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In defense of the soils. A hybrid perspective of archaeology of agriculture in the Andean high valleys (Catamarca, Argentina)

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This paper aims at presenting soils as a suitable object for archaeological inquiry and, therefore, as part of material culture. This perspective is based on my Ph.D. research experience developed in three high valleys of north-western Argentina. Soils are the foundation of peasant landscapes, synthesizing a complex interplay of physical, chemical, biological, environmental and social processes. In agriculture, they function simultaneously as both a support and a provider for plant life and, in turn, contributes to a complex assemblage that transforms them into a locus of fertility, nurturing a caregiving environment. Therefore, I suggest conceptualizing this assemblage as the Soil-Earth-Territory Complex, emphasizing both its material and social dimensions. This conceptualization prompts the development of an Archaeology of Soils, which considers their temporal and spatial depth, the multiple vital materials that constitute them, and their dynamic relationship with the processes occurring in, on, and through them. To address such complexity, Hybrid Archaeologies emerge as the most suitable approach, as they allow understanding the central role of the Soil-Earth-Territory Complex in shaping peasant agricultural landscapes within a past-present *continuum*.

KEYWORDS

soils in archaeology, agricultural archaeology, peasant landscape, past-present continuum, Northwest Argentina, Andean region

1 Informal introduction

The institutional review process for the doctoral programme in Archaeology at the University of Buenos Aires includes a series of sequential steps, each requiring an increasingly detailed development of the ongoing research leading up to the final thesis submission: a pre-project, a project, a plan, and finally the thesis itself. When I submitted my thesis project in 2023, it was returned to me with some harsh criticisms that shook the foundation of my proposal centered in working with soils as a means to develop an archaeology of agriculture.

Although I—along with my supervisors—agreed with some of the reviewers' comments, which ultimately contributed significantly to refining the justification of my thesis, a substantial portion of their feedback targeted the very idea of approaching soils through archaeology. In fact, in an informal comment, one of my supervisors was told: "She should study materialities, structures, artifacts... soil is not archaeology."

At that point, I had already made significant progress in both fieldwork and lab analyses, and had presented several preliminary writings and conference papers on the topic, generally receiving positive feedback.

These comments by the reviewers led me to reconsider what became a fundamental decision for continuing the writing process, according to their anonymous recommendation at that stage: either “switch to a Ph.D. in Social Anthropology (given the ethnopedological focus shown in this first project) or reformulate the ideas to ensure the resulting thesis clearly qualifies as archaeological.”

By then, I had spent around 10 years working on soil studies in archaeology and had been teaching the course “Soils in Archaeology” at the Faculty of Natural Sciences, National University of Tucumán, for a few years. So, together with my supervisors, we decided to revise the project in certain aspects and continue within the Archaeology Ph.D. programme. At the time, I saw this both as a challenge and an opportunity to propose, justify, and “defend” soils as an archaeological materiality—one that is different from classical ones and “more complex”, but material nonetheless.

In this article, I present and elaborate on my perspective for developing an Archaeology of Soils as a means to approach peasant agricultural landscapes.

1 (bis). Formal introduction

In its most classical conception, archaeology can be defined as the discipline dedicated to the study and interpretation of human behavior through material remains of past human societies (Renfrew and Bahn, 2007), or as the study of past sociocultural systems and processes through artefactual assemblages and their contextual relationships, with the goal of contributing to the clarification and explanation of the spatial-temporal dimension of human existence (Binford, 1962, 1988). On that basis, and as part of ongoing debates about the scope and meaning of the discipline, within the Interdisciplinary and Intercultural Collective from the High Valleys of Catamarca (CIIVAC for its Spanish acronym), in which I have participated for over 10 years, we define archaeology as a social science that problematizes social processes based on the study of material culture across time, in order to understand the present and imagine the future (Quesada et al., 2014; Korstanje et al., 2016; Korstanje et al., 2017; Korstanje et al., 2025).

This definition entails two significant implications: first, that archaeology should intertwine the study of the past with historical and contemporary social issues—a position already familiar and debated within the discipline (Politis and Pérez Gollán, 2004; Mannasse and Arenas, 2010; Meskell, 2012; Hamilakis, 2016). Second, it encourages us to rethink archaeological materiality—a debate that remains actual, especially since the ontological turn in archaeology (Nielsen, 2022; Alberti, 2016; Fahlander, 2017; Preucel, 2021).

Throughout its history, the discipline has approached artifacts from a wide range of perspectives: from their composition, addressing technological and archaeometric aspects, decorations, symbolism, and more (Knappett, 2005; Hodder, 1990); from *chaînes opératoires*, exploring their origin, use, disposal (and reuse, reclaiming, etc.), and their active role in social life (Ingold, 2007). More recently, other epistemological approaches have emerged, allowing us to explore the agency of things, materials, and the

non-human in shaping human trajectories (Nielsen, 2006; Scattolin et al., 2009; Gastaldi, 2010, 2008; Di Salvia, 2016).

Building on these contributions, here I propose a perspective that considers the role of soils not only as matter but also as agents—incorporating both human and non-human interventions in their constitution as the foundation of peasant landscapes, understood across a past–present *continuum*. To do so, I draw on my experience in three highland valleys of north-western Argentine's Andes: El Bolsón, Rodeo Gerván, and Los Morteritos–Las Cuevas.

The CIIVAC has been studying the social processes that shaped human groups in these valleys for over 30 years, from what is regionally known as the Formative Period (ca. 1,000 BCE–1,000 CE) to the present, using various indicators and always through an interdisciplinary approach (Korstanje, 2005, 2010; Mondini, 2021; Quesada and Korstanje, 2010; Maloberti, 2014, 2020; Brown, 2018). A key line of inquiry within the Collective—and one that remains active—is agricultural production and its role in social reproduction, as this region has seen sustained agriculture, with changes, ruptures, and continuities, over the last 1,200 years (Korstanje, 2010; Taddei Salinas et al., 2023). Two theoretical concepts have been central to this effort: the peasantry, as key agents in our analysis (Korstanje, 2010; Brown, 2018), and the past–present as a *continuum*—a framing that avoids the arbitrary temporal cuts typical of academic disciplines and instead embraces long-term perspectives (Lazzari and Korstanje, 2013).

In this process, as well as in our search for ways to link agriculture with other social spheres in the configuration of more complex landscapes, soils have played an important role as a complementary tool—particularly in the development of multi-microfossil analysis methodologies (Coil et al., 2003; Korstanje and Cuenya, 2008, 2010). However, to date, soils in our study area have not been examined specifically in relation to their role in the web of relationships that make up peasant agricultural landscapes.

In order to construct the logical argument that leads to the theoretical proposal at the core of this paper, I will begin by reviewing some archaeological perspectives on soil.

2 Soils in archaeology

Before introducing this section, it is necessary to clarify the concept of soil, its differences from sediment, and the scope of this article.

Sometimes “soil” and “sediment” are used interchangeably, and sometimes there is confusion as to which term is correct (Holliday, 1990, 2004; Tchilinguirian et al., 2016).

From a strictly technical point of view, without room for nuance, all soils can be sediments, but not all sediments can be soils. Soils are formed from sediments that have undergone weathering and alteration *in situ* or have been transported and deposited. However, unlike sediments, soils require a sufficiently long period of environmental stability so that formative factors converge and give rise to particular pedological processes that enable pedogenesis.

From a practical standpoint, soil is often defined as the medium in which plants grow. This definition offers other nuances: the peasant, rural, or indigenous farmer does not stop to contemplate

whether the substrate in which he sows constitutes soil or sediment. His practical knowledge enables him to recognize its potential as a planting bed.

From a phenomenological point of view, soil is recognized as a lived territory and as a place of mutual belonging with the people who inhabit it (Kusch, 1976, 1978).

Therefore, what follows are definitions and observations on soils that are not necessarily exclusive of sediments, but that serve to conceptualize soils as materiality.

Archaeological practice involves an inevitable relationship with soil: when surveying, we consider its various aspects and properties in order to identify sites, assess their state of preservation, and evaluate the possibilities it offers for working with and within it. When excavating, we directly intervene in its body in order to interpret it. Through excavation, we progressively remove it *in situ* to reach the materials that archaeology has classically focused on, such as ceramics or lithic artifacts (Salisbury et al., 2022). Our interpretations are built upon what is “un-covered” through the act of excavation. Profile cleaning becomes a tedious task, often perceived as obstructive or time-consuming in the excavation process. Similarly, sieving or screening produces piles of soil that we discard, while we recover from the mesh only those materials deemed worth taking to the laboratory for further analysis (sometimes “*just in case...*”). In our daily laboratory work, we also dispose of the soil or sediment that clings to the archaeological objects we will study. We clean, brush, wash, and scrape them. In microfossil processing from soils (an example I am somewhat familiar with), the sample is washed as many times as necessary to remove the sediment, retaining only the microfossils (comparable in size to the silt fraction) from the supernatant so that they can be observed under a microscope. Except in cases where soils or sediments are studied as a complement to other categories of archaeological materials, it seems they are always in the way, always a hindrance.

And yet, soil constitutes the broadest and most ubiquitous material category we work with.

In the few cases where archaeological literature explicitly addresses soil (sometimes also referred to as sediment), it is generally considered a matrix—that is, the container in which archaeological remains are found (Sampietro Vattuone, 2007, 2009). When soil samples are taken in archaeological contexts, they are processed and analyzed precisely as established by this matrix, complementing other studies.

Among the most comprehensive syntheses on soils in archaeology is the pioneering work “Soils in Archaeological Research” by Holliday (2004), and, in the Argentine national context—a fundamental reference for archaeologists and geoarchaeologists across South America—the work of Tchilinguirian et al. (2016). Both texts highlight applications such as stratigraphy, site formation processes, paleoenvironmental reconstructions, dating, soil chemistry as an indicator of human activity, micromorphology, microstructure, and microstratigraphy of soils, along with the potential of concepts such as *anthrosols* and anthropogenic soils.

The interdisciplinary work between earth sciences and archaeology gave rise to a field known as geoarchaeology, which has taken shape as a sub-discipline since the 1970s. From

within this framework, archaeological interpretation has shifted from a perspective centered solely on material culture to one that incorporates the study of the deposits where finds are located—not as a mere addition of geological information to archaeological problems, but as a distinctly archaeological way of thinking about contexts. Thus, geoarchaeology integrates within the archaeological record the material objects, the containing matrix (soils and/or sediments), and the geoenvironmental context (Favier Dubois, 2023). However, within this discipline, a wide variety of archaeological studies are carried out with a geological, geomorphological, sedimentary, Quaternary geology, and/or soil science imprint, applied to contexts composed of both sedimentary (Favier Dubois, 2006) and pedological deposits (Zárate et al., 2000–2002).

Beyond geoarchaeological approaches, soil physics and especially soil chemistry have been instrumental in understanding the integrity of the archaeological record (in the absence or low frequency of artifacts/ecofacts in primary contexts), in taphonomic analyses, and in delineating different activity areas—as seen in the pioneering works of Ortiz and Barba (1993) in Mexico and, more recently, those of Roos and Wells (2017), the contributions of Obregón et al. (2011) for the Andean region, and others including Ortiz (2003), Cuenya and García Azcárate (2004), and Gianfrancisco (2005) for north-western Argentina.

Despite these contributions, we can say that only a handful of works place soils at the center of theoretical reflection for solving archaeological problems. That is why the development of an Archaeology of Soils remains an incipient endeavor (Linderholm, 2010; Salisbury et al., 2022). Aware of this situation, Sampietro Vattuone (2007, 2009) proposes to approach soil as an artifact—a classic archaeological category that is virtually undisputed. According to the author, this concept encompasses any trace (physical object, feature, or landscape) made or altered by humans. By treating soil as an artifact, it can be studied in technological, chronological, and socio-functional terms (Sampietro Vattuone, 2009). From a different but related perspective—also appealing to its artefactual nature and to landscape definitions as a web of things (based on Ingold, 2007, 2015—conceptualizations), Álvarez (2021) defines soil as an assemblage of heterogeneous elements, a gathering of threads of life. That is, as *a thing*.

While these perspectives are insightful, I argue that conceptualizing soil as an artifact leads to a certain reification, overlooking the agentic aspects of its ontic nature, as will be discussed further on. At the same time, soil retains the particularity of also being addressed as an ecofact (especially in cases where there is no direct human intervention in its formation), insofar as it provides information on the long-term relationship between people and their environments. Because soils play important roles in site formation processes (Schiffer, 1991), they are also approachable from taphonomic perspectives (Behrensmeyer, 1978). Finally, the limitations of classical categories for understanding archaeological material culture allow us to conceptualize soil as a feature—in its non-portable, artefactual character.

Swedish archaeologist Linderholm (2010) defines soil as an archive, in the sense that it preserves and reflects the environmental history of humans, plants, and animals from the past to the present. His definition resembles that of an ecofact, while also emphasizing

its non-discrete structural character. Consistently, he highlights that soils (on a long temporal scale and broad spatial scale) may preserve our cultural heritage even better than museum collections (Linderholm, 2010, p. 1). He also recognizes soil's behavior as both matrix and system—constantly changing—and concludes that the multiple coexisting rates of change within it make it very difficult to compare to the biography of an artifact (Linderholm, 2010, p. 12).

One recurring way to define soils within archaeological discourse is through the metaphor of the palimpsest. In their study of changes in the use of agricultural soils (drawing examples from both North America and the Andean region), Sandor and Homburg (2017) describe soils as a palimpsest of traces from different environments that succeeded one another through multiple forms of use and/or transformation. They argue that soil operates at multiple temporal scales and intensities, processing everything produced through its relationship with the environment—including human activity. Wells (2006) also introduces the idea of soil as a palimpsest, but in this case of historically constructed and contingent ideas, beliefs, and practices. He presents soil as a reservoir of shared ecological knowledge, manifested in the pedological record and resembling an archive (Wells, 2006, p. 126), echoing Linderholm's (2010) framing.

However, as with the definition of soil as artifact proposed by Sampietro (2007, 2009), these ideas are not always developed in depth. In contrast, more exhaustive discussions appear around the concept of the palimpsest, particularly as applied to landscapes, as in Bailey's (2007) work. He offers an in-depth reading of the term, from its linguistic and palaeographic origins to its application in studies of memory construction and socio-cultural heritage—including Freudian and performative uses. Bailey distinguishes between two divergent interpretations of palimpsests: the cumulative palimpsest—the successive overlaying of activities (the most common archaeological usage), and the true palimpsest, in which all previous information is erased except the most recent inscription (Bailey, 2007, p. 203–204). He uses this distinction to illustrate the fragmented nature of the archaeological record and argues that palimpsests can help overcome both linear, sequential views of time and the spatial abstraction of discrete “places.”

Ingold (2021), for his part, notes that the palaeographic palimpsest analogy entered archaeology in the 1950s (Crawford, 1953) to describe land repeatedly used over time. Ingold continually draws analogies between the palaeographic palimpsest and soil—emphasizing its depth dimension rather than its position as the lower boundary of the landscape. He distinguishes two types of erasure that palimpsests involve: striking through and erasing. The former is sudden, violent, explosive—yet the line that strikes through also preserves what it hides, sometimes even emphasizing it. Erasing is slower and more diffuse: like an eraser on a page (both degrading together) or water washing over soil, uncovering plant roots or erasing footprints. As Bailey also suggests, a palimpsest is not formed by layering but by erasing—allowing the old to re-emerge. This is Ingold's anti-stratigraphic principle: the past surfaces as the present digs deeply, like ink sinking into parchment (Ingold, 2021, p. 5).

If we apply this reading to soil, we find that erasure of the old by the new is not always inevitable. Evidence of multiple

activities—synchronous or asynchronous, at different scales—can coexist, in line with Bailey's cumulative palimpsest. At other times, this evidence is erased by human action (e.g., stone clearing, cleaning, digging, intentional or unintentional disturbance), or by soil itself (through pedological processes such as leaching, percolation, translocation).

Pedoarchaeological stratigraphy is highly complex, combining principles of archaeological superposition (“what lies deeper was deposited earlier”), pedological development (“horizons form from the surface downward”—Porta Casanellas et al., 2003), and archaeological stratigraphy, which further complicates both by including human agency (Harris, 1991).

Thus, the analogy of soil as a palimpsest, though widely used in archaeology, cannot be applied directly without nuance. I draw here on both the cumulative and preservative capacities described by Linderholm (2010) and Wells (2006), as well as Ingold's (2021) anti-stratigraphic logic, alongside the many life cycles that occur within and through soil in constant relation with all it touches.

Finally, Salisbury (2012) defines soils as part of material culture. Starting from the critical observation that lithics and ceramics have traditionally enabled the study of symbolism, identity, exchange, power, migration, and other social phenomena, while soil has been relegated to a mere indicator of agricultural potential, Salisbury offers a comparative discussion. He reviews various definitions of “material culture” and matches them with the nature of soils, ultimately concluding that soils “[...] play an essential role in the formation of memory, identity, community, and worldview” (Salisbury, 2012, p. 24)—a proposition with which I fully agree, and which provides a foundation for what follows.

3 From agrarian landscapes to soils: a necessary conceptual framework

My proposal is to study agricultural landscapes, conceived as taskscapes, with an emphasis on soils, drawing from a framework of vital materialism. This perspective allows me to shift the archaeological gaze toward an “in-between” or an “across”: that is, not to focus exclusively on agricultural structures as discrete units, but rather to approach them within a broader web of relations, where connections and movements among them can be contemplated—conceiving of a landscape *continuum* of soils entangled with people.

The previous paragraph calls for, at the very least, a review of certain key theoretical concepts necessary for developing this proposal. The concept of landscape already has a long trajectory in the history of our discipline (Criado Boado, 1993; Anschuetz et al., 2001; Tilley, 2004), but precisely for this reason it has been used as a theoretical notion to refer to different ideas. It is therefore important to revisit the term and clarify what we mean by landscape, at least for the purposes of this paper.

From Foucault (1989), who emphasized the social and historical nature of what we call the environment, to the somatic phenomenology of Merleau-Ponty (1984), who worked on awareness of corporeality and embeddedness in the inhabited world, and including definitions developed specifically within archaeology, the concept of landscape has taken on different

nuances. Criado Boado (1993) used it to refer to everyday contexts, socially constructed and dynamic; Gosden and Head (1994) focused on how people's relationships with their surroundings over time generate feelings of belonging and spatial continuity. Nonetheless, for quite some time, landscape functioned largely as a backdrop for the subjects and objects of the inhabited world (Tilley, 2004).

Seeking to overcome this limitation, archaeology turned to Social Anthropology, and particularly to the ideas Tim Ingold began to propose in the 1990s—ideas I find particularly helpful in illustrating the point I aim to make, and to which I will return throughout the following pages.

For Ingold, space is the most abstract, empty, and indifferent concept we use to refer to the inhabited world (Ingold, 2015, p. 9): people live on the earth, on the ground, in the countryside—not in space. We dwell in the world through, around, from, and toward; we inhabit it through movements in which we trace paths and tracks that intertwine, entangle, and cross over one another, generating knots. The world, then, is formed archi-texturally by the mesh of these knots in the trajectories of dwelling. Each thread is a form of life, and each knot a place (Ingold, 2015, p. 19).

Ingold (2000) defines landscape as the product of dwelling, of people's being-in-the-world, who leave traces as records or testimonies of their lives (the threads described above), emphasizing its historicity. Landscape, then, is a relational field, where its forms emerge as condensations of beings' activity within that field. This perspective acknowledges the historic character of landscapes, highlighting both their changes and continuities, as well as how they are perceived and engaged by people.

Landscape is thus understood as a commitment to the inhabited world, with a material basis (land) and a projected and meaningful totality (scape), constituting a unit characterized by the symmetry and mutual belonging of human and non-human beings. To better grasp the concept—which, even with theoretical advances, has often remained a mere backdrop—Ingold (1993) introduces the concept of taskscape, imbued with deep phenomenological meaning. It can be understood as the landscape of practices, of agency; a space where perception and action converge, since the practice of the various beings inhabiting the landscape is itself involved in understanding and shaping it. Through dwelling, humans establish relationships with different corporeal others.

As a world of practices in motion and in temporal becoming, the taskscape is highly dynamic and never complete (Ingold, 1993, p. 194–195). In these embodied practices, people establish concrete forms of social bonding in and with the world, which enable, on one hand, the emergence of common sense through the daily reproduction of social relations—which in turn sustains those very relations (Padawer, 2013); and, on the other, as a consequence, a savoir-faire or practical knowledge that stems from the ability to perceive, to judge what is perceived (Chevallier and Chiva, 1996), and to act accordingly.

Practical knowledge arises from the convergence of inherited and practiced common sense with the personal, embodied experiences of each social subject in relation to the material world. People exercise and modify that practical knowledge every time they use it—thereby transforming the world (Chaiklin and Lave, 2001): a world that is lived, material, and sensuous.

All that has been outlined so far helps to justify the inclusion of soil depth in the material configuration of inhabited taskscape—particularly agricultural landscapes, where people and soils are intimately linked through a world of practices and tasks supported by practical knowledge. However, to understand soils within landscapes as part of material culture, we need an additional conceptual shift—one I address by turning to the philosophical contributions of Jane Bennett's vital materialism, which is particularly relevant for its commitment to the world through the vitality of bodies.

Bennett (2022) understands vitality as that intrinsic and singular quality that gives something the capacity to intercept the trajectories of other things, making things happen in context. Her vital materialism departs from historical materialism (where things seem to gain agency only when activated by human action or gaze), challenging the passive conception of the world around us. Instead, she proposes a view of matter as active, dynamic, unpredictable, and capable of agency (Manccioni and Jorge, 2022), offering a new perspective that sees humanity as a complex and rich assemblage of vibrant materials (the minerals in our bones, the metals in our blood, the electricity in our neurons), entangled with an equally material world.

The concept of assemblage, developed with clear influence from the rhizomatic model of Deleuze and Guattari (2004), emphasizes the vital potentials of matter: assemblages are not governed by a central head, but each member contributes its own vitality to allow the assemblage to generate things—while simultaneously retaining some of its own vitality, which could potentially form new assemblages (Bennett, 2022, p. 75). Thus, assemblages have irregular topographies, and their vibrant vitalities are not evenly distributed (Bennett, 2022, p. 74).

We can observe certain similarities between Bennett's notion of assemblages and Ingold (2015); Ingold's (2021) concept of place: life unfolds along lines that tie into one another (places), much like agency flows within assemblages. The more entwined the lines, the denser the knot; the more densely assembled the materials, the greater their vitality.¹

In her theoretical proposal, Bennett questions the nature of materials based on their inherent vitality: she revalues waste, debris, decay, and rot—materials that seem biographically finished, and which are, in fact, the very stuff archaeology works with. All of this provides tools for socializing matter, while also allowing social relations to be materialized for archaeological purposes.

In light of this, an Archaeology of Soils for addressing agricultural landscapes becomes an invitation to inhabit what appears empty—as seen from a Cartesian spatial lens, considering

1 I cannot fail to mention the similarities between Bennett's *assemblages* and Hodder's *entanglements* (2011, 2016), as well as those between the vital and agentive potential of matter and Gibson's (1979) concept of *affordances*, and the shared call—between the philosopher and the proponents of Symmetrical Archaeologies—to take the material configuration of things seriously (Olsen, 2010; Olsen et al., 2012; Olsen and Witmore, 2015; Witmore, 2007). Although I have not found mutual citations among these works, it is undeniable that a shared commitment to the material constitution of the inhabited world runs through all of them.

that archaeological agricultural structures and interstructural spaces often appear “clean” of archaeological materiality, in the classic sense of the term. Yet, by conceiving of a landscape *continuum* where matter and vital agencies are assembled through time, articulated through a world of moving practices, we begin to question those voids—reframing them as full of vibrant materials assembled in context, even if they merely constitute an obstacle (like a stone in the path), a discomfort (like a stone in a shoe), or a resistance (like wind against movement).

It is also an invitation to (re)think agricultural practices—not merely as something that is done, but as complex processes of acquiring *savoir-faire*, *savoir-percevoir*, and *savoir-relier*: learning to act, perceive, and relate to the vital materials of agricultural landscapes within a particular assemblage—the *soilscape*.

The concept of *soilscape* comes from soil cartography and is generally used to refer to geomorphological units associated with soil types across broad areas (Buol et al., 1973; Zinck, 2012). As a conjunction of soil and landscape, they are defined as soil landscapes and soils in the landscape—or, put another way, as the assemblage of soil-bodies in a landscape.

Now, if we consider, based on everything outlined in this section, that landscapes are materially and vitally constituted—and deep (a dimension granted by the bodies of soil as *soilscape*)—and finally, as *taskscape*, we can then conceive of agricultural landscapes as in motion, formed by the continual generation of contact and mutual perception among vibrant, vital matters. These enable corporeal experience and make things happen—and the material consequences of such events are accessible through archaeology.

Finally, I would like to discuss the concept of Hybrid Archaeologies. To talk about something hybrid can be complicated. While some emphasize that the hybrid cannot reproduce itself, others highlight its fruitful, resilient, and resistant character (Liebmann, 2013, p. 30). A hybrid is formed by assembling diverse things, becoming something different while maintaining the identity of its origins. Rather than categorizing and ordering, the hybrid inhabits the interstitial and the liminal (Silliman, 2015).

Thus, the hybridization of archaeological practice involves generating knowledge that reflects multiple, intersectional and contradictory identities in relationship to one another (while inhabiting the resulting tensions). It means claiming heterogeneity and avoiding standardized, pure content/state classifications with set boundaries. Instead, we move between our categories of analysis (Stockhammer, 2013).

In this sense, Hybrid Archaeologies include archaeological practices that bridge different fields by appealing to the transversality of knowledge, practices, discourses, theories, and methodologies (Meskell, 2012; Silliman, 2009; Lazzari, 2011; Lazzari and Korstanje, 2013). They also incorporate a social and political questioning of archaeological work to empower local communities (Meskell, 2012; Hamilakis, 2016). Rather than diminishing the legitimacy of the archaeological discipline, this approach enriches it by providing interpretive depth and directing it toward contemporary societies, thereby deepening its social role (Meskell, 2012, p. 135).

In this case, the most appropriate pragmatic framework is Hybrid Archaeologies, as it allows me to address agricultural

landscapes in a temporal and spatial *continuum* by articulating and balancing all previous concepts.

4 The Soil–Earth–Territory complex

Following the theoretical framework developed so far, I now propose to approach as an archaeological object of study what I define as the *Soil–Earth–Territory Complex* (SET), emphasizing its validity as an archaeological materiality.

4.1 The “soil” dimension of the SET complex

The technical concept of *soil*, widely used across the scientific disciplines that study it (pedology, edaphology, agronomy, and earth sciences in general), refers to the uppermost layer of the Earth’s crust which, through specific genesis and developmental processes, gives rise to three-dimensional bodies with their own morphology and characteristics that allow them to be recognized and distinguished from one another (Jaramillo, 2002).

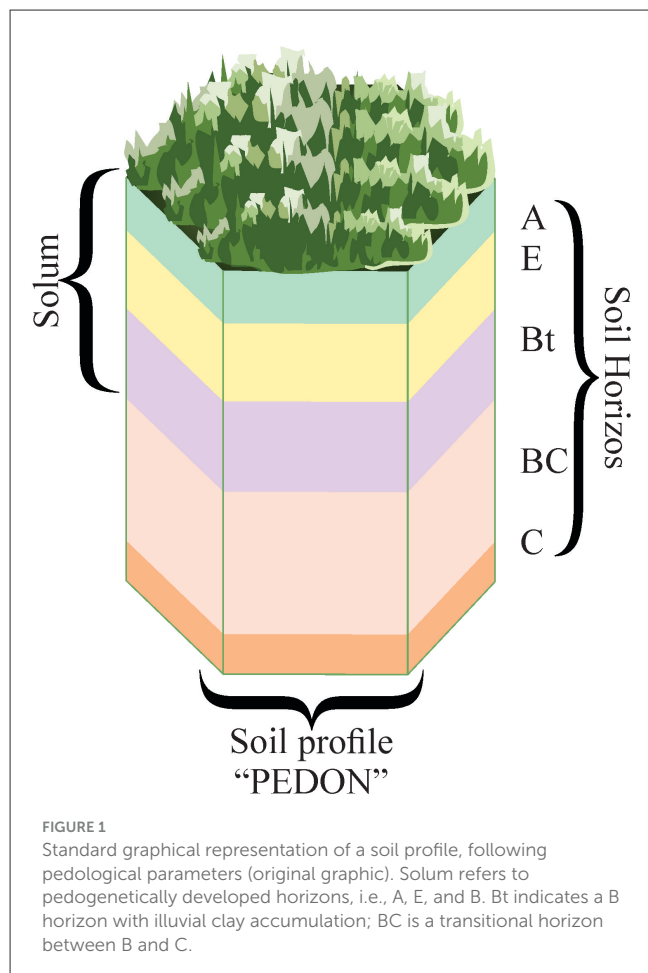
As a three-dimensional body, the soil has defined boundaries—though debates continue within Pedology and Edaphology about these limits, and no definitive conceptual consensus has been reached. Conventionally, it is accepted that the upper limit is the surface where the soil comes into contact with the atmosphere or shallow bodies of water; lateral boundaries are difficult to determine except when in contact with deep water bodies or lithic/sedimentological transitions; and the lower boundary may be defined either by the interface with unweathered bedrock or by the depth reached by plant roots (Porta Casanellas et al., 2003, p. 24).

This notion of a three-dimensional body leads to graphic representations of soil as a regular prism (or similar figures), divided into layers (soil horizons), whose boundaries are depicted as straight, fixed lines (Figure 1). This is the standard graphic representation used in empirical studies by pedologists and edaphologists, known as the *pedon* (from the Greek *πᾶς*, meaning “what is walked on or touched with the feet”²), which serves as the unit of description and sampling.

However, the individual soils represented in these pedons are not actually separated from one another—they are not discrete bodies. Lateral changes in morphology and pedological properties occur gradually, which allows the definition of *polypedons* (Porta Casanellas et al., 2003, p. 22, 23), although identifying their boundaries remains complex. Even the boundaries between horizons (horizontal or sub-horizontal layers formed through pedogenetic processes, with distinctive properties allowing them to be differentiated within the same soil) are often difficult to define.

These boundaries—sometimes sharp, sometimes diffuse—both within soils (between horizons) and between them (between pedons) help to illustrate the notion of a *continuum* across the landscape. For this reason, and beyond the cartographic utility of the *soilscape* concept introduced earlier, I propose its use as an

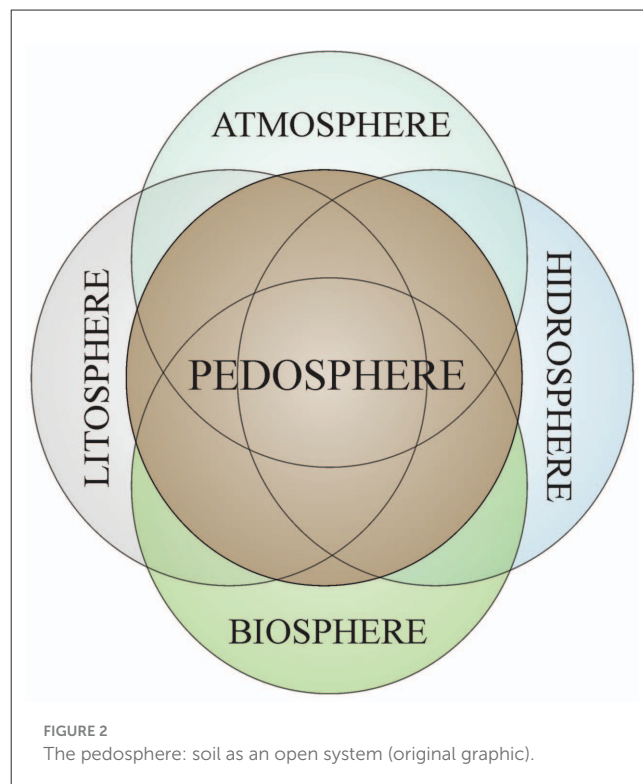
² This etymological definition is already quite eloquent, as it suggests a corporeal relationship and vital contact between the person and the material essence of the soil.



interpretative tool for understanding the assemblage of the multiple material components within a given soil, as well as the assemblages of soil-bodies across a spatial and temporal *continuum*.

Another recurrent concept in pedological theory is the *pedosphere* (or *edaphosphere*), which emphasizes synthesis. Soil constitutes an autonomous sphere that behaves as an open system, with inputs and outputs of matter and energy (Porta Casanellas et al., 2003, p. 84). This entails interactions with other spheres: biosphere, hydrosphere, lithosphere, and atmosphere. While each of these spheres can be clearly defined, they are in continuous interaction: air contacts rocks, rocks contact water; water and air mix, forming an interface in which these contacts are balanced (Conti, 2005, p. 3). The pedosphere thus represents the synthesis of these four spheres, which—broadly speaking—constitute the soil-forming factors. I propose that these inputs and outputs of matter and energy, understood in terms of *material vitality*, are managed by the soil itself through properly pedological processes (physical, chemical, and biological additions, translocations, transformations, and losses), which give a specific soil its unique identity (Figure 2).

I propose extending the idea of the pedosphere as an open system into a landscape *continuum*, using the notion of *soilscape* (soils as landscapes and soils in landscapes), and interpreting it through the lens of the *knots* generated by the entanglement of agentive movements, as proposed by Ingold (2015) in the previous section. Through this lens, each soil-forming factor is no longer



conceived as a sphere, but rather as a line along which the same factor can vary, changing the direction of movement and giving rise to different *knots*: that is, different soils within a continuous landscape (Figure 3).

The *soil* dimension of the SET Complex thus refers to the concreteness of soil's individuality—to an autonomy conferred by its properties, which distinguish it from other soils. At the same time, it refers to the assemblages of such autonomous bodies within a landscape *continuum*, due to gradual changes in the forming factors that result in equally gradual variations in pedological properties across the landscape.

4.2 The “earth” dimension of the SET complex

Within soil sciences—especially those concerned with the relationship between soil and agriculture, such as edaphology and agronomy—soil is recognized to possess two fundamental qualities that define its identity: it functions as both a *support* and a *provider* of plant life. As support, it must be stable, continuous (spatially and temporally), friable (pleasantly and evenly penetrable), and deep. These features allow plant roots to explore the soil body in search of nutrients. As provider, soil must supply the nutritional and physiological requirements for plant growth, as well as for all the organisms that inhabit it—and in doing so, also constitute it (Porta Casanellas et al., 2003).

To fulfill these roles, soils must be made up of suitable materials and substances, assembled in specific ways. It is within this analytical context that the concept of *earth* arises—arguably

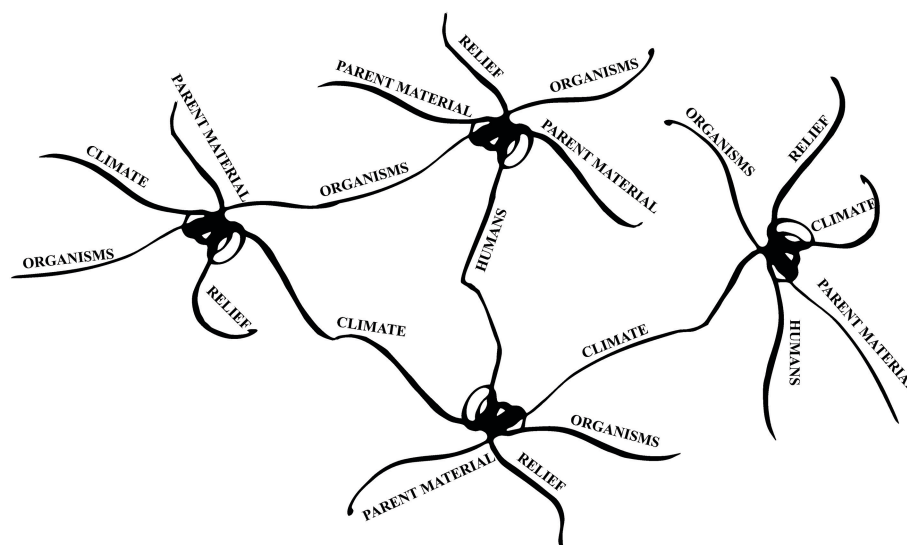


FIGURE 3

Graphic depiction of a soilscape, combining soil-forming factors understood as assemblages. Original adaptation based on diagrams in Ingold (2015).

the most colloquial term for soil.³ Unlike the more technical conceptualizations, “earth” refers to the material essence of soil: the materials and substances interacting in the pedosphere are assembled according to their vital potentials in different ways, forming what we call earth.

From a material standpoint, soil is defined as an open, three-phase, and heterogeneous system, composed of three physically and chemically distinct phases: a solid phase, a liquid phase, and a gaseous phase (Porta Casanellas et al., 2003, p. 91; Jaramillo, 2002, p. 157). Each of these phases, in turn, comprises a still more diverse array of *vibrant materials*, which can be broadly summarized as:

A **solid phase**, composed of both organic components (various humic substances with complex chemical compositions) and inorganic or mineral components (gravels, sands, silts, and clays—all physically and chemically distinct), as well as their assemblages, such as organo-mineral or clay-humic complexes (Porta Casanellas et al., 2003, p. 201). The relationships among these solids form *pores*, which host the other two phases.

A **liquid phase**: soil water, which is far from pure, containing dissolved and suspended materials (ions, free radicals, mineral and organic particles).

A **gaseous phase**: soil air, whose composition is similar to (though of differing concentration than) the atmosphere we breathe.

The components of these three phases interact with one another, assembling in different ways and at different scales: into floccules, aggregates, etc. The form, content, and concentration of

these assemblages, as well as the substances that pass through and deposit within the pores, define the identity of a given *earth*.

The concept of earth is intimately linked to perceptual and sensorial qualities, apprehensible through the body, and derived from the assemblages of such vital materials and substances: the color of soil, the smell of organic matter, and its plasticity when moistened or dried. In this way, the SET becomes perceptible and apprehensible as *earth*—mineral yet organic, solid yet porous, concrete yet kneadable or friable. These liminalities are what grant it identity as a *vital material in itself*, composed in turn of assembled vital materials.

4.3 The “territory” dimension of the SET complex

Territory is a concept long debated as a spatial category, addressed across both social sciences (notably geography, anthropology, psychology, political science, and economics) and natural sciences (such as ecology and ethology). Broadly speaking, in the social sciences, it is defined as the product of the network of social relationships woven daily between human beings and nature. Territory is thus the socio-political shaping of the environment in which people live and unfold as social beings, generating a particular sense of identity (Ther Ríos, 2011).

The concept of territory has been present in the social sciences for quite some time, which has led to it being treated—almost sequentially—from various perspectives. During the era of diffusionism, for instance, geographic determinism prevailed, whereby a society was associated with a culturally determined and geographically fixed identity.

Marx (1968), by contrast, defined the natural environment as the inorganic extension of the human body. From a neo-Marxist perspective, this led to the concept of territory becoming associated

³ Since languages and words inherently convey meaning, a disclaimer is necessary: there are terminological differences between Spanish (my native language) and English. When we go to a nursery, in Spanish we say we buy bags of *tierra*, not *suelo*; when children get dirty playing outside, they are covered in *tierra*, not *suelo* (in English, the word *soiled*, which captures this idea, has no true equivalent in Spanish).

with ideas of land tenure, ownership, and appropriation. This latter usage aligns most closely with one of the possible etymologies of the word “territory”—from the Latin *terra torium*: the land that belongs to someone, usually a nation-state. In this sense, land—as territory—was conceived as the integrated space for social production and reproduction.

In Kusch's work, from a purely South American context (1976, 1978), the mutual significance between soil and territory is made explicit. It is defined as a *foundation* and a *rootedness*, as well as an existential domicile that signifies the inhabitant. The anthropologist and philosopher uses strong language to describe these connections: something that *weighs*, something that is *demanding* and *needed*, and something that *cannot be detached from*... For Kusch, soil is not an object that can be touched; it *weighs* (1976)—it is the gravity of thought rooted in it. However, he complicates this concept by acknowledging that the soil as territory, as a foundation and a sense of belonging, is always unstable and must be continuously validated.

In contemporary times, marked by a global restructuring under hegemonic political and economic power, the social sciences have revisited the concept of territory to speak of its absence—that is, of the ongoing and alarming processes of *detritorialization*, alienation, denaturalization, and territorial precaritization among subaltern groups (Pease, 2015; Haesbaert, 2013). These debates reverse the logic of ownership and control, shifting toward a sense of *identification*—no longer determination—between people and a *lived land*.

In this framework, territory entails the weaving of a social fabric structured by kinship and familiarity ties, a shared awareness of life, diverse forms of solidarity, and of course, situations of tension and conflict (Pease, 2015). However, it often seems that this social fabric which constitutes territory is constructed *upon* soil-earth rather than *within* it.

Just as we saw in the previous section that Ingold (1993) introduced *taskscape* because landscape continued to function as a backdrop for human practices, in these conceptions of territory we see soil-earth playing the role of a *platform*—complementing the backdrop and jointly forming the stage for social life.

At this point, it is important to recall an alternative etymological root of the word *territory*, where *terra* refers to land, and *-torium* to the place where an action unfolds (as in *sanatorium* or *oratorium*). Here, *territory* becomes the intersection of *matter* and *practice*, of the object upon which one acts and the subject that acts (Monnet, 2010; D'Angelo, 2019).

Accordingly, the territorial dimension of the SET Complex I propose is grounded in the idea that “soil is constituted in its interpenetration” (Ingold, 2021, p. 7), and emerges from the depth afforded by its *soil* and *earth* dimensions. Soil is permeable, osmotic, and penetrable—qualities made possible by its porosity. A seed sown within it yields a plant that stretches both upward and downward. Water infiltrates, assembles with it, and becomes part of its body. The earthworm inhabits it, burrows through it, creating new voids, moving and rearranging its materials, and contributing new ones. People walk upon it, dig it, mix it with water and knead it, burn it, build with it.

Yet this does not imply a unidirectional relationship: soil is not merely a receptacle for what enters it. It cannot be understood solely through its accumulative capacity. It does not play a passive

role; rather, its material vitality stimulates human perception, sensory apprehension, and corporeal contact—through gesture—which then becomes a personal experience. And from this complex learning process emerges a *savoir-faire* intimately connected and assembled with soil. In this sense, Rengifo, one of the co-founders of the Andean Project of Peasant Technologies (PRATEC for its Spanish acronym), writes of Andean peasantry: “(...) *they feel themselves to be part of nature and of everything that dwells within it; in this sense, they are also part of the soil, insofar as it is considered Pachamama. Nature and all that lives within it does not belong to a person—rather, one belongs to it. [...] There is no relationship of ownership between humans and soil*” (Rengifo, 1994, p. 49).

Soil is territory, insofar as its material and vital essence, assembled with the human, gives rise to relationships and representations that confer mutual identity and belonging. These bonds emerge from the contact and assemblage of their vital material constituents over time, configuring unique landscapes. Thus, these assemblages constitute the *territory*—in which *soil*, as physical support and as *earth*, becomes the sovereign *locus* upon which people assert their identities and their social and communal rights.

4.4 The SET complex: a synthesis

The concept of the *Soil–Earth–Territory Complex* (SET) seeks to offer an integrated definition of a complex archaeological object of study—one that is also hybrid, as it is formed by the assemblage of diverse elements, becoming something different while still retaining traces of what it derives from. This definition situates the object of study in between classical categories of archaeological materiality—in the interstitial and liminal (Silliman, 2015)—allowing its social dimensions to be addressed without disregarding its material character. Above all, as Bennett (2022, p. 10) urges, it invites us to engage *seriously* with its material vitality, its trajectories, movements, and capacity for agency.

This framework helps us understand the constitution of soils as individual bodies, their assemblages as *soilscares*, their dual role as support and provider of vegetal life within agricultural landscapes, and, finally, the ways in which people have historically related to and assembled with them—co-configuring individual and collective identities through practice over the long term.

In addition, we must consider that, first and foremost, the temporalities of the SET Complex operate across different scales (Elizalde, 2009; Linderholm, 2010): some follow seasonal or annual cycles, while others unfold over hundreds or even thousands of years. Second, as a consequence of these varying rhythms, the processes that occur within it can be interrupted, halted by a seal, restarted, or sustained continuously. These two temporal characteristics offer one of the clearest avenues for approaching agricultural landscapes—by studying the assemblages that constitute the SET Complex as part of a past–present *continuum*.

Thus defined, the SET Complex becomes intelligible as archaeological materiality and contributes to a complex approach to its central role as both articulator and enabler of social relationships within agricultural landscapes, understood as *tasksapes*.

5 The case of the high valleys in Northwestern Argentina

At this point, I would like to introduce some reflections drawn from the work I have been conducting over the past several years in the high valleys of western Catamarca (Northwestern Argentina), which serve to exemplify my proposal.

Rodeo Gerván, El Bolsón, and Los Morteritos–Las Cuevas (Figure 4) are three high-altitude valleys (~3,000 masl), characterized by a semi-arid, extreme, and highly contrasting climate (both daily and seasonally), a highly dynamic geomorphology, and a rural population that has depended on agriculture and livestock raising for the past 1,200 years—with shifts and continuities, of course—as established by over three decades of research by CIIVAC (Korstanje, 2005; Korstanje et al., 2017; Kulemeyer et al., 2013; Taddei Salinas et al., 2023).

The limited pedological development in the area makes it difficult to define soils in the strictest sense; the most common profiles are of the A/C or A/C/2C types. Nevertheless, people have cultivated—and continue to cultivate—in these poorly developed soils. This has been possible because, over time, they have established relationships with soil–earth in agricultural contexts through a range of practices aimed at stimulating and enhancing its vital potentials for the creation of spaces of *crianza*—nurture, care and cultivation—(Grillo, 1994; Lema, 2014). In particular, irrigation and fertilization involve material additions (animal dung, plant remains, ashes, water) that leave traces within these soil bodies—traces that are measurable and quantifiable from both archaeological and pedological perspectives (such as variations in particle size distribution, structure, organic matter content, or pH).

Moreover, among the highland farmers, what takes place within the spaces of agricultural *crianza* (the plots) is not solely aimed at food production—or at least not in strictly economic terms from a Western capitalist standpoint. Beyond that, the inhabitants of the high valleys raise plants, animals, and soils—while simultaneously raising themselves through the process—enacting that which has been socially constructed, maintained, and inherited from their ancestors, in combination with personal experience. This heritage provides a strong sense of security in their practices, as it is supported and safeguarded by the *savoir-faire* received and learned from their immediate forebears (Cáceres, 2000). There is also a revalidation of ties to these ancestors, and a continuous commitment to and with Pachamama, who continues to offer protection. Each individual establishes personal and particular bonds with the STT, while collectively sustaining practices that create cohesion within the group and reaffirm their shared belonging to a territory.

For instance, every August, at the beginning of the agricultural cycle, the practices of fertilizing, feeding, and sharing/treating (*convidar*⁴) the earth converge. The first of these practices, which is associated with an agronomical sense, involves replenishing

nutrients so the soil can produce throughout the agricultural cycle, which will soon restart. *Feeding* the land is a family and sometimes community practice. This is done through a deep offering pit—far deeper than what is removed to prepare planting beds in fields, which is reused year after year as the *locus* of the practice. *Convidar* is a private, intimate act performed in an equally intimate place. Each person offers what little value they have, and the offerings are generally superficial or shallow. These three practices coincide in their contemplative character, and occur at a time (August) of the earth's primordial reactivation as a provider and support of life, as *Pacha-todo*. During this period in the Global South, particularly in the Andean region, the earth is considered thin, open, and hungry, and requires nourishment (Van Kessel and Condorí Cruz, 1992, p. 86). Through these practices, people seek to restore balance.

Other moments of vital connection with the soil–earth, as *Pacha*, occur during the livestock birthing season (March to May). These practices differ from previous ones in that they are festive, expressing gratitude for the fruits the earth provides at that time.

There is a shared awareness of a mutual nurturing network: A well-fed soil–earth is a healthy one, that will produce healthy seeds and good pastures for fattening the livestock, which will also remain healthy and safe.

Although these practices differ in terms of time, materials offered, and who promotes them, they all have one thing in common: they are performed on the material dimension (earth), affecting the corporeal depth (soil), but with a component associated with the socio-symbolic dimension (territory) of the SET.

In the El Bolsón valley, two archaeological agricultural sites—Vaca Vizcana and Yerba Buena—revealed evidence of quinoa cultivation in pre-Hispanic times, based on both pedological properties and the presence of diagnostic microfossils (Maloberti, 2020). If we understand “quinoa cultivation” as an assemblage, we might say that it was made possible by the convergence of sufficiently fertile earth, a relatively stable environment (Meléndez, 2017), the availability of irrigation water and fertilizing guano (represented by diagnostic microfossils such as diatoms and spherulites, respectively, which the soil managed to preserve over time), among other factors.

Some components of this assemblage became available again—due to their vital potentials and *affordances*—to be re-assembled with other vibrant matter, enabling quinoa cultivation once more in the last 15 years, though under different conditions and circumstances. These include quinoa reintroduction projects promoted by national government agencies, whose local representative—an agronomist deeply committed to the *savoir-faire* of the highland inhabitants—was able to engage in meaningful dialogue with them, leading to the planting of quinoa on family plots.

The outcomes of the “quinoa cultivation” assemblage—both in the past (pre-Hispanic times) and in the present—show clear parallels, even if they were not composed of the exact same components.

At some point between those two moments, quinoa seeds scattered across the landscape, buried in the soil like a seed bank, remained latent—awaiting suitable environmental conditions for a wild variant of the plant to emerge on the hillsides. This

⁴ *Convidar* is not simply about giving or distributing something, but rather a relational gesture that creates a bond between the one who offers and the one who receives. Even though it is translated here as *to share* or *to treat*, neither fully captures its cultural implications.

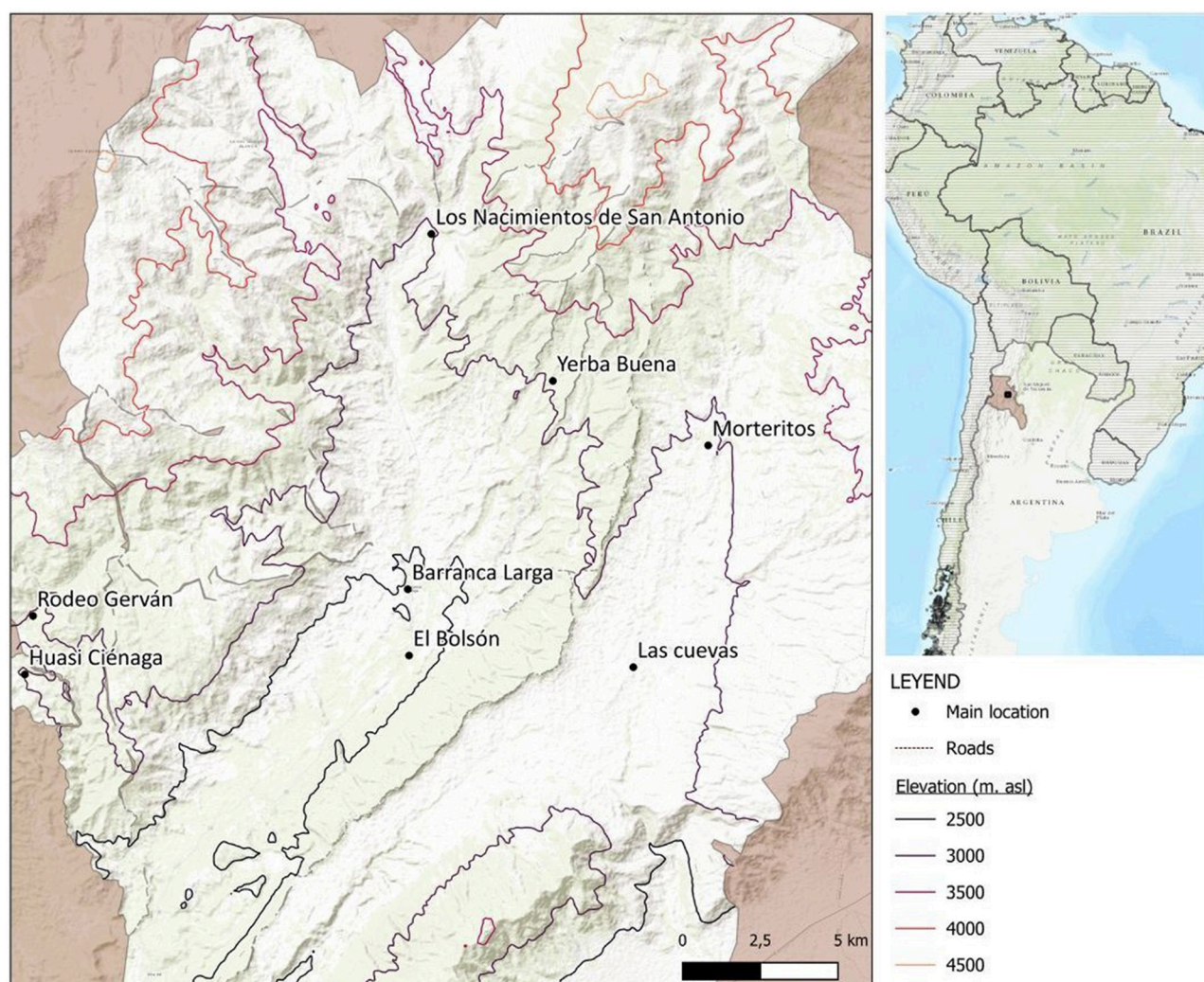


FIGURE 4
Study area: main locations situated in the high valleys of western Catamarca, northwestern Argentina.

may constitute a new assemblage: known locally as *paico* or *quinoa wascha*.⁵

If we adopt the SET Complex I propose—in which materials, agencies, and practices are assembled—then soil constitutes not only a dynamic seed bank in ecological terms, but also in social terms: a place where seeds are in contact with pests that may affect them, with the soil that will nourish them once germination becomes possible, and, upon sprouting, with people who recognize them as *quinoa wascha*, who will care for, nurture, and reproduce them. The seeds are, in the context of the multiple assemblages that make up agrarian landscapes—along with the vital knowledge and materials that enable those landscapes. In this way, seeds in the soil—understood as a dynamic bank—reflect historical trajectories embedded within a world of productive social relationships.

⁵ Seeds in this state may delay germination, preserving their vitality until conditions become favourable (Marañón, 2005).

Assemblages, writes Bennett (2022), come into being so that “things may happen” (and the plural here is key). Based on the archaeological evidence of cultivation at the two aforementioned sites, we can take this reasoning even further.

The assemblage “cultivation” (earth producing), for instance, must remain active for a period without depleting the soil’s fertility. This means that, before reaching exhaustion, the assemblage must disassemble itself and reassemble into a state of “rest” (fallow, in agronomic terms) until the soil’s vitality is restored. Then, when conditions permit, a new “cultivation” assemblage can be activated.

At the same time, while the “cultivation” assemblage becomes inactive and “rest” is activated *here*, a new “cultivation” may emerge a bit *farther* on, in a place previously held in “rest.” This ongoing activation and reactivation of assemblages of vibrant matter generates topographic variation in terms of vitality—which can be interpreted as an agrarian landscape that breathes and continually reinvents itself, grounded in the STT.

If we return to the graphical scheme used to represent *soils* earlier (Figure 3), we might say that some of these assemblages

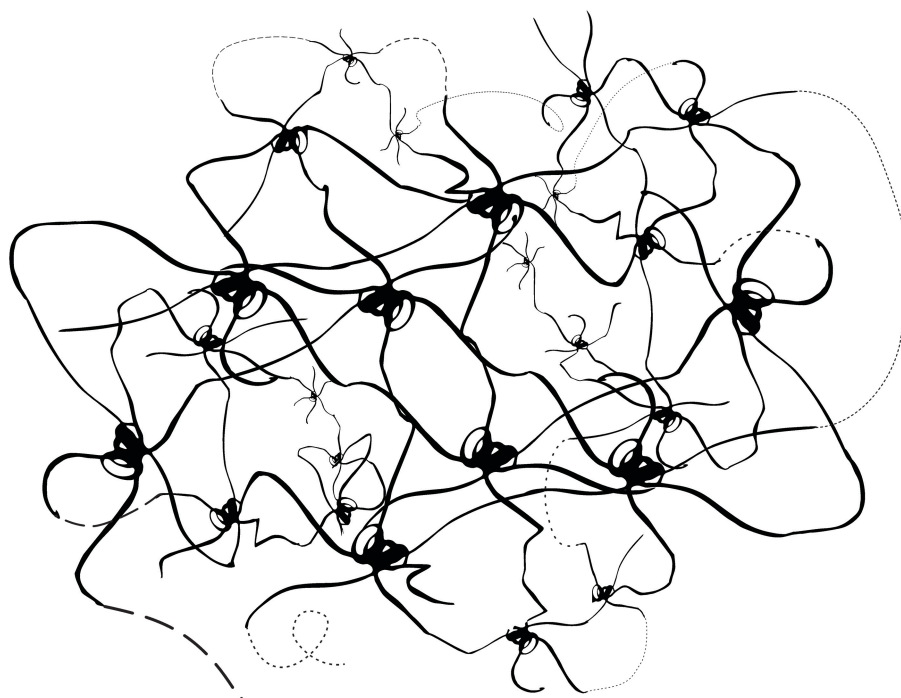


FIGURE 5

Graphic reinterpretation of soilscape as assemblages of assemblages. Original elaboration based on diagrams in Ingold (2015).

last longer than others and unfold across the landscape (Figure 5). This is the concept of a material, vital, and agentic *soilscape* that I propose—one whose corporeal, physical, and socio-symbolic foundation lies in the notion of the SET Complex.

6 An archaeology of agriculture from the perspective of the SET complex: a formal–informal conclusion

We can now begin to view the constituents of the world as *vibrant matter's assemblages* (Bennett, 2022): the SET itself (complex, multidimensional, and hybrid); the seed that it shelters but that also grows through it over time; the manures that contribute their share of nutrients; the offering or ritual, which renews a socio-symbolic commitment to it; the animal that today plows the earth, tomorrow feeds on the stubble, and later contributes its dung as fertilizer; the person in assemblage with the shovel, and later in assemblage with the hoe—which are not the same, and which make different things happen.

We thus also come to understand that these assemblages inherently carry a temporal dimension—or rather, multiple temporalities. In this way, we can consider that the physical, material, and agentic assemblages that constitute what I have called the *Soil–Earth–Territory Complex* are themselves interconnected in the shaping of agricultural landscapes, within a past–present *continuum*.

The concept of the SET Complex is a proposal for approaching an object of study that is difficult to fit within the classical

categories of analysis in our discipline—yet which is, at the same time, undeniable and valid as archaeological materiality. Far from being merely *soil* in agronomic terms, it possesses additional material, social, and symbolic dimensions that render it more complex. An *Archaeology of Agriculture* that incorporates this concept necessarily includes temporal and spatial depth, as well as its many constituent vital materials—all of which are in dynamic relationship with what occurs *on* and *through* them, without imposing arbitrary temporal boundaries.

When I received feedback on my dissertation project—suggesting either that I reformulate the topic or transfer to a doctoral programme in Anthropology—I realized that there was something problematic about the archaeology I was proposing. Was it really archaeology? Is it possible to study agriculture by thinking *from* and *through* soil alone? Why, for instance, does *landscape*—a potentially more abstract or even metaphysical concept—seem more widely accepted than *soil*, which is material, tangible, and quantifiable?

We are already “squeezing” information from soils and sediments to lend greater weight to our archaeological interpretations—but we have yet to pause and ask what this type of complex materiality truly entails.

After more than 10 years working on agricultural soils in the high valleys with CIIVAC, I have only recently started to realize that doing archaeology by thinking *from* soils is uncomfortable. That is why I have chosen to fully dwell in these uncomfortable disciplinary spaces—a choice that ultimately led to the need of writing this article.

Author contributions

MT: Investigation, Software, Conceptualization, Writing – review & editing, Writing – original draft, Methodology, Visualization, Formal analysis, Data curation.

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References

- Alberti, B. (2016). Archaeologies of ontology. *Ann. Rev. Anthropol.* 45, 163–179. doi: 10.1146/annurev-anthro-102215-095858
- Álvarez, M. (2021). Suelos, estratos, cosas. *Revista Del Museo De Antropología*, 14, 93–102. doi: 10.31048/1852.4826.v14.n2.29796
- Anschuetz, K. F., Wilshusen, R. H., and Schieck, C. L. (2001). An archaeology of landscapes: perspectives and directions. *J. Archaeol. Res.* 9, 152–197. doi: 10.1023/A:1016621326415
- Bailey, G. (2007). Time perspectives, palimpsests and the archaeology of time. *J. Anthropol. Archaeol.* 26, 198–223. doi: 10.1016/j.jaa.2006.08.002
- Behrensmeyer, A. K. (1978). Taphonomic and ecologic information from bone weathering. *Paleobiology* 4, 150–162. doi: 10.1017/S0094837300005820
- Bennett, J. (2022). *Materia vibrante. Una ecología política de las cosas*. Caja Negra. CABA.
- Binford, L. R. (1962). Archaeology as anthropology. *Am. Antiq.* 28, 217–225. doi: 10.2307/278380
- Binford, L. R. (1988). *En búsqueda del pasado*. Ed. Crítica. Barcelona.
- Brown, A. (2018). 'Cosas de indios': prácticas abandonadas, desprestigiadas, ocultas. Una aproximación a la construcción de identidades 'campesinas' e 'indígenas' en el valle El Bolsón, Catamarca [BA in Anthropological Sciences]. Faculty of Philosophy and Letters, University of Buenos Aires, Buenos Aires, Argentina.
- Buol, S., Hole, F., and Mc Cracken, R. (1973). *Soil genesis and classification*. Ames, Iowa: The Iowa University Press.
- Cáceres, E. (2000). "Contexto mitológico y ritual de la crianza del agua en el sur andino (Musuq Llaqta y Acopía)," in *Manos sabias para criar la vida. Tecnología andina*, ed. Van Kessel, J. y H. Larraín Barros (Ediciones Abya Yala. Quito, Ecuador), 129–146.
- Chaiklin, S., and Lave, J. (2001). *Estudiar las prácticas*. Amorrotu. España.
- Chevallier, D., and Chiva, I. (1996). "L'introuvable objet de la transmission," in *Savoir-faire et pouvoir transmettre: Transmission et apprentissage des savoir-faire et des techniques*, eds. D. Chevallier and Nouvelle édition (Paris: Éditions de la Maison des sciences de l'homme), 1–11. doi: 10.4000/books.editionsmslh.3818
- Coil, J., Korstanje, M. A., Archer, S., and Hastorf, C. A. (2003). Laboratory goals and considerations for multiple microfossil extraction in archaeology. *J. Archaeol. Sci.* 30, 991–1008. doi: 10.1016/S0305-4403(02)00285-6
- Conti, M. (2005). *Principios de Edafología: con énfasis en suelos argentinos*. 2da. Edición. Editorial Facultad de Agronomía.
- Crawford, O. (1953). *Archaeology in the Field*. Praeger. London.
- Criado Boado, F. (1993). Límites y posibilidades de la Arqueología del Paisaje. *SPAL*, 2, 9–55. doi: 10.12795/spal.1993.i2.01
- Cuenya, P., and García Azcárate, J. (2004). Procesos de formación de sitios arqueológicos y su relación con cambios pedológicos, El Rincón, Tafi del Valle, Tucumán. *Chungará*, 36, 415–423. doi: 10.4067/S0717-73562004000300043
- D'Angelo, A. S. (2019). ¿De qué se habla cuando se habla de territorio? *Revista Cátedra Paralela*, 16, 69–87. doi: 10.35305/cp.vi16.4
- Deleuze, G., and Guattari, F. (2004 [1988]). *Mil mesetas. Capitalismo y esquizofrenia*. Pre-textos. Valencia.
- Di Salvia, D. (2016). Contribución a la ontología animista andina: funciones, poderes y figuras en los cultos telúricos de los Andes sur-peruanos. *Revista Española de Antropología Americana*, 46, 97–116. doi: 10.5209/REAA.58289
- Elizalde, G. (2009). El suelo en la fase superficial del ciclo geológico. *Geoenseñanza* 14, 265–292. Available online at: <https://www.redalyc.org/articulo.oa?id=36021246006> (Retrieved August 8, 2025).
- Fahlander, F. (2017). "Ontology matters in archaeology and anthropology. People, things and posthumanism," in *These "Thin Partitions": Bridging the Growing Divide between Cultural Anthropology and Archaeology*, ed. J. D. Englehardt and I. A. Rieger (University Press of Colorado), 69–86.
- Favier Dubois, C. M. (2006). Dinámica fluvial, paleoambientes y ocupaciones humanas en la localidad arqueológica Paso Otero, río Quequén Grande, Provincia de Buenos Aires. *Intersecciones en Antropología*, 7, 109–127.
- Favier Dubois, C. M. (2023). ¿Qué excavamos cuando excavamos? La Geoarqueología en la formación disciplinar de los arqueólogos latinoamericanos. *Arqueología* 29, 1–20. doi: 10.34096/arqueologia.t29.n3.11195

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- Foucault, M. (1989). "El ojo del poder," in *L'œil du pouvoir*, ed. J. Bentham (Edit. P. Belfond. Paris), 9–28.
- Gastaldi, M. R. (2008). "La pala: medio de producción del modo de producción. Publicaciones del XV Congreso Nacional de Arqueología Argentina," in *Problemáticas de la Arqueología contemporánea, Vol II*, ed. A. Austral y M. Tamagnini (Universidad Nacional de Río Cuarto).
- Gastaldi, M. R. (2010). *Cultura material, construcción de identidades y transformaciones sociales en el Valle de Ambato durante el Primer Milenio D.C.* [Ph.D. Thesis]. Faculty of Natural Sciences and Museum, National University of La Plata. Buenos Aires, Argentina. Unpublished manuscript.
- Gianfrancisco, M. S. (2005). Aproximación a la funcionalidad de un determinado tipo de recintos presentes en Campo del Pucará (Depto., andalgalá, Catamarca), desde una perspectiva geoarqueológica. *Cuadernos FHyCS-UNJu*, 29, 95–111.
- Gibson, J. J. (1979). "The theory of affordances," in *The Ecological Approach to Visual Perception*. Houghton Mifflin. Boston.
- Gosden, C., and Head, L. (1994). Landscape. A usefully ambiguous concept. *Archaeology in Oceania*, 29, 113–116. doi: 10.1002/arco.1994.29.3.113
- Grillo, E. (1994). "El paisaje en las culturas Andina y Occidental moderna," in *Crianza Andina de la Chacra*, ed. Grillo-Quiso-Rengifo-Valladolid comps (PRATEC, Lima), 9–46.
- Haesbaert, R. (2013). Del mito de la desterritorialización a la multiterritorialidad. *Cultura y representaciones sociales*, 8, 9–42.
- Hamilakis, Y. (2016). Decolonial archaeologies: from ethnoarchaeology to archaeological ethnography. *World Archaeol.* 48, 1–5. doi: 10.1080/00438243.2016.1209783
- Harris, E. C. (1991). *Principios de estratigrafía arqueológica*. Editorial Crítica. Barcelona.
- Hodder, I. (1990). "Style as historical quality," in *The Uses of Style in Archaeology*, ed. Margaret W. Conkey and Christine A. Hastorf (Cambridge University Press, Cambridge), 44–51.
- Hodder, I. (2011). Human-thing entanglement: towards an integrated archaeological perspective. *J. Royal Anthropol. Inst.* 17, 154–177. doi: 10.1111/j.1467-9655.2010.01674.x
- Hodder, I. (2016). *Studies in Human-Thing Entanglement*. Bangalore: Self Publisher.
- Holliday, V. T. (1990). "Pedology in archaeology," in *Archaeological Geology of North America, GSA Centennial Volume, Vol. 4*, eds. N. P. Lasca and J. Donahue (Boulder, CO: Geological Society of America), 525–540. doi: 10.1130/DNAG-CENT-v4.525
- Holliday, V. T. (2004). *Soils in Archaeological Research*. Oxford: Oxford University Press.
- Ingold, T. (1993). The temporality of the landscapes. *World Archaeol. Concep Time Ancient Soc.* 25, 189–208. doi: 10.1080/00438243.1993.9980235
- Ingold, T. (2000). *The perception of the environment. Essays on Livelihood, Dwelling and Skill*. London: Routledge.
- Ingold, T. (2007). Materials against materiality. Discussion article. *Archaeol. Dialogues* 14, 1–16. doi: 10.1017/S1380203807002127
- Ingold, T. (2015). Contra El Espacio: Lugar, Movimiento, Conocimiento. *Mundos Plurales. Revista Latinoamericana De Políticas Y Acción Pública*, 2, 9–26. doi: 10.17141/mundoplurales.2.2015.1982
- Ingold, T. (2021). Strikethrough and Wipe-Out: Tactics for Editing the Past. *Disparidades. Revista de Antropología*, 76, 1–10. doi: 10.3989/dra.2021.003
- Jaramillo, D. F. (2002). *Introducción a la Ciencia del Suelo*. Universidad Nacional de Colombia. Facultad de Ciencias. Medellín.
- Knappett, C. (2005). *Thinking Through Material Culture: An Interdisciplinary Perspective*. Philadelphia: University of Pennsylvania Press.
- Korstanje, M. A. (2005). *La Organización del Trabajo en torno a la Producción de Alimentos en Sociedades Formativas (provincia de Catamarca, República Argentina)*. [Ph.D. Thesis]. Faculty of Natural Sciences and I.M.L., National University of Tucumán. Tucumán, Argentina. Unpublished manuscript.
- Korstanje, M. A. (2010). "Producción y consumo agrícola en el Valle del Bolsón (1991–2005)," in *Arqueología de la Agricultura. Casos de estudio en la región andina argentina*, ed. M.A. Korstanje and M. Quesada (Ediciones Magna, Tucumán), 48–75.
- Korstanje, M. A., and Cuenya, P. (2008). "Arqueología de la agricultura: suelos y microfósiles en campos de cultivo del Valle del Bolsón, Catamarca, Argentina," in *Matices interdisciplinarios en estudios fitolíticos y de otros microfósiles*, ed. M.A. Korstanje and P. Babet (BAR International Series. Reino Unido), 133–147.
- Korstanje, M. A., and Cuenya, P. (2010). Ancient agriculture and domestic activities in north western Argentina: a contextual approach studying silicaphytoliths and other microfossils in soils. *Environmental Archaeology. J. Human Paleocool.* 15, 43–63. doi: 10.1179/146141010X12640787648739
- Korstanje, M. A., Quesada, M. N., and Maloberti, M. and Taddei Salinas, M.L. (2016). *De cómo la Arqueología enriquece el conocimiento de la producción campesina: La escala familiar en el Oeste Catamarqueño*. [Dissertation] Pre Congreso ALASRU, La sociología rural en la encrucijada: vigencia de la cuestión agraria, actores sociales y modelos de desarrollo en la región, Santiago del Estero.
- Korstanje, M. A., Quesada, M. N. and Taddei Salinas, M. L. (2017). "Alguien nos mencionó como Agro-arqueólogos": Retro-aportes entre arqueologías híbridas y poblaciones tradicionales actuales. [Dissertation] XXXV International Congress of the Latin American Studies Association. Lima, Perú.
- Korstanje, M. A., Taddei Salinas, M. L., Molina Pico, Á., Mondini, M., Brown, A., Haddad, R., et al. (2025). La construcción de un colectivo interdisciplinario/intercultural de investigación y acción: intersección entre utopías, realidades, conflictos y resoluciones. *Dossier: Comunidades locales y arqueología: experiencias de investigaciones co-construidas. Revista Anales de Arqueología y Etnología*, 80, 25–60. doi: 10.48162/rev.46.046
- Kulemeyer, J., Lupo, L., Madozzo Jaén, M. C., Cruz, A., Cuenya, P., Maloberti, M., et al. (2013). Desarrollo del paisaje holoceno en la cuenca de El Bolsón: gente y ambiente en procesos de cambio y estabilidad. *Diálogo Andino* 41, 25–44. doi: 10.4067/S0719-26812013000100003
- Kusch, R. (1976). *Geocultura del hombre americano*. Buenos Aires: Fernando García Cambeiro.
- Kusch, R. (1978). *Esbozo da una antropología filosófica americana*. Buenos Aires: San Antonio de Padue.
- Lazzari, M. (2011). Tangible interventions: the lived landscapes of contemporary archaeology. *J. Mat. Cult.* 16, 171–191. doi: 10.1177/1359183511401497
- Lazzari, M., and Korstanje, M. A. (2013). The past as a lived space: heritage places, re-emergent aesthetics, and hopeful practices in NW Argentina. *J. Soc. Archaeol.* 13, 1–26. http://jsa.sagepub.com/content/13/3/394.abstract?rss=1 doi: 10.1177/1469605313487616
- Lema, V. S. (2014). Hacia una cartografía de la crianza: domesticidad y domesticación en comunidades andinas. *Espaço Ameríndio* 8, 59–82. doi: 10.22456/1982-6524.44644
- Liebmann, M. (2013). "Parsing hybridity: archaeologies of amalgamation in seventeenth-century new Mexico," In: *Hybrid Material Culture in the Americas and Beyond*, ed J. Card (Center for Archaeological Investigations, SIU-Carbondale), 25–49.
- Linderholm, J. (2010). The soil as a source material in archeology. Theoretical considerations and pragmatic applications. *Archeol. Environ.* 25, 1–35.
- Maloberti, M. (2014). Prácticas campesinas en emplazamientos agrícolas formativos. El caso del Alto Juan Pablo (Belén, Catamarca). *Comechingonia* 18, 141–161. doi: 10.37603/2250.7728.v18.n1.27630
- Maloberti, M. (2020). *El paisaje agrario y las prácticas campesinas en el valle de El Bolsón (departamento Belén, Catamarca)*. Cambios y continuidades en la larga duración. [Ph.D. Thesis]. Faculty of Philosophy and History, National University of Córdoba. Córdoba, Argentina. Unpublished manuscript.
- Mancioni, F., and Jorge, J. (2022). Aproximaciones al materialismo vibrante de Jane Bennet. *Cuadernos del Sur - Letras*, 52, 167–176.
- Mannasse, B., and Arenas, P. (2010). "Antropología y Arqueología en contextos de nuevas luchas por la tierra," in *Arqueología, tierra y territorios: conflictos e intereses*, ed. B. Manasse and Arenas, P. (Lucrecia, Santiago del Estero), 13–52.
- Marañón, T. (2005). "El banco de semillas en el suelo," in *El monte Mediterráneo en Andalucía (Junta de Andalucía, Consejo Superior de Investigaciones Científicas)* (España: Junta de Andalucía & Consejo Superior de Investigaciones Científicas), 145–151.
- Marx, K. (1968). *Manuscritos económico-filosóficos de 1844*. Grijalbo. México.
- Meléndez, A. S. (2017). *Paisajes culturales e historia ambiental en el valle de El Bolsón (Depto. Belén, Catamarca)*. [Ph.D. Thesis]. Faculty of Philosophy and History, National University of Córdoba. Córdoba, Argentina. Unpublished manuscript.
- Merleau-Ponty, M. (1984). *Fenomenología de la percepción*. Ed. Planeta. Barcelona.
- Meskel, L. (2012). "Archaeological ethnography: materiality, heritage, and hybrid methodologies," in *Archaeology and Anthropology Past, Present and Future*, ed D. Shankland (Bloomsbury Academic, London), 133–144.
- Mondini, M. (2021). "Tafonomía en los Valles Altos del NOA. El registro arqueofaunístico del valle de El Bolsón, Catamarca, Argentina," in *Zooarqueología, sociedades tradicionales, biodiversidad y cambios climáticos: integrando perspectivas entre pasado y futuro. Libro de resúmenes de la IV reunión académica del NZWG* (Editora da Universidade Federal Rural de Pernambuco-UFRPE. Recife), 120–121.
- Monnet, J. (2010). El territorio reticular. *Anthopos*, 227, 91–104.
- Nielsen, A. E. (2006). Plazas para los antepasados: descentralización y poder corporativo en las formaciones políticas preincaicas de los Andes circumpuneños. *Estudios Atacameños*, 31, 63–89. doi: 10.4067/S0718-10432006000100006
- Nielsen, A. E. (2022). Chullpas equivocadas. Una arqueología de las diferencias ontológicas. *Boletín de la Sociedad Chilena de Arqueología*, 52, 43–80. doi: 10.56575/BSCHA.05200220722
- Obregón, M., Barba, L., Ortiz, A., and Gómez, L. (2011). Transformaciones antrópicas del suelo en un lugar de habitación prehispánico en los Andes noroccidentales. *TRACE (Travaux et Recherches dans les Amériques du Centre)*, 59, 90–104.

- Olsen, B. (2010). *In Defense of Things: Archaeology and the Ontology of Objects*. Altamira Press, Lanham. doi: 10.5771/9780759119321
- Olsen, B., Shanks, M., Webmoor, T., and Witmore, C. (2012). *Archaeology: The discipline of Things*. Berkeley: University of California Press.
- Olsen, B., and Witmore, C. (2015). Archaeology, symmetry, and the ontology of things: a response to critics. *Archaeol. Dialogues* 22, 187–97. doi: 10.1017/S1380203815000240
- Ortiz, A., and Barba, L. (1993). “La química en el estudio de áreas de actividad,” in *Anatomía de un conjunto residencial teotihuacano en Oztotihuacán II. Los estudios específicos*, ed. Linda Manzanilla (Instituto de Investigaciones Antropológicas, Universidad Nacional Autónoma de México, México, D. F.), 617–660.
- Ortiz, G. (2003). La aplicación de análisis químicos para la interpretación de áreas de actividad en la región subandina de Jujuy. *Cuadernos FHyCS-UNJu*, 20, 291–321.
- Padawer, A. (2013). El conocimiento práctico en poblaciones rurales del sudoeste misionero: habilidades y explicaciones. *Astrolabio-Nueva Época* 10: 156–187. doi: 10.55441/1668.7515.n10.3391
- Pease, M. M. (2015). Tierra, terreno, territorio: perspectivas antropológicas. *Anthropia*, 13, 50–57.
- Politis, G., and Pérez Gollán, J. A. (2004). “Latin American archaeology: from colonialism to globalization,” in *A Companion to Social Archaeology*, eds. Meskell, L., and R. Preucel (Oxford: Blackwell Publishing), 353–373.
- Porta Casanellas, J., López Acevedo, R., and Roquero de Laburu, C. (2003). *Edafología para la agricultura y el medio ambiente*. 3ra Ed. España: Mundi Prensas.
- Preucel, R. W. (2021). The predicament of ontology. *Camb. Archaeol. J.* 31, 461–467. doi: 10.1017/S0959774321000147
- Quesada, M., and Korstanje, M. A. (2010). “Cruzando estructuras: el espacio productivo y su entorno percibido desde las prácticas cotidianas,” in *El hábitat prehispánico. Arqueología de la arquitectura y de la construcción del espacio organizado*, ed. Albeck, M.E., Scattolin, C., and Korstanje, M.A. (EdiUnju, Argentina), 123–153.
- Quesada, M. N., Lema, V. S., Taddei Salinas, M. L., and Korstanje, M. A. (2014). *¿Qué hicieron los campesinos todos estos años? Una mirada a los saberes agrarios desde la Arqueología*. [Dissertation] II Jornadas Interdisciplinarias de Estudios Agrarios del Noa. Salta, Argentina.
- Renfrew, C., and Bahn, P. (2007). *Arqueología. Teorías, Métodos y Práctica*. Akal. 3era ed. Madrid.
- Rengifo, V. G. (1994). “El suelo agropecuario en las Cultura Andina y en Occidente Moderno,” in *La Crianza Andina de la Chacra*, ed. Grillo, Quiso, Rengifo, Valladolid (PRACTEC. Lima), 47–130.
- Roos, C., and Wells, E. C. (2017). Geoarchaeology of ritual behavior and sacred places: an introduction. *Archaeol. Anthropol. Sci.* 9, 1001–1004. doi: 10.1007/s12520-017-0491-8
- Salisbury, R. B. (2012). Engaging with soil, past and present. *J. Mat. Cult.* 17, 23–41. doi: 10.1177/1359183511432990
- Salisbury, R. B., Bull, I. D., Cereda, S., Draganits, E., Dulias, K., Kowarik, K., et al. (2022). Making the most of soils in archaeology. A review. *Archaeologia Austriaca* 106, 319–334. doi: 10.1553/archaeologia106s319
- Sampietro Vattuone, M. M. (2007). “El suelo como objeto de reflexión para la reconstrucción del contexto arqueológico,” in *Paper presented at the IV International Meeting on Archaeological Theory in South America* (Catamarca).
- Sampietro Vattuone, M. M. (2009). “El suelo como artefacto: una experiencia desde el NOA,” in *Paper presented at Latin American Archaeometry: II Argentine Congress and I Latin American Congress* (Buenos Aires).
- Sampietro, V. M. M. (2007). *El suelo como objeto de reflexión para la reconstrucción del contexto arqueológico*. [Dissertation] IV Reunión Internacional de Teoría Arqueológica en Suramérica. Catamarca.
- Sampietro, V. M. M. (2009). *El suelo como artefacto: una experiencia desde el NOA*. [Dissertation] Arqueometría Latinoamericana: II Congreso Argentino y I Congreso Latinoamericano. Buenos Aires.
- Sandor, J. A., and Homburg, J. A. (2017). Anthropogenic soil change in ancient and traditional agricultural fields in arid to semiarid regions of the Americas. *J. Ethnobiol.* 37, 196–217. doi: 10.2993/0278-0771-37.2.196
- Scattolin, M. C., Cortés, L. I., Bugliani, M. F., Calo, C. M., Pereyra Domingorena, L., Izeta, A. D., et al. (2009). Built landscapes of everyday life: a house in an early agricultural village of northwestern Argentina. *World Archaeol.* 41, 396–414. doi: 10.1080/00438240903112310
- Schiffer, M. B. (1991). Los procesos de formación del registro arqueológico. *Boletín de Antropología Americana*, 23, 39–45.
- Silliman, S. W. (2009). “Blurring for clarity: archaeology as hybrid practice,” in *Decolonizing Archaeology: Archaeology and the Post-Colonial Critique, Proceedings of the 39th (2006) Annual Chacmool Archaeological Conference, University of Calgary, Alberta, Canada*, eds. P. Bikoulis, D. Lacroix, and M. Peuramaki-Brown (Calgary, AB: University of Calgary), 15–25.
- Silliman, S. W. (2015). A requiem for Hybridity? The problem with Frankensteins, purées, and mules. *J. Soc. Archaeol.* 15, 277–298. doi: 10.1177/1469605315574791
- Stockhammer, P. W. (2013). “Conceptualizing cultural hybridization in archaeology,” in *Conceptualizing Cultural Hybridization. A Transdisciplinary Approach*, ed P.W. Stockhammer, 43–58.
- Taddei Salinas, M. L., Meléndez, A. S., Arias, M. F., Lépori, M., Mondini, M., Korstanje, M. L., et al. (2023). Paisajes sociales en larga duración: el alero Los Viscos en el contexto paleoambiental del valle de El Bolsón (Belén, Catamarca, Argentina). *Relaciones*, 48, 56–73. doi: 10.24215/18521479e063
- Tchilinguirian, P., Ozan, I., and Morales, M. (2016). “El suelo y la arqueología,” in *Suelos y Geología Argentina. Una visión integradora desde diferentes campos disciplinarios*, ed F. Pereyra y M. Torres Duggan (Editorial Undav – Asociación Argentina de la Ciencia del Suelo – Asociación Geológica Argentina), 252–396.
- Ther Ríos, F. (2011). Diversidad y sentido patrimonial: contribuciones desde la antropología del territorio al estudio de comunidades tradicionales. *Terra Plural* 5, 153–167. doi: 10.5212/TerraPlural.v.5i2.0001
- Tilley, C. (2004). *The Materiality of Stone: Explorations in Landscape Phenomenology*. Berg: Oxford.
- Van Kessel, J., and Condori Cruz, D. (1992). *Criar la vida: trabajo y tecnología en el mundo andino*. Vivarium, Santiago de Chile.
- Wells, E. C. (2006). Cultural landscapes. *Geol. Soc. Spec. Publ.* 266, 125–132. doi: 10.1144/GSL.SP.2006.266.01.10
- Witmore, C. L. (2007). Symmetrical archaeology: excerpts of a manifesto. *World Archaeol.* 39, 546–562. doi: 10.1080/00438240701679411
- Zárate, M. A., de González, B., Flegenheimer, M. I. N., and Bayón, C. (2000–2002). Sitios arqueológicos someros: el concepto de sitio en estratigrafía y sitio de superficie. *Cuadernos del INAPL* 19, 635–653.
- Zinck, J. A. (2012). *Geopedología*. Elementos de geomorfología para estudios de suelos y de riesgos naturales. ITC Special Lecture Notes Series. The Netherlands.