated, alternatively, when a region's asset base is depleted and the elites, divided. This occurred in southern Peru in the second half of the 20th century. No territorial cleavage emerged at the end of the century, even though, as Vergara demonstrates, electoral and institutional conditions clearly incentivized conflict.

La danza hostil is innovative for several reasons. For one, it looks within each country to analyze con-

figurations of political power. Vergara examines the role that spatial—or what Gibson (*Boundary Control*, Cambridge University Press, 2012) calls territorial—politics play in shaping state/society relations in Bolivia and Peru. Vergara emphasizes that the state in the Andes is not autonomous from society. The question, therefore, is not whether the state is intertwined with society—it most certainly is in Peru and Bolivia. Instead, the point is to identify who leads and who follows in the “hostile dance” that drives politics in each country. In Bolivia, the state never fully subordinated society. At most, it depoliticized some groups by empowering others. Therefore, the eruption of conflict—that is, the activation of a territorial cleavage—was always a possibility.

In Peru, by contrast, a territorial cleavage became increasingly unlikely over the second half of the 20th century. For one, the state became stronger *vis à vis* society thanks to policies pursued by two *caudillo* rulers, Juan Velasco Alvarado (1968–75) and Alberto Fujimori (1990–2000). Moreover, the south was slowly depleted of its asset advantage, stripping the “anti-oligarchic peripheral elite” of any resources with which to challenge the center. Overall, what Vergara convincingly shows is that national political power and state autonomy are forged just as much from within—that is, from the subnational level—as from without, as a function of each country’s relative position of power regionally and internationally.

Second, Vergara demonstrates that state/society relations are anything but static. This was especially the case in Bolivia. There, the balance of power between the center and the periphery was in constant flux. A department like Santa Cruz was isolated and weak in one period, only to emerge to effectively challenge the center in another. The emergence of Santa Cruz as a powerful, national political protagonist shows that the condition of being in the center or in the periphery is temporary.

Additionally, territorial cleavages themselves are dynamic. At times, they can be highly salient in national politics, as in Bolivia after 2005 or in Peru prior to the 1950s. In other moments, however, they can lie dormant. Like the “arc of an accordion” (p. 23), the intensity of territorial cleavages can expand and contract.

Perhaps less intuitively, Vergara shows that the territorial distribution of assets can also vary. Populations can migrate internally, leaving one part of the country to inhabit another. Natural resources can be discovered. This evolution in resource wealth can enrich previously poor regions. It can also strip wealthy regions of their treasure.

Why is this so theoretically important? For one, there has been a tendency in the literature to edify the spatial distribution of power in a country. Consequently, particular cleavages become “frozen” in time (e.g., Stein and Rokkan, *Party Systems and Voter Alignments*, The Free Press, 1967). Politics, by this

account, is constrained within the institutional architecture of the national political system. Vergara demonstrates that this approach to conflict makes little sense in Peru and Bolivia, where state institutions are essentially contested spaces.

Furthermore, Vergara implicitly engages with some recent literature on patterns of long-term development (for example, Mahoney, *Colonialism and Postcolonial Development*, Cambridge University Press, 2010). These works show that a country’s economic and social development is relatively stable *vis à vis* other countries. This means that countries like Bolivia, which were the least developed at the start of the 20th century, tend to remain among the least developed at century’s end.

These relatively static patterns of development at the national level obscure much more dynamic processes of growth sub-nationally. By looking beyond the national level, Vergara uncovers quite significant potential for developmental change across a country’s territory. Moreover, he shows that these sub-national demographic and economic shifts can have real consequences for national politics. In Peru, for example, the depletion of assets in the south led to the dissipation of a territorial cleavage and the consolidation of an electoral authoritarian regime under Fujimori.

Less clearly developed is the connection between certain assets and elite capacity. Vergara asserts that two resources—organizations

and discourse—allow for elite cohesion, which is necessary for creating a regional project (p. 73). The implication is that, in the absence of a unified discourse and representative organizations, a cohesive elite would be less likely.

One is left wondering, however, if a unified discourse can exist prior to the existence of a cohesive (and therefore unified) elite. Similarly, it is likely that the effectiveness of a representative organization is in part a function of the unity of the group it represents, rather than the other way around. We can call this a chicken-or-egg problem. This confusion is problematic insofar as it renders the historical narrative vulnerable to *post hoc* definitions of elite cohesion. That is, we might conclude that the *cruceña* elite was cohesive simply because it successfully challenged the central state.

Setting that quibble aside, the value of this book is unquestionable. In addition to its theoretical contributions, the book represents a truly impressive comparative-historical effort. In *La danza hostil*, Vergara has managed to be both theoretically provocative and empirically rigorous. The book will certainly become a must-read for Andean scholars.

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Dancing Identity

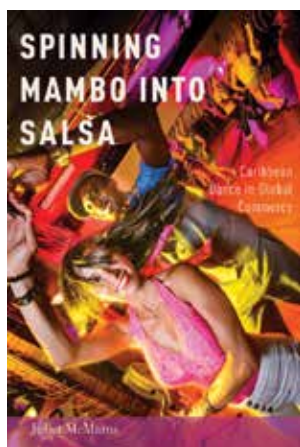
A REVIEW BY MANUEL AZUAJE-ALAMO

Spinning Mambo into Salsa: Caribbean Dance in Global

Commerce, by Juliet McMains
(Oxford University Press, 2015)

At a fancy yet packed bar in Tokyo's most cosmopolitan district; at the patio of a bar in Vancouver facing the Canadian Rockies; at a hotel lounge bar overlooking the skyline of Shanghai's Bund; at another bar, this one within walking distance of New York's Central Park; at a bar hidden a couple of blocks away from Istanbul's Taksim Square, overlooking the Bosphorus Strait which divides the European and Asian continents—these are some of the places where I have danced salsa, definitely one of the most prominent cultural exports from Latin America in today's globalized world. In fact, during my more than 10 years of living in Asia, salsa has been the most reliable way for me to keep in contact with my Latin American roots. Even at this very moment, as I write these lines at a Taiwan café, the songs coming out of the ceiling speakers form a constant loop of Latin rhythms and remixes, yet I probably am the only person in the whole establishment who understands their Spanish lyrics.

The role of salsa in helping build a Latin American—or Hispanic, or even Chicano—identity within the United States has been the subject of past studies. These works overwhelmingly argued for, or recognized, the unifying strength of the Spanish language—the



common tongue shared by immigrants hailing from all types of Caribbean, Central and South American cultures and environments living within the (North) American melting pot—as a key for salsa's success as both a community and identity strengthener amongst Latin American immigrants and their descendants. Other writers emphasized the divisive aspect of salsa, with many countries in the Caribbean claiming that it was *their* country that gave birth to the genre, or that most helped in its development and diffusion, and each claiming that *their* way of dancing salsa is the most authentic, or the best, or *la que tiene más sabor*.

However, Juliet McMains' book—while recognizing the importance of both perspectives in understanding the phenomenon of salsa—treads new ground in focusing principally on the way that salsa dancing has spread to all four corners of the world. It is a deeply engaging cultural history of salsa that ranges from New York to Los Angeles,

from Miami to Havana, from Europe to Asia. In a confident style that is both rewarding and illuminating, the book traces the development of the dance from its multiple forefathers starting in the early decades of the 20th century—rumba, cha cha, tumbao, Cuban son, and mambo. At the same time, as the subtitle of the book implies, it never loses sight of the relationship between salsa's history and its current status as a world-famous dance. In doing so it raises a deeply interesting issue: how should we view the commercialization of salsa as a commodity in the global market?

The Irish poet William Butler Yeats famously finished one of his poems with the line “How can we know the dancer from the dance?,” an evocative poetic image which deftly expresses the melodious blending of performance and identity at the moment of dancing. And yet, what happens when the dancer is a global consumer, vastly distant from the origins, the language, and the history of the dance? That is, whose dance is it anyway?

Juliet McMains is in an excellent position to shed some light on both: on the one hand, the history of salsa's development, and, on the other, the politics of identity and strategies involved in its world-wide commercialization. Currently an Associate Professor of Dance at the University of Washington, she not only graduated with a B.A. in Women's Studies from Harvard University before

obtaining a Ph.D. in Dance History and Theory from the University of California at Riverside, but she also has a rigorous background as a dancer in many styles (ballroom dance, salsa, ballet, jazz) and has been a DanceSport competitor, twice named a U.S. National Rising Star.

The book benefits immensely both from McMains' training in cultural anthropology, music and dance theory, and from her background as a dance performer and competitor. For the initial chapters of the book, in which she searches for the roots of modern salsa, she not only sought out and interviewed the few remaining dancers who frequented the birthplace of modern salsa, the legendary New York dance club The Palladium; she also danced with them and got them to share invaluable information on the development of salsa's different styles.

Thus, McMains' double background as both a cultural anthropologist and a professional dancer grants the book a unique double approach to its subject. At one moment in the early chapters she surprises us by unveiling the unexpected role of the New York Jewish community and its dancers in the development of salsa. At another moment a few pages later she visits a salsa night at a community center frequented by septuagenarian and octogenarian salsa dancers who were present at the early days of the dance, and is able to pinpoint, with a professional dancer's eye,

what is unique to their style.

In this way, the book's eight chapters develop in an organic manner: the history of the mambo craze in the United States gives way to the New York dancers who developed the dance in racially integrated nightclubs in which white, black, Jewish and Hispanic patrons all mingled and danced with each other. This is followed by the history of the split of salsa dancing into on-1 and on-2 dance styles, which flows into a chapter on the later development of the style known as Cuban salsa, or *Salsa de Casino*. The last chapters deal with the emergence of international salsa congresses in the last years of the 20th century as a defining factor in the global standardization of salsa into teachable and modifiable styles the world over. These chapters have all answered questions that I have had for years as a Latin American dancer living

abroad: how are the styles different?, where did they develop?, which one is more "authentic"?

One theme which McMains might have mentioned is the other Latin American dances that have also traveled the world thanks to globalization, and especially the Latin American dances that—in a symbiotic relationship with salsa—have travelled the globe in its company: merengue, bachata, and, increasingly, kizumba. I have visited many salsa clubs around the world where these rhythms are interspersed between salsa tunes.

Bachata in particular—a dance that is slower than salsa and danced in a much more intimate and close stance—has enjoyed an international boom in the first decade of the 21st century that has been parallel to the internationalization of salsa. This is remarkable, considering that bachata was

a much relegated musical genre in its native Dominican Republic until the 1980s. Similarly, the appearance of kizumba in salsa-playing clubs—a dance that originated in Angola, was further developed in France, and is mostly sung in Portuguese or French—is an interesting phenomenon of cross-cultural exchange: a Latin dance by way of the colonial Portuguese African experience intermingled with other Latin dances that originated in the colonial Spanish American experience. Nowadays, these Latin musical genres all play out in the international dance halls of salsa. Indeed, in Asia I have found dancers whose bachata or kizumba is better than their salsa, even as the dance clubs that they patronize mainly feature salsa.

That being said, this excellent history of the development of salsa and the beginning of its international boom is a great success, which is pre-

cisely the reason why I hope to one day read a similarly deep analysis of salsa's companion dances in the global stage. For now, McMains' excellent effort is a leap forward in our understanding of how dancers from all over the world came to dance salsa and the networks that have formed to support this international dancing culture. If you are interested in the globalization of Latin American culture, Latin American identity, or have ever tried to pick up the beat of a salsa song as you shuffle your feet, you should definitely pick up a copy of *Spinning Mambo into Salsa*.

Manuel Azuaje-Alamo holds an M.A. from the University of Tokyo and from Harvard University. He is currently a Ph.D. candidate at the Department of Comparative Literature of Harvard University, and is writing his dissertation while living in Seoul, South Korea.

The League of Nations: Practicing Diplomacy

A REVIEW BY PEDRO REINA PÉREZ

Beyond Geopolitics: New Histories of Latin America at the League of Nations, edited by Alan McPherson and Yannick Wehrli (University of New Mexico Press, 2015, 293 pages)

The League of Nations (LN) was founded on January 10, 1920, at the initiative of President Woodrow Wilson who, at the Paris Peace Conference the year before, had put forth a proposal to create an international organization to maintain and promote world peace. The

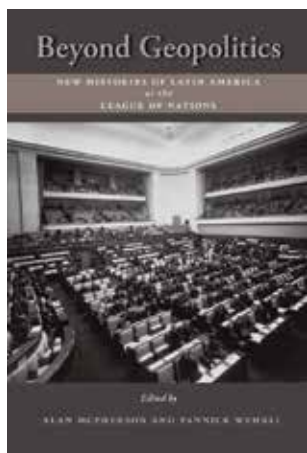
scars of the First World War were deep and painful. The League's initial goals were to promote collective security as a means to prevent wars, and to establish new alternative methods for dispute resolution such as negotiation or arbitration. The League of Nations also concerned itself with issues related to labor laws and conditions, human trafficking, arms trade, and health, among others. Its governing bodies were a council and an assembly,

with a secretariat to handle all administrative matters. Various of its organizations such as the International Labour Organization (ILO), the Health Organization, the Committee for the Protection of Children and Young Persons and the Organization for Communications and Transit were entrusted with economic, social and cultural issues.

The central tenet of LN was cooperation among its members. Since it lacked an army, it was dependent on the

so-called Great Powers to use diplomacy or other means to enforce sanctions or comply with resolutions. This was a departure from previous forms of conducting international business.

Yet the Great Powers were reluctant to support sanctions or provide an army if needed for fear of unsettling the status quo. The League's greatest failure by far, aside from other minor mishaps during the 1920s, was preventing aggression by Ger-



many and Italy against other member countries. Some of its members withdrew gradually, and World War II ensued. Yet the system put in place by the LN was an important precedent for the United Nations at the conclusion of the war. The World Health Organization (WHO), the UN Educational, Scientific and Cultural Organization (UNESCO) and the UN Children's Fund all had their roots in the LN.

For Latin American countries, participation in the League of Nations offered an experience akin to an "apprenticeship in international economic cooperation," helping to establish multicultural debates and exchanges through regular international meetings. *Beyond Geopolitics* takes a detailed look at how these experiences helped shape the practice of diplomacy, grounded in the new values that characterized the 20th century. It allowed member countries to articulate their particular visions on the international stage *vis à vis* the United States and Europe, something that had not been possible with such clarity before. Some proposals sometimes clashed with the priorities of Washington and Geneva, but the stage allowed

Latin American countries which were often ignored in diplomatic circles to lead in many LN-related activities. The book's essays on Latin American participation are mostly the result of a 2011 international symposium in Geneva.

The chapters are grouped in four areas: sovereignty and conflict resolution, labor, intellectual and conflict resolution, and economic and social activities. During its existence (1920-1946), all Latin American republics belonged to the organization at one time or another—about one third of all member states in the first years. This was significant, as the LN was deemed to be more of a European than a global organization. Most of its activities were focused on European matters as it pursued the restoration of peace on the continent after the effects of the world war. Yet the "one country, one vote" policy afforded the Latin American countries a chance to wield some power within the organization. Nevertheless, the issue of representation in the secretariat, council and assembly was at the center of an intense debate as some questioned the burdens of its financing. Those who favored participation stressed the benefits it provided Latin American republics in terms of access to a global forum, expertise on economic and social matters and a chance to lobby European diplomats directly. This was significant as it diminished the United States' influence on certain international matters.

The authors strive to fill a void in the League's historiography, as they consider Latin American participation in it a neglected subject. Two questions are central to their quest:

Is the participation of peripheral states of Latin America in the League worthy of attention? Why does the region merit special treatment? They claim that special measures were put in place by the secretariat and other bodies to take care of Latin American interests, since their participation gave credence to the LN's claim of universality. Efforts were made to improve communication and a special office was established in 1923.

The book is anchored by five major themes. The first is the region's interaction with world powers. Participation in the LN gave the Latin American members a way to better understand the relationship between universalism and regionalism and the tension it harbored. Given that the LN was their first experience in a multilateral organization, it served to point out the complexity of the exercise of diplomacy. The second theme is international cooperation. The region's countries gained access to a source of global knowledge on economic, social and scientific issues that allowed them to learn and expand their horizons. The third is cultural distinctiveness. The League created a forum to better understand Latin American idiosyncrasy and the way it was perceived. A fourth theme is the tension between universalism and regionalism as expressed in disagreements over security, trade and food, among others. The fifth theme is the relationship between Latin America and the United States. While the LN recognized the validity of the Monroe Doctrine, it provided a forum to denounce U.S. interventions.

The book undertakes its

objective with a plurality of topics, approaches and methods to focus on the complexities ignored in previous publications. Sovereignty and conflict resolution, for example, are examined in the context of the U.S. interventions in Nicaragua, Haiti and the Dominican Republic; one chapter addresses the limitation of economic sanctions against Italy after Ethiopia's invasion; and another describes Mexico and its support of the LN covenant during the Spanish Civil War. The International Labor Organization is examined to clarify how Latin American concerns were integrated without compromising the body's conventions and agreements, and how it inspired the creation of the Confederación de Trabajadores de América Latina in 1938. On intellectual and scientific cooperation the book considers individual cases related to the writing of history, as well as debates about the Pan-American Institute of Intellectual Cooperation and scientific development. Finally, the League's social and economic activities are examined such as taxation and public policies.

Scholars and practitioners of foreign affairs will find plenty to discuss in the book. It is a provocative and eclectic introduction to the complexities of early Latin American diplomacy and its history.

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Educational Lessons

A REVIEW BY L. MARCELA GAJARDO

Teaching and Learning for the Twenty-First Century. Educational Goals, Policies and Curricula from Six Nations. Edited by Fernando M. Reimers and Connie K. Chung (Harvard Education Press, 2016, 289 pp.)

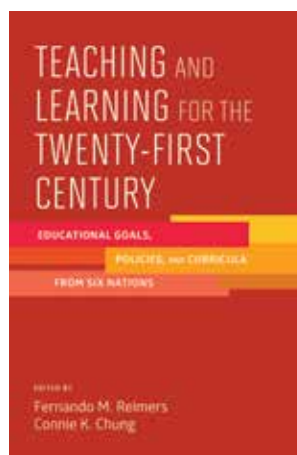
In *Teaching and Learning for the Twenty-First Century. Educational Goals, Policies and Curricula from Six Nations*, Fernando Reimers and Connie K. Chung examine some policy issues in educational development, particularly the contemporary status of curricular change and the challenges of equity. They take a hard look at issues of quality and relevance gaps both as global challenges and national debates about policy options to improve public school systems.

By reviewing instructional priorities in various national curricular frameworks and analyzing how and whether these frameworks reflect the skills students need to thrive in the twenty-first century, Reimers and Chung use systematic analysis to address subjects that sometimes involve emotional arguments rather than thoughtful comparisons and analysis. The editors look at case studies: China, India and Singapore in Asia, Chile and Mexico in Latin America, and the United States in North America.

Introduced and closed by two framing articles by the editors, the book's six

chapters dedicate a third to analysis of two Latin American countries Chile and Mexico. Although different in size, these two countries share common problems in educational development and reform efforts. Disparities and achievement gaps are still huge in both countries. Children from poorer households tend to begin school later, repeat more grades, drop out sooner, and score lower on tests than their better-off peers, regardless of their gender, race, ethnicity, or area of residence. Although progress has been made, both in Chile and in Mexico, access to quality education remains unevenly distributed. Children in poorer households are vulnerable to exclusion. Those who did not attend school at all tended to be poor, female, living in rural areas as social minorities, either refugees, displaced peasantry or indigenous groups. Although more such children and youth attend school today, indicators such as secondary school enrollment, school attainment, participation in higher education and outcomes of the educational system reveal disparities among children coming from wealthier and poorer families.

Developing countries have been trying to lead educational change and devise various policy reforms since the mid-sixties onwards, always trying to catch up



with the skills employers want and cognitive communities demand, particularly in the twenty-first century. However, not until the past two and a half decades has there been an effective and sustained effort aimed at improving learning achievement and learning outcomes. As a result of a long-term movement of educational change, virtually every country has increased public spending; schools have been built; teachers added; and salaries raised. More children are now enrolled in pre-school, primary and secondary education, and efforts have improved attendance. Nonetheless, little progress has been achieved in terms of improved learning environments and quality of learning outcomes, teachers' professional development and school management and effectiveness. In curricular terms, Mexico has attempted to develop citizenship competencies in the subject of civics, while Chile

has tried to promote learning objectives across various disciplines. In Chile, the national curriculum reflects a broad range of cognitive, interpersonal and intrapersonal skills seldom aligned with standards and performance evaluation, while Mexico, after recent curriculum reforms, continues to emphasize cognitive learning outcomes over interpersonal and intrapersonal skills and competencies.

The editors analyze the issue of educational quality in Latin America, with achievement gaps reflecting the fact that Latin America remains one of the most unequal regions in the world in terms of wealth distribution. While Chile and Mexico have managed to reduce poverty since the early 2000s, only Chile managed to lower poverty rates consistently since 1990. Mexico, together with other countries in the region, has mixed records and outcomes. Although enrollment may be almost universal, poor students are much more likely not to complete school, as are children in rural areas, children from ethnic and linguistic minorities, children with disabilities, and children affected by armed conflict. Ethnolinguistic diversity creates serious challenges, and it has been proved that vernacular language barriers have a significant impact on access to education, especially for girls in rural areas, where local

languages predominate.

Cristian Bellei from Chile contributed to the book with an essay on twenty-first century competencies in the Chilean educational system, while Sergio Cárdenas, from México, focused on recent curricular reforms and their alignment with standards and teaching materials. Reviews were conducted and national curricular frameworks examined to identify whether skills necessary to survive in globalized societies had been achieved by the reforms. Based on the twenty-first century skills classification proposed by Pellegrino and Hilton, including cognitive, intrapersonal and interpersonal skills, both Bellei and Cárdenas concluded that, although significant in terms of social investments, policy reform efforts have not had a significant impact on the quality of learning outcomes. Both Chile and Mexico participate in international testing systems and perform below what would be predicted given their national expenditure per student. Even relatively well-off students fail to excel by world standards. In fact, few students from any background receive a high-quality education. In Mexico just 0.29 percent of students scored at the advanced level in the PISA mathematics exam, which tests the capacity for advanced mathematical thinking, reasoning and ability to interpret complex information about real-world situations, compared with 6.5 percent of U.S. students. Wealthier countries in the region perform better than

poorer countries, and countries that invest more per primary school student have higher average scores. Nonetheless, in overall terms, student achievement in Latin America overall is definitely low. On average, students perform below expectations in math, reading and science, and quality varies from country to country. PISA scores reveal significant gaps among 15-year-old students in the region and their peers in OECD countries. Roughly, the same proportion scored at the lowest level in science, and a third scored at the bottom in reading. Girls perform better in reading while boys perform better in math and sciences. Adults and youngsters have relatively high levels of literacy rates. Literacy rates ranked 89.6% by 2000 and increased steadily, reaching 92.9% by 2010. At tertiary level, disparities relate to the career options taken by men and women, with women often choosing humanities and men engineering and business.

Relevance to modern requirements is a fundamental premise in the book and its major contribution to ongoing policy debates and emergence of research agendas in the field of global education policies. Reimers and Chung send a clear message that 21st-century skills and knowledge depend on the quality and relevance of teaching and learning. Educational quality is framed as the amount of skills and knowledge that learners gain through schooling and training. Quality is multidimen-

sional and context-specific, and evidence suggests that learning improves when teachers understand the subject matter, know how to teach it effectively, have incentives to teach and motivate learners towards learning. Moreover, teachers and teaching are more effective when performing in supportive policy environments that provide standards or curriculum that includes specific knowledge and skills relevant to students' current environment, as well as knowledge and skills that students will need to deal with new challenges created by economic, social and cultural changes. Access to appropriate workbooks and other learning materials support, complement and reinforce teachers' efforts.

Lately, various reports on the teaching profession have highlighted four strategies to improve teaching and learning performance in Latin America. These include new criteria and policy options for improved teacher recruitment, initial and continuous training improvement, new rules and incentives for the teaching career, and assessment or evaluation of teaching performance. As pointed out by the editors, despite ongoing reforms at the primary and secondary levels, both in Chile and Mexico improvement in teaching practices and classroom processes have not changed much in decades. Institutions in charge of recruiting, training and assessing teachers' performance have been unfamiliar with the intended goals of institutional and

curricular reforms and remain far from pedagogical practices needed to support a twenty-first century education. In Mexico, two key challenges prevail: inadequate curriculum design and lack of demand for twenty-first century skills, both hard and soft, among parents and teachers. In Chile, pedagogical practices, at the school level, do not seem to have changed in any ways that reflect the efforts made by past curricular reforms and assessments.

Compared to Singapore, India, China and the United States, Mexico and Chile are lagging behind when introducing reforms to strengthen critical thinking, innovation, creativity, scientific thinking, self-knowledge and self-directed learning, competencies identified as necessary for the twenty-first century. As the editors point out, addressing these issues by means of policy improvement or educational reforms requires new thinking and new ways of doing, both in theoretical and practical terms.

It also needs knowledge-sharing and learning from best practices in countries facing similar challenges throughout the world.

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The Best of ReVista 2015-16

The Best of *ReVista* is a prize for the best photograph published in *ReVista* in the previous academic year sponsored by DRCLAS publications and ARTS@DRCLAS



This year's winning photographs chosen by a jury of professional photography experts are Walter Iraheta and David Huamani B. Honorable mentions in the professional category go to Mauro Arias and Leslie Searles.

WINNER, PROFESSIONAL PHOTOGRAPHER CATEGORY



WALTERIO IRAHETA for "Shoes" *Iraheta studied Applied Arts in El Salvador, Mexico and Chicago. He lives and works in El Salvador as a photographer, curator and professor.*

WINNER, EMERGING PHOTOGRAPHER CATEGORY



DAVID HUAMANI B./OJOS PROPIOS for "Marcona" *Huamani B. is a member of the photo collective Ojos Propios in Lima, Peru.*

HONORABLE MENTION



MAURO ARIAS of *El Salvador* for “Boy in the Coffee Fields”

HONORABLE MENTION



LESLIE SEARLES of *Peru* for “Newborn”

THIS YEAR'S JUDGES

Rodrigo Abd is an Argentine staff photographer for the Associated Press. He won the 2013 Pulitzer Prize for breaking news photography. He is a 2016 Maria Moors Cabot Award winner for a distinguished body of work that has contributed to inter-American understanding.

Marcelo Brodsky is an Argentine photographer and conceptual artist whose best-known work deals with the legacy of the dictatorship. A recipient of the Jean Mayer Award from the Tufts Institute for Global Leadership, Brodsky created the installation “Human Tides” at Tufts to draw attention to contemporary global migrations and refugees.

Andrea Bruce, a 2016 Nieman Fellow at Harvard, is a U.S. documentary photographer who brings attention to people living in the aftermath of war. She was named Photographer of the Year four times by the White House News Photographers Association and received a 2011 Alicia Patterson Foundation Fellowship.

Andrea Josch, a Chilean photographer and academic, is the editor-in-chief of the South American photography magazine *Sueño de la Razón*. The academic director of the Photographic Research and Creation Master's program at the Finis Terrae University in Santiago de Chile, she is also a researcher at the same institution.

João Kulcsar is a Brazilian photographer, curator and academic who works on issues of citizenship and visual literacy. He was a 2002-03 Fulbright Scholar at Harvard's Graduate School of Education and collaborates frequently with Project Zero. He teaches at Senac University in São Paulo, Brazil, and is the editor of the site www.alfabetizacoavisual.com.br.



Afro-Latin American Research Institute at the Hutchins Center

Harvard University

The Mark Cluster Mamolen Dissertation Workshop on Afro-Latin American Studies

The Afro-Latin American Research Institute at the Hutchins Center for African and African American Research, Harvard University, invites graduate students working on dissertations related to Afro-Latin American studies to submit a proposal to the annual Mark Cluster Mamolen Dissertation Workshop on Afro-Latin American Studies.

Doctoral students at universities anywhere in the world, who are at the dissertation writing stage, from any discipline, are invited to submit an application. Previous applicants who were not selected before are welcome to reapply. The only condition is that their dissertations deal with Afro-Latin American topics broadly defined, covering any time period, from colonial times to the present. Proposals can be submitted in English, Spanish, or Portuguese. Interested students should submit a three-page proposal (double space) summarizing their dissertation topic and one letter of support from their academic adviser.

Materials should be sent electronically to ALARI@fas.harvard.edu (please write "Dissertation Workshop" in the subject) by January 15, 2017. About twelve students will be selected to participate in the workshop. They will be notified by February 26. Selected students will be asked to submit a dissertation chapter (up to 50 pages, double space, in English, Spanish, or Portuguese) by March 11. Chapters will be circulated among workshop participants. The Workshop will meet at Harvard on May 12-13, 2017.

The Afro-Latin American Research Institute will cover travel expenses, lodging and living expenses for all participants.

This initiative is generously funded by a bequest from Mark Cluster Mamolen (1946-2013), a childhood friend of Professor Henry Louis Gates, Jr. and a former Advisory Board member of the Hutchins Center, the Ford Foundation, and the International Academic Program of the Universidad Autónoma de Madrid (IAP UAM).

DAVID ROCKEFELLER CENTER FOR LATIN AMERICAN STUDIES

VISITING SCHOLARS AND FELLOWS PROGRAM



THE CENTER

Founded in 1994, the David Rockefeller Center for Latin American Studies at Harvard University works to increase knowledge of the cultures, economics, histories, environment, and contemporary affairs of past and present Latin America.

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APPLICATIONS DUE FEBRUARY 1ST

THE APPLICATION

Applications should be submitted electronically to drc_vsf@fas.harvard.edu or via the online application form. For the form and further details please visit <http://www.drclas.harvard.edu/scholars>.

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