



Ancestral Stones and Stone Stories: Reimagining Human Relationships with Stone from the Paleolithic to the Present

Kathryn Weedman Arthur, University of South Florida, St. Petersburg, USA
E-mail: kjarthur@usf.edu

Ran Barkai, Tel Aviv University, Tel Aviv, Israel
E-mail: barkaran@tauex.tau.ac.il

Catherine Allen, George Washington University, Washington, DC, USA

Ella Assaf Shpayer, Bar Efrati, Meir Finkel, Tel Aviv University, Tel Aviv, Israel

Dov Ganchrow, Bezalel Academy of Arts and Design, Jerusalem, Israel

Rachel A. Horowitz, Washington State University, Pullman, USA

Vlad Litov, Tel Aviv University, Tel Aviv, Israel

Marlize Lombard, University of Johannesburg, Johannesburg, South Africa

Paul Sillitoe, Durham University, Durham, UK

Edward Swenson, University of Toronto, Toronto, Canada

Co-editors—Kathryn Weedman Arthur and Ran Barkai; Contributors—Catherine Allen, Ella Assaf Shpayer, Bar Efrati, Meir Finkel, Dov Ganchrow, Rachel A. Horowitz, Vlad Litov, Marlize Lombard, Paul Sillitoe, and Edward Swenson.

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Stone is one of the most durable and oldest materials in human history and provides us with the extraordinary opportunity to discern human perceptions of their place in the world from our earliest beginnings to the present. Common knowledge suggests that changes in stone artifacts are a response to human activity and are directed through human intention. This collection of papers advocates a paradigm shift that extends our ontological perspectives in studying past and present stones. We will explore other ways of knowing and understanding stone–human interactions based on real-world experiences and perceptions of archaeological, historical, and present-day societies for whom stone is significant in their daily lives. We submit that by including a wide range of intellectual contributions to understanding our pasts, we open new possibilities and engage in practicing good science. Rather than limiting ourselves to Western theories, we

advocate a paradigm shift that forwards profound respect and appreciation for stone and other earthly materials. We propose that such worldviews may express long histories of accumulated and changing ecological knowledge that reassure and provide future solutions for the co-existence of humans and the elements of the world we depend on.

When Ran and Kathy met in the mountains of northern Italy at a small conference, we realized that the time was right for scholars focused on our deep pasts to reimagine the possible ontological and cosmological conceptions concerning stone held by our ancestors. Subsequently, we organized a research workshop between September 12 and 15, 2022, at Tel Aviv University (Figure 1). Only a small cadre of scholars privilege historic and descendant communities' knowledge as integral to writing pasts that resonate with diverse audiences and foreground human–stone relationships. We gathered these scholars from Thailand, South Africa, Canada, Australia, Israel, the United States, and the UK to discuss other ways of knowing the world that influenced how people in the past perceived their relationships with nonhuman entities, such as stone. Together, we aspire to contribute



Figure 1. Back row: François B. Lanoë, Ran Barkai, Clive Freeman, Peter Markovic, Marlize Lombard, Lambros Malafouris, Ed Swenson, Miguel Astor-Aguilera and spouse, and an unrecognized participant that joined our picture. Front row: Rachel Horwitz, Bar Efrati, Kathryn Weedman Arthur, Steve Brown, Catherine Allen, Yafit Kedar, Ella Assaf Shpayer. Paul Sillitoe attended virtually. Leore Grosman, Erica Hill, Meir Finkel, and Dov Ganchrow are missing from the picture

to archaeology and anthropology by providing deep-time narratives about how entangled human–stone perceptions, practices, and relationships have changed through time, narratives we can leverage to mitigate the significant human impact on the earth today and in the future.

We open new possibilities and practice good science by including a wide range of intellectual contributions to understanding our stone heritages. By engaging with non-Western ontologies, we seek to increase our ability to produce new knowledge, future solutions, and understanding. Today, most archaeologists focused on stone technologies spurn the inclusion of multiple perceptions of the world and insist only “objective” science can rebuild narratives, particularly about societies in deep time. Theories concerning human–stone relationships tend to focus on how human intentions and actions impact stone. Commonly, narratives offer that our ancestors scavenged the surface and penetrated the earth for passive stones, then struck, snapped, and split stones, producing various forms of architecture and tools. Morphological variations are frequently viewed as differences in qualities associated with the parent material, use, stage of use, the materials processed by the stone tools, and the maker/owner and their group identity. Stone is generally considered an inert earthly matter that experienced change only when humans, usually portrayed as male, intervened. Alternatively, we believe that creating a space for alternative ontologies is practicing a science open to new and diverse knowledge and practicing inclusiveness surrounding our shared heritage.

This thought-provoking collection of papers follows human–stone paths from the Lower Paleolithic to the Present, widening our perspectives to include epistemologies that forward profound respect, care, responsibility, and appreciation for the past and present agency for one of the earth’s oldest entities—stone.

Our first four articles engage us with new journeys into deep time and the mutualistic relationships between stones, animals, and humans. These articles recognize that stone is perhaps the most durable and ancient of materials manifested, and our earliest interactions and nurturing of stone often serve as a key to defining our humanity. Starting from the early Paleolithic, there is archaeological evidence that there was a wide variety of ways our ancestors potentially perceived stone. All stages of human interaction with stone, starting from quarrying and continuing through endless recycling, were embedded with significance, appreciation, and respect. Efrati begins this Special Issue by exploring how our senses and perceptions meld with past and present environmental experiences and create intimate relationships between humans and particular stones. Assaf explores how Paleolithic human relationships with horses are embodied in stone ball technology. Litov and Barkai demonstrate the complex relationship between Paleolithic humans, deer home ranges, and the source of the

stones employed to process deer hides. Finkel and Barkai illustrate the co-use of landscape between elephants and humans accessing water and stone.

The next three articles challenge how archaeologists have traditionally created categories for space, time, and tools based on stones. Slipping between ethnohistoric and ethnographic narratives and archaeological contexts and classifications opens new perspectives regarding what we visualize and perceive as necessary in organizing materials. Particular colors, textures, weights, or morphologies of stones may attract our attention. These aspects of stone may embody meanings specific to particular cultures, highlighting variation in the cultural construction of “types.” It is essential to incorporate such findings within a broader understanding of how archaeologists narrate the past and their relationships with stone. If stones are persons or sentient, how should archaeologists interact with stones and perceive their presence in specific time–space contexts? Horowitz, Brown, Yaeger, and Cap emphasize the Maya perception of chert as persons who animate everyday context with cosmological order. They bring into question the archaeological division of ritual and quotidian materials. Sillitoe’s long-term friendships with the stone-using Wola of Papua New Guinea also confront archaeologists’ need to create smaller and smaller discrete stone categories. Lombard investigates why Later Stone Age people in Africa created perforated stones, revealing how their assumed function as simple digging-stick weights overshadow ethnohistoric descriptions of their use in transformative rituals.

The last four articles focus on stone–human transformation from more recent pasts to the present. These papers emphasize how stones generally are perceived as permanent fixtures in the landscape that transcend time and become places where reciprocal relationships with stone may inoculate humans from harm, death, and stagnation and instigate a web of change in the essence of all interrelated beings. Mountains, caves, boulders, and quarries may have actively drawn or repelled us into a particular landscape, invigorating our senses and connecting us with other earthly beings. Assemblages of humans, stone, water, and other beings co-create and re-create future realities. Allen reveals how seemingly “petrified landscapes,” such as Andean boulders, are liminal landscapes that conjure varied intimate relationships with people who may slip between the continuous movements of time–space and matter spirit. Again challenging the perception that stones territorialize landscapes, Swenson explores Andean and Angkorian perceptions of stone and water as sources affirming the fluid nature of being and power to generate and regenerate change. Arthur presents an East African ontology in which human, toolstone, and water’s reciprocal relationships prompt regenerative and destructive powers to transform each other, ensuring the continuation of life or death and chaos. Ganchrow brings us full circle, materially, by following the journey

of hand axes from their state of being stone to their digital and 3D nylon forms and ontologically in the space of this Special Issue to explore the impacts of human consciousness and intent in the environment.

As an assemblage, these papers span time and space and inspire a paradigm shift that includes widening our perspectives to forward profound respect and appreciation for the past and present agency of stones and other materials. Gratitude, appreciation, reverence, and even fear for earthly beings may express long histories aimed at sustainability and the reassurance of the constant co-existence of humans and the elements of the world they depend on, perhaps as an expression of ancient ecological knowledge.

Stone Stories

On the first day, we gathered in Tel Aviv, we shared a personal journey demonstrating how we listened and learned from childhood experiences, our archaeological experiences, our elders, and Indigenous communities. Our paths illustrate how scholars can learn to put aside their Western perceptions and reconceive the world through other ontologies.

Inqaychu by Catherine Allen

I met my favorite stone over 20 years ago while browsing through the Sunday market in the Andean city of Cuzco, Peru. In a section catering to tourists, I noticed—among the textiles, ceramics, old coins, and antique keys—there were little stone objects in the forms of domestic animals—llamas, alpacas, and sheep—that are raised by pastoralists in highland communities like the one where I did my fieldwork. The sight saddened me because in rural households these stones, called *inqaychu*, are precious possessions: they are gifts of the Mountain Lords, conduits through which the mountains' life force passes to the family's herds. Most are family heirlooms, kept carefully wrapped up in special bundles that are opened only on special holidays. Around the solstices, shepherds may go out at dawn hoping to find one—or more precisely, hoping that an *inqaychu* may allow itself to be found, taken home, and be persuaded to stay. If mistreated or neglected, the *inqaychu* may decide to leave; even worse, hungry and bereft of offerings, the little stone may begin to devour the life force of its keepers.

So, what were *inqaychus* doing for sale in the tourist section of the Cuzco market? By the time I saw them, their individual stories were lost, for they had passed through the hands of intermediaries and were far from

their communities of origin. But we can surmise that their presence reflects processes of social upheaval as rural families give up the pastoral life, move to the city and get rid of their possibly dangerous *inqaychus*. Let the hungry stones be sold to tourists who will take them far away!

As I stood there looking at the array of *inqaychus* spread out before me on the ground, I felt one calling to me. It was the tiniest and least interesting looking of the stone animals, just a rough animal shape, perhaps a llama. I picked up the little stone creature and felt him warming nicely in my hand. That decided it—I paid, placed my unexpected purchase in the inner pocket of my jacket, and kept him there until I was home in Maryland. Then I placed him in a woven cloth bundle where I keep interesting stones and other small objects that I pick up during my travels. There he stayed for many years. Sometimes, I would unwrap the bundle and warm him in my hand.

In 2022, I prepared to travel to Israel for the Ancestral Stones conference. It occurred to me that it would be fun to take the *inqaychu* with me, especially as the organizers had asked us to tell the gathering about our favorite stones. But when I unwrapped the bundle, my little stone friend was gone. I hunted high and low, wondering if I had already taken him out and absent-mindedly forgotten about it. Yet he was nowhere to be found. I carefully looked again through the contents of the bundle, but he simply wasn't there.—Well, apparently, he didn't want to go, so I left without him.

When I returned home, I looked again, and indeed, he was gone. And yet, a month or so later, when I opened the bundle, there he was! What happened? Did he make himself scarce to avoid being displayed at the conference? Or did my vague discomfort over displaying him make him invisible to me? Or is it all the same?

Only the Heart Clearly Sees the Stone by Ella Assaf

I didn't always *love* stones. I grew up in the city. Nature was not part of my everyday life, although I always longed for it. When I began my academic training, which included techno-typological analyses of stone tools, I learned to appreciate the stones and the tools that ancient humans made from them. Shortly afterward, I joined the archaeological excavation of Qesem Cave, a Lower Paleolithic site in Israel. I excavated in an area that was characterized, alongside hundreds of “regular” stone tools, by an exceptionally high presence of natural, unshaped flint pebbles of various sizes—rounded, smooth, and sometimes with striking colors. I was excited to discover them every time they emerged from the sediment, and I began to wait for them in anticipation. With that came the notion that they were

carefully selected, collected, and brought to the cave by its original inhabitants. Stones were an integral part of their life landscape. Someone, hundreds of thousands of years ago, was walking right there. Flint pebbles caught their eyes, and they decided to bring them home. I wrote an article about the pebbles, presented them at conferences, and mainly focused on the aesthetic aspect behind this “collecting” phenomenon. Throughout my years of research, I have seen thousands of stones.

Over the years, I had my children. We don’t live in the city. Thus, stones—plenty of them—are part of their childhood landscape. They look for them, collect them, and bring them home. Sometimes, these are special stones; sometimes, they seem ordinary to me. But this is my way of differentiating, and my children have their own emotional attachment to the stones. They see stones with their hearts. I think it is thanks to them that I do it now, too. Did Paleolithic humans see stones with their hearts as well?

It is only with the heart that one can see clearly. What is essential is invisible to the eye

—Antoine de Saint-Exupéry.

Ontology in a Cache by Ran Barkai

It was on a mountain peak in the Upper Galilee, Israel. I and two students were excavating at a Lower-Middle Paleolithic flint extraction and reduction complex. Well, not exactly excavating. The complex, called Mt. Pua, is composed of ca. 1500 stone extraction and reduction localities. Some are small, some are huge, and everything in between. Each locality is a tailing pile, a stone heap composed of smashed limestone blocks that were originally part of the bedrock level containing superb flint nodules. Bedrock was smashed, flint nodules extracted, the quarrying waste was piled on top of exhausted extraction fronts, and the nodules were reduced on top of the heaps, a process we discovered after studying a few of these localities. So, each pile was covered by many worked flint items, shining in gray-brown among the white limestone blocks. We mostly took apart these piles, removed the limestone waste, and collected the numerous flint artifacts as we went down to bedrock. We were dismantling the pile rather than excavating. We choose one of the largest heaps, about 30 m in length and 15 m across. We decided to concentrate on a $2 \times 2\text{-m}^2$ (Figure 2), chosen at random at the center of the heap.



Figure 2. Close-up photograph of the excavated $2 \times 2\text{-m}^2$. (Photo by Barkai)

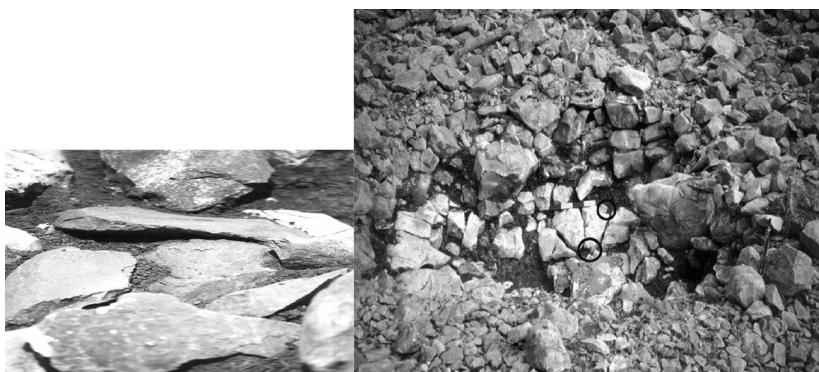


Figure 3. A close-up of one of the caches (left). Bedrock after the removal of the two caches (circled, right). (Photos by Barkai)

We dismantled the pile stone by stone and collected the worked flint. It took awhile, and the work was rather tedious. We went down almost a meter or so before we came across a big stone slab. This was suspicious. We had our camera ready. When we removed the stone slab, we saw it had covered over two small piles of artifacts, which we later called caches (Figure 3). Each cache was composed of 13 items; each had a single Levallois core, and the rest of the items were large flakes. One cache had a handaxe. What a surprise! We were not ready for that. The two caches rested directly on top of the exhausted extraction front like they were deposited there the day before yesterday (Figure 3). One of our early ancestors must have put them there on purpose, after extracting the flint and just before covering the whole scene with quarrying waste. Clearly, we felt like we were in a dream.

We could not believe this was happening! If someone else had told this story, doubts would have come to my mind. But this was my first-hand experience, and I could not believe it. The caches were published later, and this stone encounter profoundly influenced me. Maybe this was the final driver for my diving into the ontology and cosmology of early humans and into human–stone interactions, which are way beyond the functional or utilitarian. I guess I wouldn't have been the archaeologist I am now without this fortunate encounter. The question of whether every tailing pile includes two stone caches remains open and awaits further excavations at the site. Or, perhaps, it is better that this remains a mystery!

My Meetings with a Bag of Stones by Bar Efrati

As an archaeologist, I have had the opportunity to work with rocks for almost a decade, and I can say that the most enjoyable part of the work is opening up a new bag of lithic material. The bag comes straight from the archaeological site into the lab. The stones in this bag indicate that they had been lying side by side for approximately half a million years until they were excavated and re-exposed during an archaeological excavation. The quicker rhythm and working processes in the field also mean that the contents of this bag were never carefully observed before coming to the lab, and the lithic tools therein have been unseen since their time of use about half a million years ago.

What is so enjoyable about that moment is the opportunity and time to look at and feel each lithic item with your hands. So, this work of examination is really something you do with all your body. With the right amount of intention, attention, and reflection, each item picked up for inspection may take you on a journey. The colors and the appearance, inspected with the eyes, can be marvelous and curious. The weight of the item and the way it sits in the hand can be pleasantly fitting. This is the journey. Attention and curiosity towards specific objects found during the examination can be more unique than others; it depends on the person and their intent to dive into a conversation with the stone in their hand.

Rock intimacies for the left-handed person and the left-handed rock. The most pleasing encounters with a lithic are those where the item feels like it fits perfectly in your hand. As a left-handed person, it is most often immediately felt. If a left-handed rock sits in my left hand and matches the grip, I feel like I know and understand it more in our current moment of conversation. However, I did not always know to look for it; it is a matter of awareness that you gather from those who work around you, as well as with time and experience. Once attention is directed to thinking about handedness for fun, use the experience and knowledge you sense with

using your hands on the item. Once you devote a minute of your time to sense how it feels while the stone is in each of your hands and matches perfectly (or not at all), the magic of the encounter happens.

Flintlove: How I Learned to Stop Worrying and Love the Stone Extraction and Reduction Piles by Meir Finkel

This story is one of awareness, appreciation, and falling in love. It explains how I became obsessed with finding and researching prehistoric flint extraction and reduction (E&R) sites, specifically those containing large stone piles. My story began in a basic prehistory course when Dr. Ran Barkai presented the phenomena of Flint E&R sites, a research topic in its infancy in Israel. One of the sites was found around 10 km from my home in the Upper Galilee, and during the following weekend, I took my family there and saw the E&R tailing piles (Figure 4) with my own eyes. Interesting as they were, it was only a few weeks later, when I drove along the Israel-Lebanon border road, where I saw hundreds of those piles that my interest flared. A sheer case of serendipity. Following geological maps and Google Earth imagery in which I could locate tailing piles, I spent the following spring, on leave from my work, walking up and down the mountains in Israel's eastern Upper Galilee region. It was a true exploratory adventure—a time travel. It happened to be that finding the sites was the easy part and investigating them was the true problem. A ~ 5 cubic meters excavation in one of the most intensive E&R piles ended with a calculation that the 30X10 meters pile contains ~ 300,000 knapped flint items weighing ~ 24 tons (Figure 4). The usual practices of stone tools and debitage excavation seemed irrelevant at these sites.

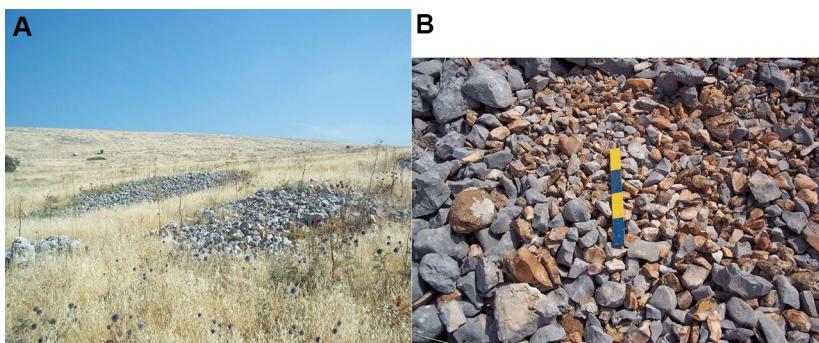


Figure 4. Flint E&R tailing piles, Achbara E&R complex, in the eastern Upper Galilee (left). The knapped flint items and broken limestone on the surface of an E&R tailing pile (right), which is in the upper left in A. (Photos by Meir Finkel)

Since then, a lot has changed. Using geochemical analysis and algorithms enabled me and a growing group of partners to better understand the E&R phenomena in various regions in Israel. Combining my new love for Flint E&R sites and my older love of nature walks led to finding new E&R localities. Sometimes, they are very limited flint “spots” showing evidence of knapping activity and are located within vast areas absent of flint. My appreciation of those prehistoric “flint consumers” steadily grows as I gather more understanding of their “geological” skills, their intimate geographical knowledge, and, in some cases, their inter-generation knowledge transmission regarding those stone sources. Sometimes, I am amazed when new E&R sites are found in places where people have been living for the last few decades. Israel is a paradise for prehistorians, and long before it came to be the “land of milk and honey,” it was the “land of flint” (and game).

Researching prehistoric flint sources changed my life. The downside of this personal decade-long new love is that it has become an obsession. I point my eyes to the ground looking for flint, missing views, flowers, etc., and areas where limestone is devoid of flint seem to me now dull and uninteresting, regardless of other flint objects found within them.

Written in Stone by Dov Ganchrow

Growing up in a period before the internet, moving back-and-forth between the US and Israel, my brother Raviv and I inadvertently transferred cultural inclinations, expressions, and behaviors, which can be viewed as simultaneously pollinating and contaminating.

As two energetic, creative adolescents, we found outlets through making music, sculpture, drawing, and graffiti—the latter of which went through several evolutionary stages beginning with the classic deployment of stylized lettering spray painted on public “canvases.”

Jerusalem has a municipal building code that dictates all public structures and private homes be surfaced with natural stone (typically chiseled limestone). Spray painting on these abundant stone surfaces never felt right to us (the uneven surface texture a further drawback), and we made it our own code—to never paint on these surfaces, looking instead for exposed concrete city infrastructure, corrugated sheet metal fences, and cinder block walls (Figure 5).

Fast forward several years to the early 90s, Northern India, to what would become a life-long love affair with the Himalayas; the two of us found ourselves on our first ever high-altitude 3-week trek. The route heading north started at the Darcha checkpoint, continued over the Shingo La pass into the Zanskar valley, on to Pudum, and terminated after a series



Figure 5. Stylized English characters, Jerusalem graffiti. (Photo by Dov Ganchrow)

of passes at the one-thousand-year-old monastery of Lamayuru in Ladakh. As a preseason undertaking, making it over the snow-laden 5100m Shingo La required much effort and made the excitement of descending into the remote villages of Zanskar even more rewarding.

One of most striking material manifestations of Tibetan Buddhism in the area are the many Mani stones that greeted us there; on Mani walls, heaped as cairns, by stupas and village prayer halls, on passes (Figure 6). Mani stones are rocks that have had a mantra or prayer inscribed in them, usually by means of chiseling away the material around the words, producing a visual effect not unlike the familiar framing with a thick outline of graffiti tags. The intriguing Tibetan fonts used in the Mani stones resonated with our spray-painting letter-design days.

A chance encounter with an elderly villager later in the trek gave us the opportunity to observe and then try our hand at Mani stone making. Following the rhythmic ringing sound of metal hammering, we wandered into the yard of a village home, where a short-statured man was busy chiseling away at a large, smooth pebble. He signaled us over and proceeded to explain in gestures the chronological work stages he was repeating to produce the minimal mantra inscription of "Om." He then placed the finished outcome over his head, in an act that we understood as its activation (Figure 7). Quick learning disciples with a background in the arts, we spent the afternoon with him, his chisel and makeshift hammer, producing identical Om stones (Figure 7). At first at least. Inevitably, the draw of integrat-



Figure 6. Mani stones surrounding a stupa in Ladakh. (Photo by Dov Ganchrow)



Figure 7. "Om" Mani stone, ritualistically placed on head upon completion, Ladakh (left). Mani stone chiseling lesson, Ladakh (center). Our "Mani" stones on a mountain pass (right), Ladakh. (Photo by Dov Ganchrow)

ing styles and exploring techniques in the expanse between Tibetan religious scripture and Western subway art got the better of us.

We went on to make our own English character graffiti art-based “Mani stones.” We carried them in our backpacks for days, waiting to find a fitting placement for them, finally depositing them among their more traditional brethren, stones heaped atop a 5000m pass (Figure 7).

In the three decades since our Mani stones settled that mountain pass, a push to drive motorable road and tunnel infrastructure into the area for national security reasons has meant a reduction in the use of high-altitude trekking passes that had been used as trade routes for millennia. These stones will outlive us and, in hindsight, perhaps join the longstanding phenomenon of cultural exchanges along these routes captured in beliefs, language, artistic styles, and materials such as stone.

Family and Stones by Rachel A. Horowitz

Like many people, I have been interested in stones since I was a child. One of my earliest memories related to stones was when my sister and I were “helping” my parents work in the garden, and we found what we thought was a fossil (Figure 8). While my parents were initially skeptical, we were right and went on to find other fossils in our backyard. While throughout my life, I collected many rocks, many of which I still have today, the ones that stand out are those that remind me of personal connections. These connections relate to ways in which we should think about raw materials in the past and present. Sometimes, stones are important because they were found or collected during memorable situations rather than significant



Figure 8. Maybe not THE first fossil we found, but one of the many my family and I collected in the backyard. This one has accompanied me on several moves around the country, providing a connection to a previous place and time (left). Emerald Creek, Idaho Panhandle National Forests (right). (Photos by Rachel A. Horowitz)

because of the type of stone material. Although the rock being a particularly interesting type of stone doesn't hurt! Like that first fossil that I remember finding as a child, the significance of that piece relates to family connections rather than to it being an important fossil.

Similarly, other examples of stones that are important to me signify a connection with people and/or places. I have a piece of Pachuca obsidian from central Mexico that sits on my desk in my office. For those unfamiliar with it, it is a "green" obsidian and is often found in the Maya region. It is the kind of obsidian that every scholar who does research in Mesoamerica can recognize, even those who have no interest in lithics! For me, this particular piece is important not just because it is a sample from that source but because it was given to me by a friend whose family lived near the source, and because I received it while I was studying in Mexico, during a trip that confirmed my interests in doing research in the Maya area. This stone symbolizes my decision to conduct research in the Maya region and the friends and colleagues who helped me along that journey. Finally, during my first year living in Washington, where I moved during the early days of the pandemic, I visited a national forest where you can look for and collect garnets, which occur naturally in the area (Figure 8). For me, these garnets provide a sense of connection with a place where I was trying to make connections, which was made more difficult due to the pandemic restrictions. While I intentionally sought out this opportunity to collect the stones, rather than it occurring spontaneously, the garnets symbolize the connections to place and people that I made during this period.

These experiences with stones shape how I think about connections with stones in the past, as we cannot always understand what the personal significance of an item may have been to a person in the past, nor why it developed that significance.

It's in the Touch... by Marlize Lombard

In our modern households and workspaces, we experience stone as cold, hard surfaces, perhaps serving as a kitchen countertop or a set of stairs. But how many people have touched the gentle warmth of an ancient dolmen on a Baltic beach under a shy Swedish autumn sun, or felt the mid-day burn of an engraved rhinoceros on a Kalahari boulder? How many have felt the softness of a bird carved in the green soapstone of Zimbabwe or the white marble of Hydra in the Aegean Sea?

Being the first to touch the razor edge of a European flint flake—perhaps even drawing a drop of bright red blood—or the first to gently brush open and pick up a finely knapped, bifacial Still Bay point buried in a cave

on the southern-most tip of Africa 75 thousand years ago, is the closest some of us will come to a sacred experience.

In some cultures, people experience the rock surface of a cave wall as a veil through which to enter another world. Painting therianthropic images in the darkest corners of caves represents the mythological ability of some individuals to shapeshift into human-animal hybrid beings, moving through the veil into ancestral worlds. By touching rock walls, perhaps leaving a muddy or paint-stained handprint, we may become one with such worlds and their stories.

Today, some people hug trees—I go about touching stones touched by our ancestors.

To Bare a Stone by Vlad Litov

Among the many geographic features of northern Israel, the evergreen Mount Carmel, surrounded by luxurious vegetation, sea-facing cliffs, karstic caves, and hyraxes galore, is my favorite location for a spontaneous hike. I went there in the early morning with a good friend who casually offered to pass by Sefunim Cave, one of the many karstic caves in the region that I had not visited before. Upon reaching the cave, our attention was attracted by an odd-looking rock boulder located in the cave, directly facing us standing at the entrance. The boulder was covered by green moss and stood out against the background of the more obscure cave interiors



Figure 9. Photo of the boulder resembling a bear skull/head inside Sefunim Cave. (Photo by Vlad Litov)

and the sunlight outside. However, something in its odd relief impressed me at that moment, so without thinking twice, I said: “That rock looks like a bear skull!” (Figure 9).

Apparently, my travel companion was thinking the same. We exchanged a few words about the unexpected discovery before turning our attention to a few fossil-bearing limestone outcrops and a couple of flint blades scattered next to the cave. With a long walk ahead of us, we didn’t stay long by the bear boulder and soon continued our route in a good mood.

Bears are not encountered anymore in the region, as the last wild specimens were hunted down in Mount Hermon in 1917. Wherever bears have survived, they play a vital role in their ecosystems by keeping the population of ungulates in check and are considered ecosystem engineers. Most bear species enjoy an omnivorous diet, although their trophic level and behavior are equal to that of apex predators. Throughout history and pre-history, humans adored their powerful and fluffy neighbors. For Siberian indigenous peoples, a bear is always a prominent character: An ancestor, a liminal spirit, a fearsome forest guardian, or a fellow brother from the woods. Among the countless intriguing material evidence for human–bear interactions in the past, incidents of bear skulls placed on top or under boulders looking like a bear’s body are well known from the Upper Paleolithic cave contexts in France, representing an astonishing example of zoomorphic stones mixed with (hunted?) animal skeletal elements. The evident connection is multifarious and striking.

Sefunim Cave has been almost constantly inhabited by prehistoric humans since the Middle Paleolithic and until the Late Chalcolithic. Stone was of supreme importance for these people, and bears were their recognizable neighbors. It is hard to say precisely when that particular boulder obtained its intriguing shape by geologic forces. Assuming the boulder was already there at some point in prehistory, one may wonder how this conspicuous rock was perceived by early humans who arrived at the cave. Did they also recognize a bear inside the rock? And given the presence of bears in Mount Carmel until recently, what was their sincere reaction?

Stone and Steel by Paul Sillitoe

I am going to introduce you to some friends who live in the Southern Highlands of Papua New Guinea, which was the last region in the world where people used stone tools. They are heirs to a sophisticated farming tradition that extends back 10,000 years (equivalent to Mesopotamia and Mesoamerica), and yet they continued using stone tools until modern times.

I am not sure if I should tell you this anecdote, given the audience, but here it goes: Steel tools have replaced stone axes in the mountains of New Guinea, which has predictably led to some changes, reducing the time taken to complete certain tasks. There have been several comparisons of stone and steel axe time efficiencies, which largely agree on steel being three to four times faster. But, other evidence suggests that stone axes were not as inefficient as these ratios suggest. For instance, there was the initial attitude of the Wola to steel axes when Australian colonial officers first offered them as payment for things, who, to their consternation, refused them, demanding instead highly valued seashells that they transacted in their all-important socio-political exchanges—they even pulled the pearl-shell buttons off the newcomers' shirts! And an early patrol officer who witnessed stone axes and quarries still in use commented, “Although the work axe looks a crude and inefficient tool, it is surprising how quickly men can work with it” (Vial 1940:162).

An extended series of observations of men working at different tasks using stone and steel tools (Figure 10A, 10) to compare their relative efficacies confirms these early impressions. But, it is not always feasible to make direct comparisons in the handling of stone and steel tools. The ways in which men use axes differ; they employ different techniques. The comparative efficiency of axes varies, too, from one task to another and according to the materials on which men use them. They also undertake tasks with steel axes not attempted previously with stone, such as felling and splitting up enormous hardwood trees.

I discovered this by chance—or experimentally (an example of anthropology's scientific method, or more accurately, serendipitous method)—by insisting that my friends stick to my plans of felling two large trees of the



Figure 10. Wola men felling trees with a stone axe (left) and a steel ax (right). (Photos by Paul Sillitoe)

same dimensions (which I had carefully measured), one with steel and the other stone axes, me with stopwatch and notebook in hand. After laboriously felling one of the trees using a steel axe, they insisted that they had never previously felled hardwood trees (Southern Beech) of that size with a stone axe. I interpreted their response as shirking because the first tree had taken quite a long time to fell, and I insisted that they proceed. I hesitate to finish this story with archaeologists present ... It was only after we had shattered three stone axe blades that I believed them. I wrote in my notebook that in stone-using times, people dealt with such large trees by debarking them, lighting a fire around the trunk, and leaving nature to topple them. At the other end of the scale, stone axes are also ineffective at chopping down saplings too because their blunter blades tend to bounce off instead of cutting into them, and men resorted to breaking them physically.

It is not only dumb anthropologists who make such blunders. The archaeologist Peter White had a similar experience with Duna speakers: “making a bow and arrow using only stone tools. Three stone axes blades were hafted... two were chipped, one lightly, the other to the extent of having two-thirds of the cutting edge and a large chunk of the body broken off”; he also “lost one small axe blade when it fell out of its haft and down inside a hollow tree” (White and Modjeska 1978:286 endnote 14). Likewise other people such as the Baruya aver that they “never tried to cut down the giants of the forest, that is to say, trees more than 2 m in circumference,” revealing the “limits of the effectiveness of work with lithic tools” (Godelier and Garanger 1973:208, 210). In West Papua they avoided trees about one-half this size, and such “large trees are not cut down but rather girdled” with the removal of a “ring of bark” (Petrequin and Petrequin 2020: 36).

Of course, I should have listened to my friends after observing them using stone axes on many previous occasions. The use of stone and steel axes demands different techniques. In contrast to wide arching, powerful shoulder delivered steel axe blows, men used shorter swings with stone axes, putting less weight behind them, delivered more rapidly as forearm pecking blows with a recoil motion to reduce the shock and risk of blade damage. The flexible socket and rattan hafting afforded some protection, too, by absorbing the force of blows. When felling a tree with a stone axe, men chopped at a more vertical angle, paring off slices, instead of cleanly chopping out sizeable woodchips, leaving slivers attached; they delivered occasional blows at the rear of the notch to make it easier to detach these by hand. Finally, although time is the only way readily to measure comparatively the efficiencies of the tools, it overlooks the more efficient exploitation of natural resources and better-quality work, possible with steel tools. In fact, the extra time spent working with steel tools on some tasks to

achieve a better outcome improves the comparative efficiency of stone measured by time alone.

Sentiments in Stones: Wak'as and Hitching Posts by Edward Swenson

In the ancient Andes, prominent stones and visually arresting boulders incarnated powerful persons (*wak'as*). Communities loved and feared these lithified beings as arbiters of fertility, divination, and well-being. I encountered one such petrous person while conducting an archaeological survey in the Jequetepeque region in northern Peru during the early 2000s (Figure 11).

It consists of a huge, craggy boulder over 4 m high that appears precariously perched on the lower slope of Cerro Catalina. Visible from afar, the massive stone looks as if it could roll down the hill at any moment. The boulder overlooks an expansive pampa housing Moche (650–800 CE) religious constructions, some of which align with the distant rock. The large stone resembles a feline head, and it was the recipient of mass offerings of spondylus shell and high-quality ceramics dating to the Late Intermediate and Late Horizon Periods (1250–1500 CE). These fine artifacts were strewn ankle deep around the formidable rock. The boulder was clearly the subject



Figure 11. The Alecpong boulder in the Jequetepeque Valley, Peru and associated offerings (left). A nineteenth century hitching post (right) in Trumansburg, NY. (Photos by Edward Swenson)

of intense devotion, and local communities and possibly representatives of the Chimú and later Inca states paid their respects and continually fed it offerings. The looming, hallucinatory presence of the stone, along with its numerous votives, evoked strong sentiments and conjured the great esteem the *wak'a* held for past peoples. Remarkably, a little over a year after visiting the boulder, I stumbled upon a description of a venerable stone in the writings of Antonio de la Calancha, an Augustinian friar who lived in Jequetepeque in the seventeenth century. He wrote that among the rocks worshiped in the region, one in particular, called Alecpong ("God in Stone"), was especially adored. This boulder was the revered son of the solar god and a progenitor of local kin groups. Calancha recounts that the Sun petrified Alecpong in a fit of rage triggered by the death of his wife. The Sun then demanded that humans worship the stone, and Calancha reports how Indigenous peoples honored the boulder with tribute, submissive gestures, and offerings of sticks, stones, and other goods. The imposing boulder discovered in our survey was most likely Alecpong, and we felt its continued force to move and instill awe.

I often think of Alecpong when I encounter other notable, if less evocative, stones. When I visit my hometown in upstate New York, I am always drawn to the slate hitching posts sporting iron rings that stand vigil in front of houses built in the nineteenth century (Figure 11). Although they no longer function to hitch horses, residents take pride in these posts as witnesses of another time, and they occasionally plant flowers and assemble a tableau of ornaments and pebbles around the monoliths, similar to the penumbra of offerings surrounding Alecpong. Certainly, the hitching posts lack the might and animacy of the Jequetepeque *wak'a* or of the Inti Watana, the famed gnomon and "hitching post of the sun" at Machu Picchu. However, this comparison reveals how certain qualities of rock (see Swenson this issue) can explain their reverential status across cultures. Both Alecpong and the town's hitching posts embody a spirit of duration and constancy that can powerfully fix memories and invoke deep feelings of nostalgia and identity. In an insecure and ever-changing world, the persistence of such stony persons offers some solace and comfort.

The Power of Stone from Hocking Hills to Holy Ground by Kathryn Weedman Arthur

Unconsciously, I roll the pads of my 5-year-old fingers and toes over the granules of sand between us—me and my friend, the big rock (Figure 12). He is an over 300-million-year-old sandstone boulder who escaped the ravages of glaciers and watched from below Old Man's Cave—as Delaware, Wyandot, Shawnee, and an old white trapper called his land home.

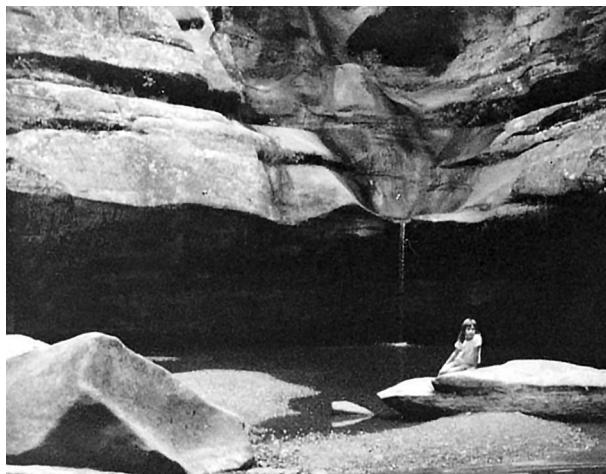


Figure 12. Sitting with my “friend,” a boulder below Old Man’s Cave in Hocking Hills, Ohio

My friend basked in the spring rain-filled creek off the Hockhockin River in Hocking Hills State Park, Ohio. Of course, my five-year-old self cared little for these details. I still remember clearly how I nestled myself into the curves of this huge river boulder. I thought I was invisible to my parents and sister, who I had left behind on the forest trail. I am not actually hiding. I am melting with the warmth of the sun into the stone. Trying to enter more deeply into the boulder, I close my eyes. I could see in my mind the birds my mom directed my gaze to along the forested trail. I hear the warblers’ trills and the nuthatches’ squeaks, only slightly muffled by the creek. Her waters swish up the sides of the narrowing gorge, cascading between the caverns, falling splashing into herself. I was listening. My fingers and toes again and again felt the sandy surface that failed to give way to my touch but nonetheless had been slowly transformed by water and time. My family has arrived long before I am ready. Reluctantly, I slid down the side of the boulder and joined the creek water bubbling over the “baby” rocks. The cold water swirled around my feet and stung, contrasting with the firm, undulating “baby” pebble surface bracing my stance. My gaze was drawn toward one that seemed to glisten rosy pink. I considered greedily grasping one in my hand and slipping her in my pocket to add to my collection at home in a brown paper bag. I decided instead to leave her with her friends. I ran off to join my family before I enlisted my father’s stern reprimand using my full name.

This memory was hidden in my sensory memory until I went to the Ancestral Stone Workshop. I am not Christian, Jewish, or Muslim, and

beyond seeing religious buildings, old walls, and cobbled streets, I had no preconceptions about what I would experience in Jerusalem. Throughout the day, I moved between feelings of being a bit miffed at my lack of education, sad because many American Judeo-Christians had apparently forgotten their connection to land, and well... astonishment. Awed for in the sacred land for Abrahamic religions were sacred foundational limestone slabs and bedrock! Stones that were once open on the earth's surface were now interred in religious structures. I watched people very comfortably move to touch their surface, but I wondered if it was appropriate for me as a non-believer. Further, I am keenly aware in this sacred place, that my left hand always wants the experience of touch first. My left wrist marred with a three-inch scar incurred by a break from which I nearly lost my use to move and feel with my fingers. I did not want to cause offense, but the stones enticed and lured me. How many people have shared this tactile experience and how many reiterations of the surfaces have existed? Each time, I hesitantly reached to caress the limestone: the soft, chalky surface of the Rock of Agony, the buttery depression in the wall along via Dolorosa, the cool, rippled, reddish surface of the Stone of Anointing, and the warmth of the West wall heated by the sun. Tactile memories ignited one of my earliest connections to nonhuman beings—the presence of my childhood boulder friend and his baby pebbles. A reminder that stone can ground us in place, move us through space and time, and connect us with each other.

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