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Looming the Future

Tejiendo el futuro Tecendo o futuro

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ABSTRACT

This essay is based on the source critique of a contemporary photograph depicting weavers from Chinchero, Peru, Its aim is to analyze how traditional looms play the role of persistent technology that sustains cultural identity and female agency for the weaving communities in Cusco. Drawing on concepts from Science and Technology Studies (STS), it argues that the loom is not merely a tool, but a community-based technology central to cultural identity and social cohesion. The analysis reveals that the loom, as a community-based technology, enables a sociotechnical relationship for cultural practices, where identity becomes central and reaffirmed through weaving. More significantly, the practice of weaving fosters female agency. The essay concludes that these looms act as persistent technologies, dynamically rewriting cultural heritage to integrate the present while

preserving intergenerational practices, thus ensuring the community's resilience and economic adaptation amidst modern challenges.

RESUMEN

Este ensayo parte de la crítica a una fotografía contemporánea de tejedoras de Chinchero, Perú, para analizar cómo los telares tradicionales de cintura desempeñan un papel de tecnología perdurable que sostiene la identidad cultural y la agencia femenina de las comunidades tejedoras de Cusco. Basándose en conceptos de los Estudios de Ciencia y Tecnología (STS, por sus siglas en inglés), sostiene que el telar no es solo una herramienta, sino una tecnología comunitaria fundamental para la identidad cultural y la cohesión social. El análisis revela que el telar, como tecnología comunitaria, permite una relación sociotécnica para las prácticas culturales, en la que la identidad cobra protagonismo y se reafirma a través del tejido. Más significativamente, la práctica del tejido fomenta la agencia femenina. El ensayo concluye que estos telares actúan como tecnologías persistentes, reescribiendo dinámicamente el patrimonio cultural para integrar el presente y preservar, al mismo tiempo, las prácticas intergeneracionales, y garantizando así la resiliencia y la adaptación económica de la comunidad frente a los retos modernos.

RESUMO

Este ensaio parte da crítica a uma fotografia contemporânea de tecelãs de Chinchero, no Peru, para analisar como os teares tradicionais de cintura desempenham uma função de tecnologia duradoura que sustenta a identidade cultural e a agência feminina das comunidades tecelãs de Cusco. Com base em conceitos dos Estudos de Ciência e Tecnologia (STS, na sigla em inglês), ele sustenta que o tear não é apenas uma ferramenta, mas uma tecnologia comunitária fundamental para a identidade cultural e a coesão social. A análise revela que o tear, como tecnologia comunitária, possibilita uma relação sociotécnica para práticas culturais, na qual a identidade assume um papel central e é reafirmada por meio da tecelagem. Mais significativamente, a prática da tecelagem promove a agência feminina. O ensaio conclui que esses teares atuam como tecnologias persistentes, reescrevendo dinamicamente o patrimônio cultural para integrar o presente e, ao mesmo tempo, preservar as práticas intergeracionais, garantindo assim a resiliência e a adaptação econômica da comunidade diante dos desafios modernos.

KEYWORDS / PALABRAS CLAVE / PALA-VRAS-CHAVE

Looms, community-based, identity, artifact, technology, STS / telares, comunidad, identidad, artefacto, tecnología, STS / teares, comunidade, identidade, artefato, tecnologia, STS

Peruvian textiles have been recognized as top-tier worldwide (Ellis Benners, 1920), not only for the pieces they produce, but also for their process, materials, and artisanal practices. These practices are a mix of methods that have been inherited from pre-colonial times, even before the Inca Empire rapidly expanded and colonization arrived with the Spaniards. Nowadays, artifacts related to ancient textile practices are still the *zeitgeist* of that era, inscribing a social and economic script around them. This script implies that some people and

¹Which were part of women's role besides some other core homemaking activities, like agricultural work (Del Solar, 2019).

 $^{^2}$ This empire was one of the shortest, yet also one of the most powerful, before the Spanish colonization began (DeMarrais, 2013).

processes around it are still in place. It is now more intentional than it has been before, as it intends to retell the stories we want to keep alive as a community, since it is a practice that private organizations now promote (Del Solar, 2019). Through these efforts, artifacts such as backstrap looms attempt to preserve a way of creating identity for the communities involved, while revealing a path to our cultural heritage (Julien, 2002); thus, allowing us to experience the process of using looms in a tangible way.

That is why running into women who weave in Cusco is part of the typical scenery, but, when visiting its valleys, one can start to feel immersed in how it builds community in many different aspects. This is when I began to wonder how the traditional looms play the role of persistent technology that sustains cultural identity and female agency for the weaving communities in Cusco. To answer this question, I will conduct a source critique based on a photo that allows for reflection on the agency of the women who keep the cultural identity and heritage of their communities alive through weaving in the modern context. To ground the arguments presented in this essay, I will turn to the field of Science and Technology Studies (STS) and frame this reflection with concepts that will allow us to navigate the complex relationships involving people, social practices, cultural artifacts that function as technology, and the different kinds of infrastructure around them. And here is where the source critique of a few pictures will allow this list of actors to explicitly fulfill a role that will be acknowledged in the discussion section of the essay. This cultural practice needs to be supported to prevail over time—as done until now—and the strongest declaration for it is that weaving has not stopped. It is by doing so that communities of weavers are providing support to their own cause; it keeps building on for themselves, while also conveying the values that make their identity remain strong through the passage of time.

Chinchero's weavers' community in Cusco coexists with many other communities of weavers. Eight other communities that have long preserved their own textile traditions and practices surrounding them (Figure 1). To shield this cultural endeavor, textile centers take on a relevant and active role. These textile communities, from Accha Alta, Acopia, Chahuaytire, Pitumarca, Patabamba, Santa Cruz de Sallac, Chumbivilcas, and Mahuaypampa (Centro de Textiles Tradicionales del Cusco, n. d.-a), create a cultural ecosystem supported by resources from the Center of Traditional Textiles in tandem with other institutions (Centro de Textiles Tradicionales del Cusco, n. d.-b). This group of communities weaves while preserving traditional techniques based on the backstrap loom, which, as an ancient technology, provides a script to be followed to preserve culture and identity. As a matter of fact, the backstrap loom here is just

Kepasniato (488) a Mapa Cusco's Textile Communiti... Reserva comunal Amarakaeri 12 views de Last edit was seconds ago 0 Pillonnata Add layer 4 Share Preview Huayopata ✓ Textile Communities T Individual styles Textile Center Chinchero-AW... △ Salcantay Textile Center Accha Alta Textile Center Acopia Textile Center Chahuaytire Textile Center Pitumarca Textile Center Patabamba Textile Center de Santa Cruz ... Traditional Textile Center of _ Nevado Auzangate 119 Cotabambas Textile Center Mahuaypampa Textile Center Huacatinco Coyllurqui Acomayo Base map

Figure 1Communities of weavers in the Chinchero region (map)

Note. From Mapa Cusco's Textile Communities – Ensayo [Map], by A. Agurto, August 31, 2025, Google My Maps (https://www.google.com/maps/d/edit?mid=10tehFB7tggtNZpmXqEDvAhghGQBlaDA&usp=sharing).

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the gateway to start reflecting on cultural practices that *make* places, culture, and identity at different levels. What we can start highlighting is that, thinking about the extension of the Inca Empire versus the region demarcated on the map, it is somewhat overwhelming to acknowledge the passage of time and the constraints it may bring to cultural practices that might not seem attuned to the rhythm of life nowadays.

Literature Review

To address the research question of how the traditional looms play the role of persistent technology that sustains cultural identity and female agency for the weaving communities in Cusco, I will draw on the field of Science and Technology Studies (STS). Its perspective seeks to broaden ours, analyzing the relational aspect between technology and society. In this essay, I engage in conversation with authors who provide a framework for reflection that allows us to reinterpret the role of cultural artifacts, such as traditional looms, in weaving communities today. I will then focus on a couple of ideas to guide the source critique that lies ahead, enabling us to reread our textile heritage.

Alejandra Osorio's "Why *Chuño* Matters: Rethinking the History of Technology in Latin America" brings forward a new way of framing cultural artifacts from Latin America, challenging the normative perspective on innovation that dom-

inates technology studies. In her article, she presents the idea that historians could "incorporate local and long-standing knowledge and use into the history-of-technology canon" (Osorio, 2022, p. 808). Her case study, which embodies her thought process, is based on chuño (frozen, dehydrated potatoes), which may seem like an extreme case; yet "it illustrates that the region has the potential for alternative histories of modernity and technology. Studying old technologies could also mean investigating coexisting and competing technologies" (p. 823). Expanding on this idea, Osorio provides the framing for a new vision of old technologies, reinterpreting their role to understand it in relation to competing technologies of the present.

On a more tactical level, we draw from Madeleine Akrich (1997) and her de-scription of technological objects and the social scripts these can provide. This concept offers a glimpse into the loom itself, as an artifact and its physicality, which limits its functions, almost providing a literal functional script on how to use it. This brings us to a more familiar logic regarding technology and its users, as well as perhaps non-users. Specifically, two main ideas resonated strongly within Akrich's (1997) paper: the idea that "negotiations are translated into technological form" (p. 208) and it is evident by the constant back and forth between users and designers of technologies to inform their own projects (p. 209). This is relevant in a situation where a weaver can impact the use, process, and form of their looms, or rather the textiles they produce for their communities. Another idea proposed by Akrich is related to *stabilized technologies* (p. 211), in which looms make a perfect fit for weavers, who are the mediators for this technology, to narrow or extend its function, providing an opportunity to impact their own script.

Source Critique

In this picture (Figure 2), we see some of the women weavers of the Chinchero community, based in the province of Urubamba at an altitude of 12 342 f.a.m.s.l., where the Centro de Textiles Tradicionales del Cusco [Center of Traditional Textiles from Cusco] was founded circa 1970. In 1996, it became an NGO, focusing on preserving textile traditions that were beginning to disappear (Centro de Textiles Tradicionales del Cusco, n. d.-b). The women gathered here use backstrap looms, traditional in their region, and weave with a "complementary warp-face technique, which allows weavers to make two-sided textiles, that is, both sides of the textile are correct and can be used, since there is no obverse or reverse" (Centro de Textiles Tradicionales del Cusco, n. d.-c, para. 3). This picture becomes relevant as an alternative archive (Osorio Tarazona et al., 2021) for such traditional practices that have had shared support from the private sector and public entities, which are also interested in preserving said practices.

This source also shows the physical labor of weaving *llikllas*³ from Chinchero. It is a very demanding process that involves hours of sitting to complete each project. The sitting arrangement in this photo transmits the unity behind this work, a sense of community that can be seen as they are all using their craft to build themselves and their identity. It is also relevant to address the fact that there is a specific time during the day and place for women to dedicate themselves to this kind of craftwork, given that weaving is not their only responsibility as part of a community⁴. And although this work could be done in isolation, there is still the need for support in revising one's work and the work of others, asking questions, and not only that, but the sense of community that allows women to keep pushing themselves forward on projects that can take weeks due to their complexity and chosen materials5. Here we have addressed most of the evident aspects presented in the photo, which gives protagonism to women, who lead the traditional loom practice.

³ Blankets (in Quechua).

^{4&}quot;The weavers' engagement with weaving is intense and takes up the main part of the day, except for farming activities. Time is distributed between traditional household production and garments for the market. However, the weaver does not neglect their new responsibilities in terms of making products for sale" (Del Solar, 2019).

⁵ "The materials can be native cotton or camelid fiber (e.g., llama, alpaca, or vicuña). [...] A high-quality shawl (*lliclla*) requires around eight weeks' work" (Del Solar, 2019, p. 4).



Figure 2Weavers from the community of Chinchero

Note. From Chinchero, by Centro de Textiles Tradicionales del Cusco, n. d.-c (https://www.textilescusco.org/community-detail/chinchero/6).

Nevertheless, there are some nuances that this photo conceals, which need to be analyzed at a deeper level. I will review this, highlighting actors who are relevant to this craft, yet not present; the kind of knowledge that is being developed in it, and its impact. There is a social infrastructure that makes this photograph possible. The Center for Traditional Textiles, also an NGO, rushed⁶ to create a space and process that had been available since the 1990s, which allowed for ten communities from the Cusco region to receive the needed support to focus on ancient techniques from their communities7. This sustained the opportunity for these women weavers to dedicate their time and skills to this craft, while also taking part in other roles within the NGO or their own communities. For instance, in similar textile projects, "about 34% of women involved in the project assumed positions of authority in their communities and were elected to political office in their district councils" (Del Solar, 2019, p. 7). They become the gatekeepers and mediators (Akrich, 1997, p. 211) of these ancestral techniques by acquiring agency that can also be extrapolated to other aspects of their social lives.

Now, let's dive into another layer of analysis that the map and the photo bring us. The region where these communities are

based leverages the social infrastructure mentioned above, since it is a place to foster this cultural practice of weaving. While at the same time, we observe the symbiosis happening between the textile center, the weavers, and their materials, making this place recognized as the region where weaving with backstrap looms is preserved. For this, we draw on Keith Basso (1996), who reflects on the idea that places have a meaning produced by practices and connections situated there. Because of their role then, textile communities could be thought of as an identity-spot, where the weaving being done by women and their communities secures the constant building of themselves and their community. Basso (1996) has a very thoughtful way of portraying what can come from a relationship with the place:

Places possess a marked capacity for triggering acts of self-reflection, inspiring thoughts about who one presently is, or memories of who one used to be, or musings on who one might become. And that is not all. Place-based thoughts about the self commonly lead to thoughts of other things—other places, other people, other times, whole networks of associations that ramify unaccountably within the expanding spheres of awareness that they themselves

⁶Rushed intentions to convey the urgency behind projects like the NGO one, since the resources for cultural aspects are not allocated to preserve this.

⁷ They were even able to recover the blue pigmentation typical of their blankets that disappeared for a while at the beginning of the 20th century (Centro de Textiles Tradicionales del Cusco, n. d.-c).

engender. The experience of sensing places, then, is thus both thoroughly reciprocal and incorrigibly dynamic (p. 107).

This zooming out from the picture, while addressing the evident and not-so-evident lavers, leaves us ready to consider one last aspect: the economic impact of this craftwork. The NGO collaborates with various allies to promote the textiles produced by all their communities in the center, enabling them to sell at a price that values the preservation of the craft, attention to detail, the time invested, and the materials used. And on this topic, the (international) market for Andean textile pieces is rather kind to the Peruvian ones, since they are considered the most intricate and have made their way into textile studies, research, and art pieces since the 50's or 60's in the US and Europe through Bauhaus artists (Auther, n. d.; Gardner Troy, 2018). And to be more specific, in Anni Albers' book On Weaving, the dedication states: "With a dedication 'To my great teachers, the weavers of ancient Peru," and it is addressed later that Peru has the

highest textile cultures we have come to know. Other periods in other parts of the world have achieved highly developed textiles, perhaps even technically more intricate ones, but none has preserved the expressive directness throughout its own history by the specific means (Albers, 1965/2017, p. 50).

Although this is not a precise forecast of how sales will go, it does inform us of the place and recognition that this work has secured throughout generations of weavers.

Discussion

Portraying Agency

When first examining the source, everything may seem staged. Still, when referencing old pictures, one can realize that the representation of textile craftworkers in Peru has remained the same, as if the photograph could never interfere with the work being done between the weaver and the loom. Examining one example from the artist Martín Chambi (Figure 3) and a more recent picture, circa 1990, from the very own Center of Traditional Textiles from Cusco (Figure 4), we can see that there is no one meddling with this interaction that turns into heavy labor for the body of the woman weaver. Furthermore, we see the practice of embedding themselves in their craft, through textiles, as an autobiographical exercise, "inscribing their own identity at different stages of their lifespan" (Arnold, 2023). Both images provide evidence regarding said practice, far back in the 1920s into the 1990s and today (Figure 2).

Since Andean weaving happens in a cultural context where textile production is integrated into daily life, rather than subordinated within a hierarchy of the

Figure 3Portrait of an Unidentified Woman Weaver from Paucartambo



Note. From Retrato de mujer tejedora de Paucartambo no identificada [Photograph], by M. Chambi, c. 1918—1934, Catálogo Digital de la Colección Fotográfica Martín Chambi (https://coleccion.chambimartin.org/index.php/Detail/objects/16191).

arts (Auther, n. d.), it has a relevant role in the communities' lives. Here is where the connection to Osorio's vision on old technologies brings depth to the topic: this perspective on their own craft as part of their lives is what consolidates their practice towards an identity and enhances their agency (Osorio, 2022). And it is depicted with familiarity in pictures from alternative archives, as the pictures taken by Chambi started (Figure 4). So, this community agency is being acknowledged and distributed, as we see different participants, from women closer to the weavers, apprentices and children, actors who are needed for this cultural practice to keep afloat and be shared as a community. This leads to a better understanding of how strong the bonds as part of the weaver community are, even including family members and tourists curious about the weaving process (Figure 3). And these women who weave in the picture are intended to be seen as a community, instead of individuals. This is what leads me to the idea of describing the looms as a community-based technology.

Perhaps a closing thought regarding the looms as community-based technology is that they could have evolved in this way because of the stabilization of the loom as a technology itself (Akrich, 1997). Building on Akrich's idea, it brings to the forefront the notion that the community of weavers has, in fact, mediated the adoption of this

technology into their daily lives and become the cultural official mediator, which brings us closer to the layer of analysis of the embedded script in the loom itself.

Loom's Social Scripts

The description above allows us to dive further into what looms transmit to the present from an intergenerational practice passed on to the women in Chinchero. This is a story about agency for the women involved in this craft. However, it is also about their families and the creations they bring to life, the textiles that embody their identity and culture. For this purpose, I am borrowing Akrich's (1997) concept on the de-scription of technology that allows an artifact, such as the loom, to change—or not—its role according to its use and context. To expand on this, it needs to be acknowledged that the relationship that arises between weaver and loom is a technical one as well as a cultural one (Arnold, 2023)8, where, for a moment, a loom can be experienced as the technology for textile creation, in which the weavers' knowledge and dexterity with the fibers, loom and her body need to harmonize to produce a textile for her community that represents them and their values. Other times, the loom can also play the role of a symbol, which, when teaching a new person the process, can indicate that this particular weaver belongs to her community.

⁸ For the rituals that involve the community and the rite of passage of learning techniques connected to moments that mark one's life, as menarche.



Figure 4Women Weavers from Chinchero

 $Note. From \ Our \ Story, by \ Centro \ de \ Textiles \ Tradicionales \ del \ Cusco, n. \ d.-b. \\ (\underline{https://www.textilescusco.org/about-us}).$

The sense of belonging to this craft shows up almost as the right to be taught how to do it and it is creating the future weavers that will also share that kind of intimacy with a loom that creates culture and tradition. While this is happening, there is also a contingent aspect to it in the sense that it also demarcates who belongs and who does not. As Akrich (1997) explains, technology can sometimes also create non-users, necessitating mediators to connect the technology with users so that it can be fully understood. It seems kind of anachronistic to be using these terms, but when reflecting on the dynamic that takes place at the textile centers through volunteering or workshop experiences, it is easier to realize that women weavers are indeed those mediators sharing their knowledge with people interested in the process. From this perspective, we see the social scripts expanding and new meanings emerging from these relationships and practices that involve new people interacting with them.

The scripts embedded in the looms transcend through the textiles they create. As a cultural artifact, they are foundational around the world and convey messages through textiles, which become the medium. Del Solar describes it in a very precise manner:

Textiles are a fundamental way of expressing change over time as it happens in the diversity of rural areas, nationally and beyond. Representations of identity change, especially as a consequence of (or in reaction to) tensions and negotiations over time. They are expressed through artistic means, in this case through the textiles woven (Del Solar, 2019).

And this is connected to the idea shared by Franguemont et al. (1992): for Andean people, weaving is one of the most important means to learn, communicate and reproduce aesthetic and cultural values (p. 48). After making sense of these ideas, the social scripts that looms provide to these communities make sense. By still maintaining their technique in place, they keep producing textiles that retell their stories as communities, but every time a little bit more current than before. And even if we can see more industrialized processes also adapting to social or commercial demands, in this case, what is being replicated is a system of values. A system that keeps being relevant through these textiles and the craftwork of women who learned the technique. Involving, as well, people from the community in the process of preparing the looms and materials for the weavers to use.

This is where we see the agency and the scripts described above intertwined. Those textiles created in Cusco can be related to Inca fabrics regarding their function, not only as a mnemonic device, but as something that people from the very same communities can read and

understand, as the details of the textile speak of the region they belong to (Arnold, 2023). This understanding of the textiles and their role made its way to the Bauhaus' weaving artists' ways of creating, for instance, with Annie Anders, who also recognized that Andean textiles had such an enormous wealth of pictograms and ideograms for societies that did not yet know writing. In addition to oral communication, textiles had an important function for the preservation and transmission of information, community norms and orientations (Bittner, 2017, para. 11). And this is why it is recognized as a token for representing spatial, cultural and aesthetic values through a familial practice (Del Solar, 2017, p. 17).

Reflection started for me when I noticed that some artifacts resist the passing of time. After interacting with some STS authors, as presented through this essay, for the looms to resist the passing of time made total sense, since they are de-scribing9 their culture of a specific place into the present, in this case, through the textiles that weavers, fibers, the community and the looms produce. This now conceived network of actors situates itself in a key place in Cusco, where preserving culture through physical and social infrastructure is possible and the goal for everyone involved. These are of course embodied by the textile center(s), that

create the space for the social scripts to be rewritten in new nuances and with different intentions for the weavers themselves and the community around them.

Recognizing this region as an identity-spot¹⁰ is also what holds the argument that looms are a community-based technology. This is where it becomes evident that the role of artifacts like looms is at the core of community-based practices, as their own culture promotes. The interesting aspect of this is that it is not usually highlighted that this kind of technology also represents a community-based way of existing. This kind of ontology is also tied to local cultural practices and contributes to the economy, as well as to their identity, since what the looms produce also inform on the cultural and valuable aspects of what might be translated in the textiles they exchanged for other goods. This sets apart the backstrap looms from kinds of non-human technology towards a community-based technology. The analyzed source depicts how the loom itself is contributing to a group of weavers to keep their traditions since the Inca Empire was established.

Even though coexisting with industrialized processes, the purpose of looms is to preserve an identity that keeps bringing together the Chinchero community, as well as the other communities aided by

⁹Let's remember Akrich and the embedded script of technology.

¹⁰ This was drawn from Gieryn's *truth–spot* concept (2002) but is paralleled to Basso's idea of places triggering a *thought–place* process of identifying oneself while interacting with the place.

the NGO. It also involves this very same community in the production process, though that cannot be accounted for by the source itself. This was referred to the social infrastructure provided by the NGO that aims to ensure the longevity of this kind of craftwork.

Conclusion

I set out this essay to answer how the traditional looms play the role of persistent technology that sustains cultural identity and female agency for the weaving communities in Cusco. After the analysis, I can conclude that looms have become a persistent technology by establishing their sociotechnical role through the community practice that weavers have strengthened over time. Just as the fibers intertwine to hold the pattern and the form of the woven piece, the relationships that emerge from the interaction of women weavers, the looms, the materials, the community, and the textile center hold this traditional practice in place. Following the sociotechnical script embedded on the loom, these communities of weavers have been able to curate their identity into the pieces they produce. But not in a constrained way, rather in a manner that, even though stabilized as a technology, it provides them with sufficient flexibility to remain relevant to themselves and their society. And though the social script fits the technology in relation to the weavers, we can even argue that it interacts with today's society by carving a space for its own relevance, demonstrating that identity is active, built and embedded in sociotechnical interactions.

Though Andean textile weaving is a cultural practice fairly recognized internationally, there are many challenges ahead in the near future. It is important to accept that an adverse context would be a great advantage for traditional communities, techniques, and processes. Some changes in this context include how technology evolves and can impact traditional crafts, such as weaving. For instance, changing how it is conceived, created, and experienced; challenging the agency and social scripts that build culture, identity, and community by being transferred to algorithms that could embody these practices through mechanical bodies.

This essay navigated the intangible cultural value of the looms, the weavers, their families, the textiles and the textile centers, leaving lingering questions after this thoughtful journey. The one that challenges me to my core is: what kind of identity would emerge from a narrative that portrays a sociotechnical system that recognizes the value of these relationships that arise while interacting as such, in a situated context? To have this fair new reading about the looms and weavers' community is an active exercise of reinterpreting sociotechnical interactions, but also how old technologies and

new ones relate to the present, to our history and identities. This was an effort to focus and pay attention to the looms as an "everyday" object that often gets overlooked in the background when traveling to a familiar destination, but that embodies so much more when paying attention to the entanglements of its surroundings and the weavers' communities.

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