Engineering Masculinities: How Higher Education Genders the Water Profession in Peru

Edwin Rap & Maria Teresa Oré

To cite this article: Edwin Rap & Maria Teresa Oré (2017): Engineering Masculinities: How Higher Education Genders the Water Profession in Peru, Engineering Studies, DOI: 10.1080/19378629.2017.1342255

To link to this article: http://dx.doi.org/10.1080/19378629.2017.1342255

Published online: 29 Jun 2017.
Engineering Masculinities: How Higher Education Genders the Water Profession in Peru

Edwin Rapa and Maria Teresa Oré

Abstract
By telling the story of an agricultural university in Peru, this article shows how a specific professional formation forges a strong linkage between engineering and masculine identities in water management. Although these identities come to be seen as self-evident or even natural, they are the outcome of diverse, repeated, and ritualized performances as part of the everyday life of the university. Through collectively enacting and experiencing such cultural performances, engineering students are trained to do science and technology in specific ways, ways that embody particularly masculine symbolic repertoires. On becoming part of a professional society, through rites of passage such as hazing and field work, students simultaneously learn to behave as engineers and become ‘real’ men. Building on and sometimes actively re-working existing societal markers of hierarchy and difference, male engineers in this process distinguish themselves from non-engineers, women and ‘other’ men. With careful interviewing and observation of agricultural engineers, the article suggests an interpretive framework to analyse the multiple cultural and performative repertoires that ‘engineer’ specific masculinities.

Introduction
The above song is the unofficial anthem of a renowned agricultural and engineering university in Lima, Peru: La Universidad Agraria de la Molina (UNALM). In the accompanying
video, shot during an interuniversity competition of tunas (traditional music groups for male students), the La Molina tuna starts by unfolding a banner with the university’s coat of arms. Unveiling this totem and collective symbol in public provokes an emotional response among the audience. In particular, we hear the high-pitched voices of female students in the audience. The speaker introduces the marinera molinera as the song that ‘we sing in all the places where we meet molineros like ourselves. We do it with much affection. It makes us remember all the life experiences of the university.’ When the tuna starts playing the marinera, a highly stylized form of Peruvian song and dance, the video shows a tuna dancer graciously waving the university flag over the stage. At a predetermined moment, when the deep male voices are singing of the handsome molinero and his courtship, the dancer picks up a rose and smells it for an extended moment. Then he gathers speed for an artful turn in which he sends the flower flying towards his female spectators in the audience. The tuna repeats the anthem’s performance with its memorable lyrics. This cultural performance shows both the pride and emotion of belonging to a professional guild, but also how the education powerfully gendered and sustained an ideal of masculinity.

The enactment of this song illustrates how a particular engineering culture comes about as the result of the repeated performance of particular stylized behaviours. These cultural performances simultaneously work to instate, re-affirm, and keep in place socio-cultural identities, professional relations, and hierarchies. Starting from the lyrics of this cherished song, the article proceeds to identify and discuss a number of related cultural performances, focusing in particular on how they work to establish engineering professionalism as something masculine. The anthem further suggests that these professional masculinities intersect with the wider ethnicity, race, class, and gender relations that mark Peruvian conquest and (post-) colonial history.

This work is an unintended outcome of a series of exploratory interviews with former senior officials from public water institutions in Peru and earlier in Mexico. Earlier publications already report the background information for this article. Constructing the life histories of these agricultural engineers allowed us to explore their academic education, professional life, and the culture they came to share in spite of varied social backgrounds. Striking in their accounts were the ‘masculine’ jokes, nicknames, and loyalties that they maintained throughout their professional lives and the stories from their university days that they so joyfully recounted, motivating us to further explore how these are interrelated. We complemented around 40 semi-structured interviews in the period between 2008 and 2015 with a literature study, testimonies, and observations in the university as well as YouTube videos. Interviews with different generations of female students, who have increased in numbers, showed that the university is a rapidly changing place, but also that the history and tradition that we describe here continues to bear effect. We do not examine this particular case with the intention of creating a negative or stagnant picture of what

3 ‘Masculine’ is between quotation marks to remind the reader that this is a label applied by the researchers. This is to leave open the question: ‘On what basis do the researchers name or label something as masculine?’ To assign meaning like this is a human and contentious process, shaped by specific cultural and political discursive repertoires, hence we do not claim to arrive at universal ideas of man- and womanhood. This effort is part of an ongoing academic debate on gender.
4 In this article, we give little attention to the early entrance of women students to the university, their increasing numbers and participation over time, and how women of different generations and backgrounds have dealt with the masculinities described here. Because we carried out a series of interviews with these women engineers, we will write a successive paper on this particular topic.
we know as a rigorous scientific education or engineering masculinities in general. Masculinity can be associated with many positive values. It is, however, undeniable that some aspects of hegemonic masculine engineering identities are associated with authoritarian and patriarchal power and supported by technocratic expertise, which can have profoundly degrading, discriminatory, and disempowering effects. Over time, the broader relevance of our findings gradually became clear, as we discovered the many parallels with engineering schools in other parts of Latin America and the world.

In the next theoretical section, we discuss a perspective to explore how cultural and performative repertoires, including rites of passage, gender the engineering profession. We then trace the formation of the agricultural school used here as a case study and its evolution into a prestigious institution for higher agricultural education. Subsequently, we recount how young (male) agricultural engineers are socialized into the engineering society of this national school. The penultimate section more specifically focuses on the early professional life of irrigation engineers from this school in public water management institutions and the ways in which this interlinks professionalism and masculinities. The last section presents the main conclusions.

**Professional masculinities in engineering culture**

Masculinities are those practices and ways of being that serve to validate the masculine subject’s sense of manliness. To know how agricultural engineering is made a masculine profession, we trace the acts through which engineering masculinities are culturally performed and become institutionalized in the everyday life of a university.

The lens of cultural performance offers an interesting insight into how professions are gendered. Erving Goffman describes performance as ‘[W]hen an individual appears before others, he knowingly and unwittingly projects a definition of the situation . . . ,’ immediately indicating the gendered nature of performance. Munro further shows how managers construct their cultural performances to make themselves visible, both as members of a group and as individual managers who are identifiably in control. They try to make themselves visible to colleagues, seniors, or clients in different ways. In this article, the concept of cultural performance helps to explore how engineers enact engineering masculinities, thereby forging a linkage between engineering and masculine identities. With the repetition of such practices, cultural performance comes to constitute a ritual. Early in the twentieth century, Durkheim already demonstrated that rituals are as key to science as to religion. ‘Human energies are harnessed to group ends through revolutionary excitements, and shaped through ritual and the collective representations that rituals produce. A culture (an enduring way of thinking, a solidarity) results.’ Building on this understanding, we define engineering culture in the broadest way possible as shared webs of meaning and enduring patterns of thinking, feeling, and behaving, starting from (higher) education and passed on between groups and generations of engineers. Engineering cultures

---


may encapsulate different masculine and professional identities and sub-cultures, some of which become hegemonic masculinities, associated with (state) power, patriarchy and the control of dominant men.\textsuperscript{12}

From the perspective of queer theory, Judith Butler shows with her work how gender is produced performatively.\textsuperscript{13} Through performativity – the exercise of performatives – categories such as male and female come into being. Performatives are speech acts that perform actions and produce a series of effects that call objects, identities, or situations into being.\textsuperscript{14} Gender is thus not a stable identity but is ‘tenuously constituted in time’ through a ‘stylized repetition of acts’.\textsuperscript{15} Butler dismisses the existence of a performer, a core gendered self or subject as illusory effects, with which she disregards the ethnomethodological insight that gendered selves are produced by ‘doing gender’ through actions in and interactions with a social, material, and institutional context.\textsuperscript{16} Although we build on the insights of performativity theory, we depart with Butler when she separates performativity from the gendered performance and lived experience of social actors.\textsuperscript{17}

The engineering profession is gendered in multiple ways, which need to be performed, embodied, materialized, reiterated, in order to ‘stick’ and ‘travel’.\textsuperscript{18} This gendering is interrelated with the aspects of structure, practice, and display, which reinforce and legitimate professional power, expertise, authority, as well as social differences, inequalities, and gendered hierarchies that fit into a larger patriarchal system.

Building on the literature and this case study research, the article suggests an interpretative framework to explore the gendered nature of professions and the cultural infrastructure\textsuperscript{19} and performative repertoires that make the engineering profession masculine. The framework consists of 10 interrelated components (see Figure 1):

(1) Rites of passage (e.g. hazing, fieldwork), initiation rituals, classroom interactions, sporting and drinking events, and public ceremonies that reinforce professional bonding, strengthen masculine identities, and mark the gendered boundaries with ‘others’.\textsuperscript{20}

(2) Songs, stories, anecdotes, nicknames, humour, and metaphors that belong to the oral history and convey professional and masculine meanings and belonging.

(3) Heroes, champions, legends, myths, and models of ‘great men’. These exemplary masculinities ‘express widespread ideals, fantasies and desires’\textsuperscript{21} and offer a professional glue\textsuperscript{22} that is integral to hegemonic masculinity.\textsuperscript{23}

(4) A professional mystique and its symbols, associated with a national mythology, a revered institutional tradition,\textsuperscript{24} belief in modernization, and a mission to exploit natural resources.

\textsuperscript{12} Connell and Connell, \textit{Masculinities}, 2005.
\textsuperscript{13} Butler, \textit{Gender Trouble}, 1999.
\textsuperscript{14} Austin, \textit{How to Do Things with Words}, 1962.
\textsuperscript{15} Butler, \textit{Gender Trouble}, 1999, p. 179.
\textsuperscript{16} West and Zimmerman, “Doing Gender,” 1987; Brickell, “Performativity or Performance?” 2003.
\textsuperscript{17} Green, “Queer Theory and Sociology,” 2007.
\textsuperscript{19} Oldenziel, \textit{Making Technology Masculine}, 1999.
\textsuperscript{22} Rap, “The Success,” 2006.
\textsuperscript{24} Piña Osorio, \textit{La Interpretación}, 1998.
Figure 1. Interpretative framework for engineering masculinities.

(5) Technology, infrastructure, machinery, and tools that master nature and provide pride, power, and pleasure in engineering.25
(6) Western natural, mathematical, and applied sciences26 and the use of technical terminology and expert languages.
(7) Collective symbols, totems, and visual displays such as a coat of arms, flags, commemorative items, pictures, diplomas; professional prizes, rings, busts; and other cultural materials that visualize the link between engineering and masculinity.
(8) The campus as a separated and inhabited space with a layout of historical remnants, faculty buildings, dorms, classrooms, laboratories, experimental fields, sports grounds, and so forth.
(9) Disciplinary and normative pressures to establish and conform to heterosexual identities and gendered hierarchies, for instance, through dress and group behaviour.
(10) Titles, rules, and structures for indicating position, privilege, pride, and upward mobility in a gendered professional hierarchy.

The case study in this article will contain many examples of these 10 points and we will indicate their respective numbers in the text, e.g. [1] refers to the first element.

Higher education plays a major role in producing the strong linkage between engineering and masculine identities. On entering this university, young engineers become subject to a hazing and other rites of passage that socialize them into a particular professional society, culture, and hierarchy historically dominated by men. Van Gennep commented

on these rites of passage: ‘The life of an individual in any society is a series of passages from one age to another and from one occupation to another.’ Van Gennep pointed to the importance of tools and symbols in these rites, serving as markers to distinguish occupational classes and professional groups. Examples that will return in this article are the professional coat of arms, Latin motto and tools, which date back to the medieval knight’s rite of passage: the vigil of arms. Van Gennep’s analysis suggests that these ritualized cultural performances through which apprentices learn to become a professional are deeply gendered.

Almeida and Queda critically complement these insights by showing that the rite of passage of student hazing involves psychological and physical violence (bullying) and creates a power relation between students, staff, and the university that permeates all aspects of academic life. In their view, hazing is an institutional practice that cultivates a culture of self-reverence for the institution, in which young students learn to accept authoritarianism, hierarchical thinking, and social and gender inequities. In this microcosm, gender and class prejudices, and racial stereotyping produce social differences and exclusion.

The introductory song subliminally communicates the historical intersection of professional masculinity with race, ethnicity, class, and gender, which is rooted in the colonial and post-colonial history of Latin America and Peru in particular. The lyrics attest to the criollo, masculine, and heteronormative environment of the university. What criollo means has changed over time and differs per place. Originally, it referred to ‘white’ Spanish descendants born in Peru, with high status and control over land in colonial society. After independence, the term gradually came to refer to the mestizos of mixed blood as the national norm. Today, criollo refers to a multiplicity of sometimes-ambivalent meanings ranging from a nineteenth-century nationalistic ideology of urban upper classes to a contemporary coastal lower and middle-class culture. Some criollo attributes are: Spanish speaking, mestizo, coastal, urban, roguish, humorous, downplaying the indigenous, and admiring Western science, technology, and culture. As the song illustrates, these meanings also pervade the professional ideal of masculinity: the molinero is not from here: he is a ‘free man’ who decides himself where he goes and identifies with his university, rather than his place of origin. The song further praises his brave, heroic, chivalrous, and festive qualities. At the typical jarana (party), he is enjoying pisco (Peruvian spirit), the peppered criollo food, and seductive marinera dancing. He is a handsome lady’s man of criollo origin, yet in the song, he courts a lower-class woman of mixed blood (cholita: both an endearing and pejorative diminutive). As a Peruvian criollo, he is known for his ability to conquer women’s hearts, alluding to the courtly lover, a medieval Spanish knight, as demonstrated by the dancer in the opening scene. The phallic symbols of the knife and the chilli pepper underscore specific masculine characteristics, sexual connotations, and gendered contrasts according to dominant and submissive stereotypes. When the knife becomes feminine, it bends towards the molinero. Throughout the article, the distinct heteronormative connotations are accompanied by a ranking of masculinities and femininities.

Almeida and Queda, Universidade Preconceitos & Trote, 2005.
with some personality traits and behaviours being seen as more masculine than feminine – the manlier the man, the better [9].

The history of agrarian education in Peru

Engineering masculinities are a product of a larger history of conquest, state formation, nation building, racial domination, and professional formation in Peru and beyond. In Latin America, state formation created a dominant role for state institutions to employ a privileged class of professional men, which shaped engineering masculinities. Professions historically depended on their capacity to carve out exclusive spheres of influence in the state apparatus and establish their legitimate expertise for broader influence on public policy. Cleaves defines a profession as ‘a privileged occupation with a mystique’ [4]. He indicates that the success of a profession lies in its ability to merge this mystique with the national mythology and its unifying symbols and derive status and privilege from that. In Peru, state formation and nation building gave a special status to the higher agricultural school that is our topic, to become the national centre for rural modernization. The state especially targeted irrigation expansion as a key project of national development, which created an emerging class of agricultural engineers with a professional mystique and a history of ‘great men’ in water management [3]. This professional formation strongly associated masculinity with irrigation technology [5].

La Molina’s origins date back to the Escuela Nacional Agraria y Veterinaria (ENA(V)): National Agrarian and Veterinary School, inaugurated in 1902. Peruvian president and civil engineer, López de Romañá, promoted its establishment, after he became inspired at a visit to Europe by how national agricultural colleges there fomented rural modernization [4]. At the government’s request, a team of Belgian professors from the prestigious Gembloux agricultural college came on a mission to develop the curriculum and teach at the new school. The foundation of their work was laid in 1901 when a series of field visits were undertaken to diverse regions to report on the agricultural reality in Peru, with most detailed attention on the potential for irrigated agriculture along the Northern Coast. The leader of the mission, founder and first director of the school, was the Belgian engineer Vanderghem. A statue honours him in the rectorate and shows that he remains a professional model for engineers from the school (see Figure 2). His exemplary commitment to the mission did not allow him to return to his native country, and he kept on teaching until the day he died of a heart attack in class among his students [3].

The foundation of a national agricultural school marked the beginning of the scientific training of agricultural engineers (ingenieros agrónomos), who were charged with the mission to modernize Peru’s irrigated agriculture [4]. Professional formation in agricultural engineering was thus intimately related to the state’s hydraulic mission to modernize,
expand, and centralize the control over irrigated agriculture and stimulate national development. This hydraulic mission provided a professional mystique that was merged with the national mythology in which large irrigation projects counted as unifying symbols of progress [4]. These efforts were largely targeted towards the then dominant form of large-scale hacienda agriculture.

La Molina’s coat of arms, which constitutes a collective representation of its professional society [7], indicates the positivist spirit of contributing to the national advancement of Peruvian agriculture (see Figure 3) [4]. The shield contains a llama and maize against a green and red background, symbolizing Peruvian agriculture, and a sun, as the masculine Inca god, against a blue sky and above flowing water that provide the elements required for flourishing agriculture. The Latin motto surrounding these symbols with a Latin motto (Colere cupio hominem et agrum) that signifies: I want to cultivate man and field. This motto epitomizes the mission of the university and the professional mystique of the agricultural engineer: to help modernize Peru as a nation and its farming ‘men’ through agricultural development [4].

The state’s hydraulic mission contributed to the rise of another foreign ‘father’ of engineering. The government of president and engineer Leguía (1919–1930) invited an American engineer, Charles Sutton, to develop a diagnostic of each coastal valley to review water resources and irrigation potential. Sutton was then commissioned by the government to execute large irrigation works on Peru’s Northern Coast. He trained a generation of new engineers and technicians in water resources and proposed that the state should take over water control as a way to modernize coastal agriculture [4]. Nowadays, agricultural
engineers honour Sutton as the father of irrigation in Peru. His influence remains relevant as a professional ideal, masculine role model, and collective hero for agricultural engineers [3].

Pictures show engineer Sutton as a white gentleman, dressed in suit and tie, with a hat on, while he is doing fieldwork (see Figures 4 and 5). His Peruvian assistants appear to follow his instructions by carrying the tools and taking measurements [9].

---

The national agricultural school was originally associated with a political economy in which the dominant patriarchal structure of landownership consisted of *haciendas* (large-scale land properties owned by Spanish descendants or *criollo* elites) [10]. The campus was meaningfully located at an old hacienda in the Santa Beatriz district of the capital, Lima [8]. In 1933, it moved to the Hacienda La Molina, on the outskirts of Lima, because its rural facilities and lands allowed laboratory and field studies, and it was more favourably situated vis-à-vis the encroaching urban Lima. The school continued to develop agricultural production on the hacienda and was partially self-financed in this manner. The land, facilities, staff, horses, and other animals were originally managed hacienda-style.

The hacienda setting added to the school’s privileged, masculine, and *criollo* ambiance [8/10]. Originally, it was a school for the sons of large landowners, managers, and foremen of haciendas and therefore received financial support from the main haciendas in the country. During the school’s first half century, strong competition existed over the limited student vacancies, the admission exams were very demanding, and education was paid for by the students’ families and therefore accessible to only a privileged elite [10]. Only the best students from upper- and middle-class backgrounds could enter, thus contributing to the pride of belonging to a special breed. The fact that they were mostly men was associated with patriarchal landownership and inheritance patterns, a higher education that was only accessible for elite men, and professions and public jobs that were predominantly masculine [10]. Consequently, agriculture and engineering were considered male careers. ENA gradually became a public agricultural school that enjoyed national and international fame and prestige because of its high scientific level.

During the first decades, the education nurtured the (masculine) pride of being an engineer from an authoritative institution and the ambition to acquire professional privilege

---

38 Popularly known by the criolla song from the hacienda era: ‘A la Molina no voy más’, in which workers decide that they will no longer return to La Molina, because of their maltreatment.
and status. Professors were recognized inside and outside Peru, university services and facilities were excellent, and professional status was high [8]. There was an enormous respect for the technical expertise and masculine authority of professors, whom students publicly invariably addressed by their title Engineer, Professor, or Doctor [6/10]. Lecturers normally passed on their knowledge in a vertical way and expected strong discipline and punctuality from their students [9]. Both male teachers and students were dressed formally in class. Studying classroom and group pictures of that period shows that dressing ‘well’ signified dressing like a responsible and professionally capable man. A classroom picture shows around 40 young men, of whom most are wearing jackets, shirts, and ties. Seated together in an inclining row of benches, they emphasize the implicit masculine norm [9]. Consequently, the only two female students stand out as different and sit somewhat hunched together in the front row. Professors represented and conveyed pride in the profession and in the discipline’s contribution to national development and progress. In those years, being an engineer meant a high status for a man in Peruvian society.

In 1960, the National School of Agriculture obtained university status and was renamed National Agriculture University La Molina. The name La Molina (referring to a mill) symbolized the historical connection to the hacienda. The curriculum was designed to teach modern agriculture and irrigation technology for medium- and large-scale farms [5]. Haciendas were also the model for education and were visited by professors and students as part of fieldwork. The haciendas’ dominant influence and financial contributions reduced after agrarian reform was promulgated in 1969. Although large-scale farming remained attractive as a model for modern agriculture for university professors and students, Sutton had also introduced the idea of an intermediate coastal (male) farmer, as the main beneficiary of public irrigation development. Molinera agronomists also participated in the Agrarian Reform by measuring and dividing the land for the benefit of smallholder peasants. This commitment with this group also remained alive in the university.

From the 1960s onwards, students from diverse regions of the country enrolled at La Molina, including more low-income (male) students, leading to a popularization of what once was a privileged education. After the agrarian reform, the military government established free entrance intended for the children of peasants and community members. Gradually, more urban and rural middle-class people and rural lower-class students with indigenous roots began to attend, for whom an engineering degree from this university contained a clear promise of social mobility. Initially, these were mostly male students. For these students with mixed backgrounds, the criollo identity of the molinero remained the dominant norm, which largely denied and excluded their indigenous origin [9]. Many Andean students reproduced the admiration for modern Western science and technology, and the disregard for peasant agriculture [5]. The university grew in student numbers, teaching staff, and faculties, and it became more complex to continue managing in the old style. Students from the Andean and Amazonian provinces of Peru were allowed to stay in

---

41 In 1969, the military government of general Velasco Alvarado promulgated the Agrarian Reform Law to distribute the land of large haciendas among agrarian cooperatives and societies of social interest, as well as a new Water Law, according to which the Peruvian State centralized and assumed control over water management in the country.
student accommodations, which later became a nucleus for student and political organization. Gradually, the number of female students increased, first from an urban and later from a rural background, and the university slowly adapted.

**Entering the university: learning how to become a professional man**

On enrolment, most (male) students were subjected to hazing during the largest part of the twentieth century and after that in an adjusted form [1]. This extracurricular event is known as *el bautizo molinero* (baptism of the *molinero* freshman) and is understood here as a rite of passage that genders the professional formation by linking professional and masculine identities. The young student’s entry and acculturation into the engineering community initiated a transition from adolescent freshman to a new life of professional adulthood.

The first week of the opening term at the University of La Molina, a group of senior students caught the *cachimbos* (a derogatory term for freshmen) unawares in class. Chaining hands, the veteran students surrounded the group of neophytes to prevent their escape and emphasize the collectivity of their ordeal. The veteran students commanded and brought the freshmen to a central place at the campus, while abusing them with insults and derogatory remarks, mixed with puns [8/2]. Senior students directed the collective practising and singing of songs, such as the *marinera molinera*. In the week that followed, the freshmen experienced a series of humiliations, intimidations, and degrading punishments but also engaged in physical exercises, music, and laughter. The stripping of clothes and shaving of heads potentially symbolized the removal and death of the neophytes’ former identity. Being showered in dirt, dung, and (questionable) fluids that served as ‘ritual cleansing agents’ further purified and washed off their past identity.42 Painting *cachimbos*’ bodies and the proud wearing of university or faculty t-shirts embodied new forms of identification and distinction as engineers. The *cachimbos* were at some point chased through and bathed in an oxidation pool at the university *granja* (farm). This act invoked a ‘baptism’, like ‘*el bautizo molinero*’ suggests, to symbolically mark the passage from adolescent to young student. In different ways, the passing through tunnels while being defiled was repeated and we suggest it symbolized a rebirth.43 Having to compete aggressively with one another on an obstacle course and doing push-ups in semi-nudity further marked the passage to a new identity.44

A *molinera* remembers the hazing experience in the early 1990s, when female students were still excluded:

Ten minutes before the end of class, the classroom was surrounded with people who started knocking on doors and windows. A friend was able to escape through a window a few minutes before, because I think he knew what was coming. So an older student went through a list to confirm that all were there. Then they ordered the boys into lines and they made them remove their clothes to remain in their underwear. Some came prepared in bathing trunks. Their hair was cut and they had to remain in a squatting position. The *cachimbos* had the opportunity to save themselves from the punishments if they acquired a padrino – a friend in higher classes – and they had to give money to buy beers. I remember I saw them very scared . . . . Then (the boys) were taken to the university farm, but the organizers told us (the girls) that if we stayed they would paint us and threw some paint at us so we had to withdraw. It was not a space for

---

women. All my friends passed through an oxidation pool with sewage water, but on top they painted them and threw cow fodder at them. They were hardly recognizable. One group they took to the abattoir and put them in the fridge, where they almost froze, because they forgot to take them out. This was all directed by men ...

She recalls the fear and fright on the faces of the boys during *el bautizo*; this indicated the violence and power abuse that characterized these events. Senior students could establish hierarchy; exert authority and patronage by distributing punishments and favours.

Originally, this initiation rite was probably also an initiation into a distinct form of manhood, separating the boys from their family (particularly women), but making them part of a new family [1]. It fostered male sociality, bonding, and hierarchy, and marked the entry of the young engineers into the cultural realm of La Molina. Becoming an engineer was in part learning how to become a man among other professional men with power inequalities. The roughness and dirtiness of it were considered inappropriate for girls, so for a long time they did not participate or were protected against excesses and excluded from the brotherly solidarity produced. However, with the entrance of more women into the university and attempts to reform or even prohibit the event, its character gradually attenuated, and female students currently participate and are given a similar treatment, although exercised by women and partly separate from the boys. An internet video shows how a senior female student aggressively instructs a group of girls on a bus how to sing the anthem. The faces of the girls who undergo this treatment show a mixture of fear and desire to belong.

The hazing experience offered numerous occasions for students to perform competing masculinities. The novices were taken out and incited in a group to display their drinking capacity, usually a largely male competition. Such competitive occasions were opportunities for students to prove and feel their membership of the group, more enjoyed by some than others. A student learned the importance of group solidarity by collectively putting up, and helping one another to cope, with verbal and physical challenges, humiliation, and ridicule by senior students. In this respect, the hazing experience bears similarities with the initiation of military recruits. The students survive the hazing as ‘they are all in it together’ and initiate a shared social life in which drinking prowess and sports play a major role.45 In spite of the sometimes grim and violent nature of these events, they are interspersed with laughter, jokes, and levity. The hazing event and the associated cultural performances reinforced a life of masculine solidarity, humour, stories, and sexual pranks to be shared over time [2].

Associated with hazing, early on in university life young students had to pay their dues (*pagar derecho de piso*), which was also a way in which they learned how to perform in a gendered hierarchy [1]. Paying dues happened when professors or seniors send junior students for messages or doing basic and unpleasant tasks. Such forced acts made the social hierarchy clear and the fact that a freshman started from ‘the bottom of a professional pecking order’.46 One was made to understand that tolerating such maltreatment can be part of advancing in a career. The principle also manifested itself when a student aspired to become a member of the university’s *tuna*. Before one could enter this all-male collective, the tradition had some requirements: one had to pay one’s dues by carrying instruments or

cleaning the locale and showing that one is gallant and knows how to court women. Learning how to climb the professional ladder was thus also a test of masculinity. The university provided such life lessons.

Later in the academic calendar, the so-called *corzo molinero* offered performative opportunities to reinforce the professional cohesion in a gendered manner. This annual event constituted almost a week of festivities, game playing, and sporting events organized in celebration of the school’s anniversary around a carnival-like parade of floats traversing the campus and the Molina neighbourhood [8]. The students spent several days and nights together preparing and decorating a float with allegorical representations of their faculty that symbolized and celebrated their future discipline. The entire procession started with the banner of the university’s coat of arms and the year of its anniversary [7]. A faculty banner preceded individual floats and accompanied student groups of musicians, dancers, and followers, who recite songs or chants that kept the atmosphere going and demonstrated human joy in belonging. Thematic costumes, flags, and clothing details identified the students with their faculty: Forestry, Fisheries, Agronomy, or Agricultural Engineering. During the gymkhana, a major sports event, faculty students competed in different sports and contests. Nowadays, these are less dominantly masculine and more mixed events, in which boys (sports, making music) and girls (dancing, cheerleading, Miss Elections) can distinguish themselves in particular gendered ways. Because the public dancing contests are mixed, these embodied performances provide opportunities to express provocative heterosexual meanings and asymmetric gender roles. The events strongly identify the students with their generation, faculty, and university, as well as with their gender and sexuality.

During sporting events, *molineros* learned to compete and produce gendered hierarchies within the framework of their professional cohesion [1]. There were the soccer championships, internal to the university, but also the annual interuniversity championships. A dream for agricultural engineers was to beat an eternal rival, the civil engineers of the *Universidad Nacional de Ingeniería* (National University of Engineering), where ENA had its origin. Olchese Pachas [47] showed two interesting pictures from such a championship in 1949, where a group of (male) *molineros* were dressed as cheerleaders, complete with hairdos, tops, and miniskirts. In the next picture, they were bending forward with their rears exposed towards the audience, together spelling out the letters of their collective rival: *Ingeniería*. This joke ridiculed and feminized their opponents and demarcated their differences as engineers and as males. Designating ‘the other’ helps to define ‘us’ and frames gendered professional hierarchies. A related joke stated that there are three types of girls: 1. very pretty ones, 2. those more or less, 3. *las Molineras* (girls from La Molina). This othering of females contributed to an environment in which belonging is associated with masculinity [2].

Sports were often combined with another favourite pastime for which *molineros*, as good *criollos*, have a reputation in the urban landscape of Lima: ‘Molineros drink, it’s part of the tradition, I don’t know if it is tradition, but a molinero that doesn’t drink is, perhaps, not a molinero’ [1]. Football and drinking followed each other in a chain of physical competition, bodily confrontation, joking relaxation, and alcoholic brotherhood.

I believe that almost all the prizes in the Molina, where there are football championships, for example, the prizes are not books, they are beers. We played football bloodily, hard, you were

---

struggling in the field, first for honour, for pride, and then for the beer, because the first prize was two cases of beers.

That this bond of embodied brotherhood through sports and alcohol does not stop after leaving the university is demonstrated by the young professionals who still regularly return to the university grounds to play a game with their old classmates. Afterwards, they exchange jokes, beers, rumours, anecdotes, job opportunities, and professional experiences. Their female colleague students are also invited, yet it is more difficult for them to participate in the same intense and bodily manner. Not having participated in such male bonding, female students are at a disadvantage in their professional life. Similar restrictive popular games were cockfights, cards, and gambling.

The described festivities were interspersed with long periods of dedicated study and classes according to the curricula. After several years, this educational and ritual cycle ended with the graduation ceremony that also finalized the rite of passage to a professional life. Every generation of students asked a padrino (godfather) to financially and morally support their graduation ceremony, often a favourite or influential professor or professional, who could sometimes also help with job suggestions.

The above-described initiation rituals produced generations of very united molineros. A generation is the cohort that identifies itself by the year of joint graduation, e.g. ‘the generation of 61’, and the nicknames that its students had for one another (e.g. monkey, shark, and so on) [2], which were derived from physical characteristics or anecdotes that occurred during their early period as freshmen at the institution. An engineer of the 1961 generation told us:

There was much comradeship and camaraderie. All of us studied nothing else than agronomy, there were optional specialization courses, but everybody did the common courses .... But coming back to UNALM, we were already 270 people, we were very close, very, very united, both in the technical activities and in the cultural and festive ones, we also worked very seriously and together we got drunk.

There were soccer championships ... there was the week of agriculture, the week of La Molina. We just celebrated fifty years, those of us still alive have met again and again and we have kept in contact, we are planning a pachamanca (traditional Andean meat dish) in the lands of [a fellow student], he became president of the Agrarian National Society at the time of Velasco.

An author wrote on the same matter:

The friendship of molineros is chimerical, magical, and memorable. I have perceived that various professional circles attribute to molineros the fact of finding and helping one another sometimes with marked favouritism, to prefer one another arbitrarily, and to get together every time they can regardless of generational differences or interfaculty distances, only united through the umbilical cord of ‘Colere cupio hominem et agrum.’ This intimate relation that exists between molineros, every molinero and his university is proverbial, singular, defining, and our principal characteristic. It is the Alma Mater that we have in abundance and that many universities do not know.48

These generational bonds continued to matter professionally, for example, in later professional encounters, such as the celebration of the ‘bodas de plata y oro’ (literally: silver and golden weddings), the anniversaries celebrated the corresponding number of years after graduation. Several cultural materials help to sustain such professional loyalties over

time and imagine the larger Molina community as a family [7]. On the walls of the contemporary rectorate, a large number of bronze plaques list the names of individual engineers per year of graduation and recall the many anniversaries celebrated since ENA’s foundation (see Figure 2) [8]. This setting demonstrates that men largely dominated the professional tradition, illustrated by the long lists of names and the busts of admired male professors. The bust of the founder Jorge Vanderghem shows a visionary engineer, whose groomed beard, moustache and elegant suit with tie also convey masculinity (see Figure 2) [7].

Such cultural materials allow individual graduates to identify with their (male) professional examples and imagine themselves as part of a larger scientific community. We observed the meaningfulness of this for professional identities in the homes and studies of several engineers that we visited. They proudly showed us the framed photographs of their generation, commemorative tiles of anniversaries, and professional awards [7]. The original graduation pictures of the earlier molinero generations are stylized portraits of an esprit de corps, in which the group formation of young male professionals, their formal clothing (suit and tie), solemn faces, and the carefully synchronized direction of folded legs visualize an almost military-like authority and discipline (see Figure 6 and 7). The absence of women or presence of a few emphasize the masculine norm [9].

In short, the university constitutes a cultural world that contributes to professional bonds, masculine identities, and gendered hierarchies that matter in the professional life of young engineers. The collective commitment to their Alma Mater links these engineers together and revives through recurring cultural performances, for example, during the generational and university anniversaries or professional encounters of the Guild of Engineers. In some way, they become part of a large family. When two molineros meet in whatever remote corner of the world, it is remarkable to see how quick they know each other and ignite special warmth, by identifying themselves through their generation, faculty, their teachers, and the shared legends of the university. This bond among agricultural engineers is connected with their professional mystique and the technical orientation of the education, the topic of the next section. To summarize:

In La Molina not only did I acquire a profession and a title, but much more [10]: I acquired the discipline for study and work [9]; valued the sincere comradeship and the work in a committed team, valued the importance of science and of technology for rural development . . . . I was infected by the molinera mystique. [5/6]

The next section examines how professional masculinities are also performed in class and in early professional experiences through the special connection that agricultural engineers make with irrigation technology and agricultural machinery (Figures 6 and 7).

**Agricultural engineering: irrigation technology, machinery, and masculinities**

The European model for agricultural education offered a multi-disciplinary curriculum with possibilities for specializations leading to a degree in agronomy, which all ENA students followed. After its foundation, UNALM expanded the number of faculties, including, for example, Forestry, Fisheries, Social Sciences, and Agricultural Engineering, where students

---

followed a specialized curriculum. Although these faculties together shaped the institution, we focus on the latter faculty, because it became increasingly influential in water management and traditionally lacked female graduates. In 1960, the university created the first Faculty of Agricultural Engineering in Latin America, called *Ingeniería Agrícola*, under supervision of the Food and Agriculture Organization (FAO). Being the first faculty was a sign of international recognition and support. The first agricultural engineering students were agronomists who followed the irrigation and drainage courses and ended up with a specialization in agricultural engineering.
From its formation, the faculty and its specialization came under growing American influence. USAID supported the faculty and provided scholarships to students and professors to study at US universities – North Carolina, Utah, California, Colorado, Massachusetts, Stanford, and so forth – to raise the scientific level of water management. The American educational system and its disciplinary specialization increasingly became the model for La Molina. Other students went to engineering schools in Europe or Chapingo in Mexico. For many students, these international experiences were their first contacts with international bodies and inserted them into a transnational circle of travelling experts, consultants, and engineers. When they returned as professors to La Molina, they conveyed that experience by training new student generations from the 1970s onwards.

As part of the FAO agreement, several European and American engineers arrived to support training in specialized areas. Maruy Tashima’s paper ‘From the Slide Rule to the Digital Age’ is a charming recollection of this period for the celebration of 50 years of agricultural engineering. This narrative history of ‘great men’ shows how (inter)national engineering and masculine identities coalesce. The group of experts in the faculty was ‘captained’ by a Dutch engineer, who was ‘legendary’ for his ‘notable knowledge of the secrets of agricultural machinery’. There was no professor who knew more about machinery and ‘we took his classes because it was a pleasure to hear him talk in English about machinery’. This quote echoes the existential pleasures of engineering, celebrating the masculine engineering pride in the great achievements of machinery. Maruy Tashima acknowledges that, through these stories of legends, agricultural engineers feel connected when they meet. In his perception, the legend of the faculty started developing with an architect, who was their professor of mathematics, rural design, and later their dean, el Machazo (superman) as he liked to be called, ‘el maestro, el padrino, el amigo de todos nosotros’ (master, godfather, friend of us all). The professional authority of these masculine role models resided in their technical expertise and glorified nicknames.

Both abovementioned professors were professionals of ‘much temperament’, just as the other department heads, whose leadership competed seriously. These personalities marked the road map of the faculty, each one wanted more students, more specific weight, more influence in the destiny of our profession. It was a sane competition but it marked us . . . .’ As a result, the students felt a special loyalty towards the department and the specialization that they chose. In Maruy Tashima’s view, each department head thought he managed a faculty. He acknowledges that they benefited hugely from this competition in the faculty and university more generally. La Molina offered them an exceptional body of professors to which he dedicates his tribute. Professor–student relations were unequivocally hierarchical and prototypically ‘masculine’ (authority, competition, technological, and mathematical competence), but often also warm and friendly.

Engineering masculinities also appear to evolve with the design tools that engineers use. Maruy Tashima’s title features a slide rule and the digital age, showing that the changing design tools of an engineer are markers of professional developments. The author

---

56 Maruy Tashima, “De la Regla de Cálculo a la Era Digital,” 2010, p. 3.
ridicules his pensioner computer clumsiness, stating that he was born under the influence of the slide rule [10]. Professor el Machazo introduced them to the secrets of the slide rule in designing rural structures. The author recounts a related story about another ‘grand teacher’, the head of practice. One very hot afternoon during a practical exam, the head approached him as the class delegate of the fourth-year class. As a senior student, he felt quite sovereign, and he complained that it was impossible to work in this heat. The teacher responded, ‘what an ass . . . ok, come back at night’. At 20.00, the teacher awaited them with a cigarette, a coffee thermos, and the practical exams. The students had to resolve a rectangular structure. With the slide rule, such operations took 8–10 hours. Consequently, they did not finish before sunrise. From this experience, the students learned that they could not play with this teacher, and they respected him for that. This classroom initiation shows how a teacher performed an exemplary role by providing a life lesson and demonstrating the discipline, dedication, technical skill, emotional investment, and respect versus superiors that a young engineer needs to succeed in life and climb the professional ladder [9]. When the author excuses himself for the lapses in his memory, on his ‘hard disk’, he calls himself a model that was reconfigured from a slide rule, a ruler, a drawing table.57 As an engineer, he closely identifies with the design tools of his profession. In his recollection, the slide rule symbolizes the birth of a generation and epitomizes the masculine sense of professional pride, pleasure, and belonging in engineering that they share [5].

The multi-disciplinary perspective of early generations of agronomy students who enrolled at the Faculty of Agricultural Engineering narrowed when new students entered directly through the faculty and further reduced after the military government intervened in the university in 1972.58 The new faculty was less broad and holistic and differentiated itself from the original Faculty of Agronomy with a new specialization that was more technical and mono-disciplinary. The curriculum no longer included much on social and economic sciences, but focused on soil and water, irrigation and drainage channels, infrastructure, rural construction, and mechanization. These topics attracted few female students [5].

The dominant orientation that professors transmitted to their students in agricultural engineering was that ‘you have to be technical, you have to construct irrigation systems, construct canals and for that you need to know mathematics, hydraulics, physics, and all those things’ [5/6]. Students were prepared with professional values and created ‘a moral, disciplined and technical attitude’ [9].59

From the 1960s onwards, different currents emerged within the faculty. Because of our interest in water management, we focus on the influential current of engineers that followed international careers in public irrigation and drainage projects. During the 1960s, many of these started working in large irrigation projects on the Peruvian coast. These special projects built a modern infrastructure that transferred water from the Andes to major coastal irrigation districts, with international financial support and advice [5]. La Molina professors worked there part- or full-time. They brought or recommended students to work on different stages of these projects during their internship or as postgraduate students, and taught them how to execute soil and water management studies and design and construct

58 Mid-1960s social conflicts in the country shook up the university. Students, workers and professors organized continuous strikes until the military government intervened violently. The university dismissed several professors and students of the left and closed the specialization of sociology.
infrastructure. These students could then return to the university to train new generations. In these projects, they learned internationally dominant ideas and techniques for efficient water distribution, productive agriculture, and water user organization.\(^{60}\) The expression ‘molinero jala a molinero’ (molinero pulls molinero) describes how a professor pulls his best students to the project or institution where he is working [10].

From working on irrigation projects, engineering students learned both technical knowledge and working on a team of engineering men.\(^{61}\) Engineering teams worked collectively on projects and other technical activities, with a clear hierarchy and a strong professional and masculine solidarity. Such fieldwork experiences, especially those involving some physical hardship, muddy boots, and alcoholic diffusion, were also professional rites of passage, building mutual respect and camaraderie. Male friendships and loyalties were born that would extend over a lifetime. These collective experiences created an *esprit de corps* and a sense of belonging to a ‘group of good technicians’ working on ‘star’ projects, reinforcing a professional hierarchy and a privileged institutional career, which characterized hegemonic masculinity:

Then I went to work during the last year in an internship in San Lorenzo irrigation project . . . It was a star project at that time for the World Bank, they were in the stage of physical land development, land preparation for agriculture, and there were many professionals who came from La Molina . . . . That group was there. They were agronomists with a specialization in agricultural engineering . . . And we are the first generation, generation 65 of agricultural engineers, which began and finished within the Faculty of Agricultural Engineering.

In this era, an agricultural engineer’s professional ideal was to work for international irrigation and drainage projects that constructed large infrastructure works, often on the Peruvian Coast. Public infrastructural works such as dams and irrigation canals constituted symbols of national development and modernity in the professional mystique of agricultural engineers [4/5]:

They live idealizing the coast to some extent . . . they’re very attached to the north. And in the north, one of the sources of pride was the construction of canals and dams. So they had an ideology that progress translated into works, that’s why they went to Agricultural Engineering, since there you have machines, works of cement, canals, and dams; that is what progress is.

Many of the older generations of engineers share a profound sense of decline in professional prestige, authority, and culture. In their opinion, after the Golden Age of La Molina in the 1960s and 1970s, the social status of studying there declined, and other careers gained more status and income. The following reflection suggests a perceived decline not only in teaching and engineering, but also in emotional connection and ‘great men’ [3]:

Thirty years ago, the agrarian university was something different from what it is today . . . [The difference was]: The quality of the lecturers, the quality of teaching, leadership, the emotion felt by people working there, that’s what’s been lost. It is true that in those times many men appeared in La Molina with strong ideas. Much vision and discipline, good sense [9]. Why was there a special environment? What was special about La Agraria? (in a thoughtful voice)

The decline in professional prestige increased the need to recall heroic examples of engineering masculinity [3].\(^{62}\) We learn this when a respected engineer responds to the second

---

author’s question about a ministry’s organization chart by recalling an experience in his early professional life:

Listen to what I am going to tell you. You are talking to a man of seventy with experience: organization charts do not serve for anything. What is important is the man that you have in every square, if that man does things well, the square works well, if that man is a leader and ensures that everything works fine, the system works fine, but for many organization charts and laws that you have, this does not work. When you go from Piura to San Lorenzo on a highway, presently asphalted, this highway was made by Engineer Abelardo Sanchez, who was project director, and he had a very interesting phrase, saying: ‘You know why they say “la ley” (the law: feminine)? Because if “ley” was masculine, they could not violate her and you have to violate her’ . . . I was working levelling fields. My job was to receive the land from my group and give them to the farmer, designed so that he produces and I had a pool of machines under me . . . , and he arrived one day and told me: ‘Listen, tiger (anonymized molinero nickname), I want you to send me a motor grader to the highway of Sullana.’ I tell him: ‘Don Abelardo I cannot do that, because I have to deliver a few little things.’ He tells me: ‘You cannot do it?’, ‘No, I cannot.’ ‘Either you send me the grader or you are going to have very long holidays.’ The Piura–Tambogrande highway does not exist in any budget of the republic and he did it. Now I ask you: In which program and which square was that?

This statement reveals various overlapping rankings, hierarchies and levels of meaning, regarding gender, age, profession, culture, and bureaucracy, that forge the link between engineering and hegemonic masculinity. First, the quote stems from the authoritative voice of an experienced engineer responding to a younger female social scientist. Second, a male engineer who is a project director and a leader makes the bureaucratic organization that is conceived in masculine terms function well through top-down orders and hierarchical relations. Third, the engineer works with male farmers and producers, implicitly excluding women. Fourth, the physical works he constructs and the machine pool he controls to dominate nature for agricultural purposes visualize his engineering performance, power, and potency. Fifth, a criollo and engineering savviness is needed to get things done around

---

63 All names are anonymized in this quote.
here. Sixth, the statement strongly expresses an ambiguous attitude towards the law, which symbolically invokes the masculine sexual violence rooted in colonial conquest.

The above reflection indicates a situation in the past. The present situation of the university has substantially changed with the arrival of a new generation of students, which are increasingly more balanced in gender terms (Figure 8). There is more consciousness of the gendered nature of natural resources management, the important roles and rights of women in agricultural water management. This is in part because of the work of feminist and emancipation movements and individual women and men, who are changing the everyday life of the university. However, at the same time, engineering masculinities continue to have influence.

Conclusion

This article about gendering in engineering education argued that the formation of agricultural engineers in Peruvian water management forged strong linkages between engineering and masculine identities. We focused specifically on the multiple and recurring cultural performances, which reiterate how a sense of belonging to the professional guild is powerfully gendered and sustained by a masculine norm. These strong linkages in engineering culture started with hazing as a rite of passage. However, they continued in many different ways during class interactions, festive events, fieldwork, and permeated the academic culture and professional lives of engineers.

Engineering and masculine identities repeatedly interlocked through the reiterative performance of songs, drinks, dances, classroom interactions, stories, design instruments, mathematics professors, which show the multiple elements that produce, sustain, but also change engineering masculinities. It is striking that a metaphor of the patriarchal family underlies how people express the intimate professional relations that they sustain over a professional life[2]. Examples include: birth under influence of the sliding rule, the umbilical cord with the Alma Mater, baptism of freshmen, father figures, padrinos, ‘golden weddings’, all suggesting that from baptism to burial the molinero becomes part of a symbolic family.

The education actively produced this masculine sense of professional unity and esprit de corps in which the institute itself, represented by its coat of arms, constituted the main unifying symbol[7]. Moreover, the resulting professional networks, events, and associations later played an important role in access to jobs and other professional opportunities.

Engineering became a distinct route to a particular form of masculinity that promises social mobility, prestige, and privilege – in which manhood is associated with: heterosexuality, mathematical precision, design instruments, technological competence, and practical problem-solving. Consequently, the cultural performance of engineering masculinities produced social, ethnic, and gender differences and professional hierarchies through: hazing, tunas, criollo dancing, aggressive competition in football, drinking, and department relations, superiors discrediting their subordinate’s masculinity, and so forth. These gendered rankings and hierarchies in professional performance interfere and resonate with wider social and cultural hierarchies and gendered institutions in society.

The article has suggested an interpretative framework to explore the cultural and performative repertoires that make the engineering profession ‘masculine’. Through different

---

examples (more than 75) we were able to identify 10 different layers of engineering masculinities that together produce a masculine engineering culture and gendered hierarchies in water management. We intend this interpretative framework to serve as a heuristic device for the further study of engineering masculinities in other places and invite the reader to consider its wider applicability and relevance. The 10 suggested layers are also potential entrance points for recommending changes in engineering education.

Internationalization of the engineering education inspired the foundation of the agricultural school and university and international organizations such as FAO, World Bank, and USAID profoundly influenced the formation of engineering masculinities through finance and expertise. Western knowledge, role models, and curricula often dominated, but the relative weight shifted from Europe to the USA during the twentieth century, in line with global developments and hegemonic models. At the same time, this Peruvian university education, set at a campus on a former hacienda in Lima, also situated engineering masculinities and made gender intersect with national and regional questions of race, ethnicity, class, and a colonial and post-colonial history. Both universalizing and particularizing tendencies thus produced a process of glocalization that influenced engineering masculinities.

Nevertheless, engineering masculinities are not specific to La Molina and their multifaceted character bears significant similarities with other prestigious agricultural and engineering schools around the continent. Take, for example, what Cleaves states on the national agricultural university of Chapingo in Mexico, originally established in 1854 as ENA(V) and later moved to an old hacienda: ‘alumni and professional gatherings served the social purpose of re-encountering each other, reviving and solidifying the relation with the school and knowing about opening job opportunities’ and invariably ‘culminate in the enthusiastic singing of the school song’. The incorporation of students and professors into the everyday life of the institution produced these professional relations. Through such gatherings a *chapinguero* learns to venerate the institutional symbols and tradition of the Alma Mater, its eminent teachers, the work mystique, and the sentiments of belonging to the university, one’s own identity versus that of ‘the other’, for example, women or social scientists. This Mexican engineering culture reverberates with the culture of self-reverence described for the Brazilian College of Agriculture (of the University of São Paulo), also established at an old hacienda, around the same time as La Molina. In all these three national agricultural universities, hazing, and other initiation rituals lay at the roots of an engineering profession that became influential in building national water – and agricultural knowledge infrastructures and modernizing state–society relations during the twentieth century.

**Acknowledgements**

We would like to thank the reviewers and the editor for very helpful comments and Alvar Closas for suggesting Figure 1.

---

66 Cleaves, *Professions*, 1987, p. 73.
Disclosure statement

No potential conflict of interest was reported by the authors.

References


Van Gennep, Arnold. The Rites of Passage. Chicago, IL: Chicago University Press, 1961.


