

# THE MOCHE LIMA BEANS RECORDING SYSTEM, REVISITED

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**Abstract:** One matter that has raised sufficient uncertainties among scholars in the study of the Old Moche culture is a system that comprises patterned Lima beans. The marked beans, plus various associated effigies, appear painted by and large with a mixture of realism and symbolism on the surface of ceramic bottles and jugs, with many of them showing an unparalleled artistry in the great area of the South American subcontinent. A range of accounts has been offered as to what the real meaning of these items is: starting from a recreational and/or a gambling game, to a divination scheme, to amulets, to an application for determining the length and order of funerary rites, to a device close to an accountancy and data storage medium, ending up with an 'ideographic', or even a 'pre-alphabetic' system.

The investigation brings together structural, iconographic and cultural aspects, and indicates that we might be dealing with an original form of mnemotechnology, contrived to solve the problems of medium and long-distance communication among the once thriving Moche principalities. Likewise, by reviewing the literature, by searching for new material, and exploring the structure and combinatory properties of the marked Lima beans, as well as by placing emphasis on joint scholarly efforts, may enhance the studies.

**Key words:** ceramic vessels, communicative system, data storage and transmission, fine-line drawings, iconography, 'messengers', painted/incised Lima beans, patterns, pre-Inca Moche culture, 'ritual runners', tokens

*“Como resultado de la falta de testimonios claros, todas las explicaciones sobre este asunto parecen inútiles; divierten a la curiosidad sin satisfacer a la razón.”* [Due to a lack of clear evidence, all explanations on this issue would seem useless; they entertain the curiosity without satisfying the reason]  
von Hagen (1966: 157).

## INTRODUCTION

The Spanish Jesuit missionary José de Acosta (1940 [1590]) quoted by Rafael Larco Hoyle (1944: 59), Ann P. Rowe & John H. Rowe (1996: 463), and numerous modern authors (Larco Hoyle 1942: 93–94; von Hagen 1966: 157; Donnán 1978: 2; 1992: 11; Zuidema 1991: 151; Bawden 1996: 143; Phipps 1996: 154;

Kaulicke Roermann 2000: 45; Salomon 2004: 23; Brokaw 2005: 572; Pillsbury 2005: 9;<sup>1</sup> Bourget 2006: 1), have drawn attention to the fact that no true writing system, i.e. basically phonetic in content, was found among the pre-Conquest ethnic groups dwelling in what corresponds today to the Peruvian state. The northern coastal valley areas of Perú, witness to the emergence, development and fall of the Moche, Lambayeque (Sicán) and Chimú cultures (see von Hagen 1966: 39; Banks 1980: 8; del Busto Duthurburu 1983: 141; Berezkin 1983: 7; Bawden 1983: 215; Benson 1992: 303–304; Shimada 1994: 1; Donnan 1996: 123, 2005: 128; Cordy-Collins 1996: 223; Moseley 2001: 172; Valle Álvarez 2004: 11; Pillsbury 2005: 11; Kaulicke 2006: 85; Bourget 2006: 4, Castillo Butters & Uceda Castillo 2008: 707–708), are geographically part of this defined territory.

The salvage of a good number of earthenware vessels – mainly shaped in a distinctive globular form – in the course of archaeological diggings, or as a result of chaotic looting across sites and acquisitions by different private collectors or museums of the world, has provided scholarship among other things, with examples of patterned drawings and incisions. Without doubt, undecorated and plain vessels exist and must have existed (Donnan 1992: 11); however, since they are short of elements that constitute evidence for our study, they will be discounted. At first glance, the illustrated vessels of the Moche appear to have had some artistic function, related to a commemorative and display function (see Banks 1980: 51). Yet, the fact that they might have been in some way utilitarian is not entirely ruled out. Under specific circumstances arranged by elite groups, i.e. feasting and commensal tournaments at ceremonial centers, they possibly served as containers to hold water or *chicha* (see, e.g., Donnan & McClelland 1999: 19; Swenson 2006: 126, 128, 132, 134), a popular beverage made of maize, somewhat akin to the ancient Greek *hydrias* (water jars) and *kantharos* (drinking pots/cups), or in another instance, to the Græco-Roman amphorae regularly and mostly filled with wine, olive oil, water, or honey. Banks (1980: 51) in his turn, plainly dispels claims of similar nature by stating that “*for ordinary purposes gourds served as drinking vessels*” among the Moche population.<sup>2</sup> In some of the fine quality pottery found – Larco Hoyle (1942: 95) gives notice of more than four hundred pieces of ceramics – are shown chromatic (see Donnan 1978: 10), human or humanized figures and kidney-shaped Lima beans, anthropomorphous and not, of different sizes. The reassembling and the further study of the preserved material give us also an idea that such rendering was not done for mere ornamental or amusement purposes (see Larco Hoyle 1942), though a degree of ritualistic function should also be taken into account. Larco Hoyle (1944: 57; 1966a: 98; 2001 [1938]: 145–169), driven to some extent by a desire to endow the ancient Peruvians with a graphic code

“...por rudimentaria que fuera...” [however rudimentary it was] (Larco Hoyle 2001 [1938]: 145; see also Ibarra Grasso 1953; Naville 1966: 43–48; de la Jara 1970: 27–35; 1975: 41–71; Barthel 1976: 27–55; Totten 1985: 63–66; Prada Ramirez 1994; Rowe & Rowe 1996: 463; Arellano 1999; Kaulicke Roermann 2000: 44–47), was the first to suggest “...un sistema ideográfico de escritura...” [an ideographic writing system] underlying the patterns in question. Since the Moche developed a complex, formidable civilization over a time-span of nearly 900 years [*ca.* 150–100 BC – *ca.* 800–850 AD], – if one cares to employ the multiple reference sources, the time variation comprises periods between 600 and 800 years – he regarded as natural the fact that they possessed a singular system which “... reflected and transmitted the human thought” (1944: 57), probably by recording economic transactions, lists of commodities and other key social, religious, military and/or natural acts. Larco Hoyle (1944: 59–60) approaches the system in a comparative manner while finding “...analogías valiosas...” [...valuable analogies...] between Maya glyphs and the Moche painted beans, which may be helpful in studying the relations and the origins of the cultures in the pre-Inca South America. Without denying the significance and the interest the notion raises by itself, caution is urged at this point, most of all when two long-ago different communicative systems (graphic and symbolic) are compared on the basis of external analogies. In addition, Mesoamerican Maya glyphs have been shown to enclose a strong content of speech (see Coe 1992; Houston *et al.* 2001), while the combinatorial mechanisms of the Moche Lima beans’ system are still unknown, and their precise undertones are with any luck speculated, but not yet established. Eventually, despite antedating the Spanish discovery of 1492 and succeeding colonization, I should say that enforcing resemblances in terms of common origin and further similar developments between Maya glyphs – or other scripts – and the Moche mottled beans in order to make any compelling case, will not proceed. The stance in itself is explicable given the aspirations to grant *graphic status* to groupings of symbols or imagery that appears incised, engraved, stamped or painted in various media, on nationalistic, political, private, or on other grounds. The understanding here is that the professional literature at hand is not abundant, hence without forwarding substantial proof – based on original research – about such status, the approach may lead authors to a pitfall that needs to be avoided.

The aim of this paper is to review the existing opinions in the field and re-target the marked Lima beans under the focus of a possible structural approach, though without dismissing the classical iconographic approach, whose value has been every so often stressed (see Larco Hoyle 1942; Barthel 1976: 28;<sup>3</sup> Donnan 1978, 1992, 1996; Shimada 1994: 22–27; Castillo Butters 2000: 5–6; Kaulicke 2006: 87; Bourget 2006: 2–64; McClelland & McClelland *et al.*

2007). Likewise, it will be also important to look at the parallel view that generally, non-alphabetic, and in particular, the mnemonic-oriented or the accountancy systems are not crude doodling or primitive schemes in the evolutionary scale of scripts (see Imbelloni 1942: 216–217; Barthel 1976; Sampson 1985: 28–39, 46–61; Gaur 1987: 25–26; Schmandt-Besserat 1994; Boltz 1994: 22–23; Mignolo 1994: 293–313; Bouissac 1994: 362–365; Brown 1998: 11–28; Arellano 1999; Arellano Hoffmann & Schmidt 2002: 14; Houston 2004: 282; Corliss 2005: 159–166; Damerow 2006). They appear to be a characteristic and resourceful offshoot, unexplored in depth (see Brokaw 2005: 573), and not always and necessarily related to the next stage of progress in universal scribal practices. Under this perspective, the research is able to bring to light the examined system as an efficient “*information exchange system*” (Kulmar 2008), able to work out administrative and non-administrative problems, within the framework of a dynamic pre-industrial society as the Old Moche polities were.

## CURRENT DATA AND RELATED ISSUES

The extant corpora of the marked and/or incised beans appear mainly on earthenware or baked clay containers intended for storage, serving, or funerary offerings, and in a similar manner in textiles (Larco Hoyle 1942, 1944), in which Moche artists had reached mastery. For certain, these data have been retrieved in the course of the years as chance would have it. The painted and designed pottery is in part a direct and expressive testimony of the life and

history of the Moche, and it has been – at length or not – commented upon in several sources through the years (Larco Hoyle 1942: 94; 1944: 60; 1966a: 94–96; Sawyer 1966; von Hagen 1966: 85–91; the Queens Museum Exhibition 1975:



**Figure 1.** A Moche stirrup spout bottle with series of beans displaying different patterns.

*The state of preservation and the quality lead us to believe that the object was intended for offering purposes and not for domestic use. The observation, plausible as it seems, requires more comprehensive evidence in order to be confirmed or otherwise falsified, see Berniere’s (2010) discussion. The photo of the artifact (catalogued ML002479), is reprinted with the kind permission of Museo Larco, Lima, Perú, specifically from Arql. Isabel Collazos Ticona.*

2–3; Barthel 1976: 27–28; Donnan 1978: 10; 1992: 11,<sup>4</sup> 69; 1996: 126–141; 2005: 127–139; Banks 1980; Berezkin 1983; del Busto Duthurburu 1983: 152–166; Bawden 1983: 281–283; Stierlin 1984: 98–102; Gaur 1987: 18–19; Benson 1992: 309–314; Shimada 1994: 16–20; Berrin 1997; Stone-Miller 2002 [1995]: 103–116; Pillsbury 2005: 9,<sup>5</sup> McClelland & McClelland *et al.* 2007; Kulmar 2008: 137, Bernier 2010). Indeed, upon analysis, the material’s general appearance is sufficiently clear.

The apparent reniform – kidney-like – and clustered pictographs (cf. Larco Hoyle 1942: 100),<sup>6</sup> though not geometrically simple, do not offer the intricacy of other established or unknown scripts where at times there is difficulty in “...*distinguishing “noise” from meaningful data, particularly when the object is broken or degraded*” (Hunt & Lundberg *et al.* 2001). The terms ‘*marked beans*’, ‘*mottled beans*’, ‘*painted beans*’ and ‘*incised beans*’ will be alternated in this essay. However, they basically point at the same event: Lima beans potentially used by the Moche around pre-Inca northern coastal Peru as carriers of meaningful information, whose surface was fashioned in a rich variety of patterns. As for the words ‘*text/s*’, ‘*inscription/s*’, ‘*scribe*’, and ‘*grammar*’, from this point onwards they will be let alone since they take as fact encoded speech, epigraphy and other script-related activities. For lack of a better method, the examination was made by eye in any available sample of given length. Vase paintings, or better said, the recovered images have been compared to ensure consistency and objectivity in the study, since the drawings are not identical due to the tridimensional nature of the artifacts, i.e. ceramics, and also due to the individual or stylistic differences of the authors (see, e.g., Bouissac 1994: 357 on the need of “*a closer examination of the data on the site rather than on drawings made by a biased researcher...*”). Thus, the current analysis refers to reproduced images or fine-line re-drawings of ceramic pots and bottles, published up to now by individuals or institutions, actually all of them eligible sources (see Imbelloni 1942: 225; Larco Hoyle 1942: 102–103; 2001 [1938]: 147–149, 151–152, 155–158, 160–161, 164–165; von Hagen 1966: 153, 156, 158; de la Jara 1970: 33; Donnan 1978: 74–76; 1996: 141; Banks 1980: 27; Berezkin 1983: 13, 82; del Busto Duthurburu 1983: 151–156; Stierlin 1984: 91; Gaur 1987: 19; Benson 1992: 313; Berrin 1997: 142–144; Shimada 1994: 18; Moseley 2001: 189; Klauer 2004; Bourget 2006: 36–37; McClelland & McClelland *et al.* 2007: 76–85, 94, 131, 176; Museo Larco 2010; The Metropolitan Museum of Art 2010). The importance of the fine-line paintings in studying the Moche culture has been highlighted by Christopher Donnan (1996: 124) and Michael E. Moseley (2001: 184), “*Because fine-line paintings can portray many figures interacting, they provide our fullest record of iconographic characters and their behavior.*” At this juncture it should be stated that the accuracy of observations and conclu-

sions is liable to such conditions: assuming that ancient Moche artists – if not accurate and matter-of-fact in their representations – were evocative of a more direct reality (cf. Kubler 1961: 15; Bawden 1983: 232–233), and that the modern duplications and photographs are bound as much as possible to the original source. The reliability of Moche art depictions regarding historical life phenomena has been critically discussed (cf. Donnan 1978: 3; 1992: 69;<sup>7</sup> 1996: 124; Donnan & Castillo 1992; Benson 1992: 303; Shimada 1994: 18; Verano & Anderson *et al.* 2000: 177; Popson 2002; Stone-Miller 2002 [1995]: 87, 107–109; Pillsbury 2005: 16; Verano 2005: 91; Bourget 2006: 10, 18; Castillo Butters & Uceda Castillo 2008: 722). The perspective of this survey would have been more complete if we had access to all the visual data, static line drawings of the Lima beans or of the animated ‘runners’ and accompanying ‘beans’ (cf. the Queens Museum Exhibition 1975), which would reasonably help in capturing more variables and provide a training scenario. Any command in writing or notation systems, as good as it is, cannot compensate for the lack of diachronic and diatopic corpora (see Larco Hoyle 1942: 98 on “...*la falta de documentación indispensable*” [the lack of essential documentation] and de la Jara 1970: 33, “*Las dificultades son grandes debido a la pérdida masiva de nuestros textos*” [The difficulties are great due to the massive loss of our texts]). The whole corpus is difficult to access for a number of reasons: (a) physically out-of-my-reach, (b) yet unfound or simply unrecognizable potsherds, (c) or even worse, totally abraded, shattered or lost objects. Accordingly, they will impact on the interpretation of the data themselves, owing to distortion and sampling errors (cf. Donnan 1978: 9;<sup>8</sup> Good & Hardin 2003: 6–7; Myatt 2007: 73<sup>9</sup>). Likewise, apart from the evidence found in ceramics shape, design and representation patterns, techniques of molding, stamping, modeling, firing and baking (cf. Banks 1980: 14–21; Bawden 1983: 231–233; Donnan 1992: 13–23, 60–69; Shimada 1994: 20–22), there is no exact chronology, i.e. corresponding historical stages as to when the genuine Lima beans (*Phaseolus lunatus*) were used throughout the Moche sphere of activities and influence. This fact is noticeable because, first, they were organic matter, hence prone to biological decay, and the archaeological context in which many of the vessels and other artifacts were recovered, is more often than not undocumented (see Banks 1980; Lechtman 1996b: 33; Bourget 2006: 49–50; McClelland & McClelland *et al.* 2007). By chance, a few Lima beans may appear in some past Moche precinct, either in a ritual enclosure, a mortuary site, in residential architecture, or in an ancient domestic refuse – beyond doubt valuable evidence – but then again they may be plainly carbonized, with their designs, if not definitely, possibly irrecoverable.

Almost any researcher studying this regular Moche practice would be inclined to think that the system, apart from being ingenious, was quite conven-

ient, both in terms of media chosen and equipment used for incision and transport (see Gentile 2008: 1). The raw material was Lima beans, a familiar agricultural produce used since the pre-historic times in Peru together with ordinary or kidney beans (*Phaseolus vulgaris*), and chili peppers (*Capsicum sp.*), or *ajís* (see Fung Pineda 1979: 19; Curatola Petrocchi 2000: 19). Such a piece of evidence, in other terms, may be translatable as a cheap, prolific crop that even when attacked by disease and insects, was still naturally and successfully reproduced, and easily manageable (see Larco Hoyle 1942: 94), “Material empleado – *Debemos dejar establecido que no se trata de frijoles o porotos ni de habas, sino de pallares (Phaseolus lunatus), que ofrecen una superficie plana y lisa, apropiada para el dibujo y la incisión.*” [Employed material – it should be established that we are not dealing with beans or *porotos* (a Quechua term for beans, my note) neither with broad beans, but rather with Lima beans (*Phaseolus lunatus*) offering a flat and smooth surface, appropriate for drawing and incision]. The vessels’ pictorial strips, and archaeological findings alike, show us that storage and transport were done in small, handy leather pouches apparently made from the tanned hide of llamas (cf. von Hagen 1966: 155; Bankes 1977: 83; Gaur 1987: 18; Larco Hoyle 2001 [1938]: 174–175, Figures No. 196a & 196b; Regal 2002: 64), another abundant item in daily Moche economy (cf. von Hagen 1966: 45). Short stick-shaped objects, similar to styluses – other scholars may see ‘darts’ or ‘spatulas’ instead – appear in many drawings indicating their possible function: painting, and most likely incision (see McClelland & McClelland *et al.* 2007: 76–81). With regard to these objects, Regal (2002: 64) quoting Larco Hoyle (2001 [1938]) points at “...*un pedazo agudo de cuarzo...*” [...a sharp piece of quartz...], found in the leather pouches during excavations, presumably employed to mark the surface of the Lima beans. It might be argued as well at this point that when paint was applied on *pallares*, it could have regularly been outlined by incising (see, e.g., the Queens Museum Exhibition 1975). Thus, the suitability of the above listed elements, in conjunction with Moche experts’ inventiveness and the assumed communal infra-structure, i.e. “*civic-ceremonial centers*” extended overland such as in Mocollope, El Brujo, Moche, Galindo, Cerro Mayal, Pacatnamú, Pampa Grande, etc., where the existence of craft specialists is occasionally, or extensively evidenced (see Bawden 1983: 211–235; Stone-Miller 2002 [1995]: 106;<sup>10</sup> Pillsbury & Leonard 2004: 282), roads and footpaths in widespread use by couriers, dignitaries and commoners since antiquity (see Larco Hoyle 1966b: 102; Bankes 1977: 85; Topic & Topic 1983: 237–259; Benson 1992: 309; Davies 1995: 140; Valle Álvarez 2004: 43) and assisting relay stations, seem to have been a catalyst for interaction, as well as a guarantor of an operational communicative system over the centuries. Interestingly, similar patterns have been attributed to the early postal

systems (see Wikipedia 2008), where messages or packages were dispatched by using mounted and/or walking or running messengers, as well as facilities that combined postal routes, roadside hostel services and storage space.

### **Theoretical considerations, description and analysis**

In the biggest Lima bean samples so far, a number of alignments appear to have symmetrical or asymmetric geometrical patterns, e.g. small (concentric or not) circles, half circles, grouped dots, curved and undulated lines, straight, broken and/or oblique lines, striped and elliptic areas, and minor zigzags; other beans have partially filled or ‘shaded’/black ‘inked’ areas or clear areas (see also Larco Hoyle 1942: 102–103; 1944: 61; Bankes 1977: 83; Gaur 1987: 18; Berrin 1997: 143). All these fixed, multiple structures apparently without much visual appeal, are a rough, if not an explicit indicator of an organized system concerned with intelligible dealings, very prone to a communicative type. Sixty-eight years ago, Larco Hoyle (1942: 103) identified “...*más de 300 tipos diferentes de pallares, en las pictografías de vasos mochicas*” [...more than 300 different types of Lima beans in the pictography of Mochica vases]. If the above statement is completely or in part correct, it is not difficult to conclude that the inventory of tokens must have been large in their own day, proper of a pictorial or a logographic system. As a rule, the number of signs is helpful in determining the type of writing system we are dealing with (see Robinson 2002: 41–42), though any matching here refers to graphical, and not to pre-linguistic signs, as the Moche tokens most probably are.

On the other hand, all these incorporated patterns in the ‘bean writing’ did not seem to be have been generated unexpectedly, or on a whim. It certainly takes time and skill to operate a communicative system (iconic, symbolic, mixed, largely phonetic, or phonetic) with copious motifs and nuances, meaning, a tradition is required while engaging an audience found across the extension of a large confederacy, as Moche sedentary polities appear to have been. As with all seminal proposals dealing with scripts and other varied recording codes, Larco Hoyle’s (2001 [1938]) (1942) (1944) claim was not initially endorsed. In the course of time his theory has been surveyed, being sometimes partially favored, and other times mildly rejected, or severely discarded by other investigators (see Barthel 1976: 27). For instance, Cordy-Collins (1980: 81) calls “...*unfortunate...*” the interpretation of Banks (1980: 26–27) regarding the bags known to have held beans, and also censures Larco Hoyle on the idea that certain incised symbols “... *constituted written messages...*” Here I consider that we need to be very cautious and comment that there is a misinterpreta-

tion lying on the perspective and on the used definitions. In spite of Larco Hoyle's (2001 [1938]: 145) enthusiasm to see true graphism in ancient Peru (see in particular de la Jara 1967, 1970), he did not claim a writing system after all (see Sampson 1985: 26–45; Diringer 1990: 53–78; Boltz 1994: 16–22; Mignolo 1994: 303–307; Bouissac 1994: 356–362; Olivier & Godart *et al.* 1996: 12; Sproat 2000: 23, with regard to terminology and other theoretical conventions) in the sense that the patterns were single or multiple graphemes coding sounds of the Old Moche language like in an alphabetic or even pre-alphabetic writing system, as Cordy Collins (1980: 81) might have recognized. All he suggested was that Moche culture was in possession of “*an ideographic writing system,*” which by today's terms would be a clean logographic, or a pictographic system. This “*ideographic system*” was formed by ‘*ideograms*’, in all probability understood by Larco Hoyle as abstract symbols representing “*...a meaning rather than a sound*” (Nakanishi 1988:115), and able to transmit implicit information from the first link of the standard institution, the encoders, via the messengers, liaison to the penultimate link, the decoders, in charge of releasing the statistics to the right people, who in turn had to apply it pertinently. Nevertheless, insofar as the observations go, Larco Hoyle (1942, 1944, 2001 [1938]) did not have the training of a linguist, or that of a semiotician or script analyst. Consequently, he did not specify in his work if the so-called ‘ideograms’ a.k.a. tokens, were motivated after real life objects or if they were stylized and abstracted in their shapes (cf. Boltz 1994: 22). Likewise, neither did Larco Hoyle, to my knowledge, devise an inventory of tokens nor carry out an exhaustive contextual analysis on the matter, nor classify the inventory in ‘*primary*’ tokens (those favored by their high-frequency use), ‘*secondary*’ tokens (those less frequently used), ‘*singletons*’ (tokens with only one occurrence throughout the extant samples), or specify if purely decorative patterns were deliberately involved. In a theoretical and a practical level, I see no rarity, or an “*...outdated interpretation*” (Cordy-Collins 1980: 81) by Banks (1977: 83; 1980), or by Larco Hoyle (1942, 1944, 2001 [1938]) at this point, since artistic expressions and/or devices with mnemonic and visual-semantic features have been admittedly acknowledged in various cultures and time-periods of humankind (see Naville 1966: 43; Barthel 1976: 27–29; Sampson 1985: 28–29; Gaur 1987: 18–32; Diringer 1990: 14–15; Vidal *et al.* 1992; Schmandt-Besserat 1994; Boone & Mignolo 1994; Boltz 1994; Sassoon & Gaur 1997; Fischer 1997: 167–168; Arellano 1999: 215–262; Robinson 2007). Any legitimate critique needs to bring legitimate evidence to back it up, which in this case (see Cordy-Collins 1980) is underprovided, or missing. As a result, I see no grave errors (apart from those, perhaps linked with the denominational nature of the system) being perpetuated by the supporters of Larco Hoyle's hypothesis. For that matter, any tur-

bulent debate based on difference of opinions, may serve as a reminder that no conclusions are ultimate, until more evidence is presented and more reliable studies are made. Recently discovered ceramic material, unavailable at the time of Vivante (1941), Cordy-Collins (1980), del Busto Duthurburu (1983), indicates that Lima beans iconography was meant for a larger purpose, and not at random or nonsensically described in these portable objects. Painted elements and scenes, e.g. structured ‘beans’, ‘messengers’, or ritual ‘runners’, leather pouches, sticks, male ‘foxes’, etc., give the impression to have been often concomitantly placed in order to convey a symbolic, if not a close reflection of the long-ago existing reality. The operation was conceived rather under a specific ideological and symbolic prism to serve in particular the interests of the ruling class, i.e. high sovereigns and priesthood, and the interests of the Moche society as a whole for information and knowledge exchange. Likewise, while concurring with Larco Hoyle (1942: 102), I doubt that they were part of an Old Moche game, acted upon reed mats, or otherwise some sort of ‘board’, or ‘table’ game performed during leisure time, like today’s backgammon, or dominoes (see, e.g., Vivante 1941; Ibarra Grasso 1953: 50; Barthel 1976: 27–28;<sup>11</sup> del Busto Duthurburu 1983: 149;<sup>12</sup> Depaulis 1998: 38–39). A reason to say so is that Lima, or Peruvian butterbeans appear to have enjoyed a status, not only as a cultivated plant supplying nourishment (see Larco Hoyle 1966b: 102; Donnan 1996: 123; Berrin 1997: 142; Moseley 2001:31), but also an emblematic one. Aside from naturalistic illustrations of Lima beans found here and there in isolated samples, we also see unusual warriors drawn in the shape of footed and armed Lima beans, together with *tumi*, i.e. trapezoidal knives, war-clubs, shields, spears, javelin-throwers, and some nose ornaments (cf. von Hagen 1966: 156, 158; Donnan 1978: 44–45; 1996: 141). Likewise, Moche ‘aristocrats’ are spotted in warriors elaborate costumes and characteristic headdresses, or



**Figure 2.** The illustration retrieved from Jackson (2008: 147; Figure 7.8., drawing by Donna McClelland) shows a confrontation of ‘bean’ and ‘deer’ warriors.

inside Lima bean shells like some hybrid human-crustaceans, avidly hunting deer, a predilection among the elite (see, e.g., von Hagen 1966: 86; Banks 1980: 38–39; del Busto Duthurburu 1983: 149; Shimada 1994: 100–101; Moseley 2001: 98; Stone-Miller 2002 [1995]: 109). Depictions of cervidae in the rock art of Peru dating back thousands of years as part of a hunting theme (see Guffroy 2003: 221), evidences more the permanence of this practice among the inhabitants of the discussed area.

Sheer aesthetic impulses or mere gastronomic taste for beans (while modifying these objects or while painting Lima bean-shaped entities on the surface of clay containers), cannot fully explain the layout and patterning.<sup>13</sup> In fact, I hesitate to accept that the ceramic environment was solely used for artistic expressions, with the authors competing in a display of extravaganza, or in applying their imagination without restraints. K. Berrin's (1997: 144) comments regarding photo 82 offer quite a number of options as to its ingrained semantics "*Each figure holds a bundle of sticks. Various marked large beans, usually grouped, float between the paired figures, who often seem to be juggling them. It looks like a game, but serious matters are surely implied. Rafael Larco Hoyle and others, following him, have argued that beans had a form of writing incised on them. The designs on the beans in a single context are often different. Divination may be under way here. The number of beans may relate to crop prediction or to astronomical calculation.*" Earlier, E. P. Benson (1992: 309) had revealed a similar concern, "*Some writers think that the designs on beans shown on pottery were a kind of script, possibly for auguries.*" A different interpretation is offered by A. Jiménez Borja (1985: 50–51) as to the purpose of 'beans' and 'sticks' that appear recurrently in the pictorial scenes: to fix on and regulate the length and structure of funerary services in the Moche society. The approaches to the comprehension of the discussed phenomenon are as *interesting* as they are largely *non-falsifiable*, or even *impromptu*. In any event, one intersection in all the surmises (be they anecdotal or scientific), seems to be their notational or statistical nature. Such premise may be used to better evaluate the system and in consequence, to objectively explain the function of the Lima beans markings and their context of use.

In Fig. 3, the anthropomorphous Lima bean representation seems to combine attributes of the military and the encoding/decoding specialists. The mace, the shield, the javelins, and the trapezoidal knife on one side, and the four 'incising' sticks and Lima beans on the other, give some credibility to the claim. The true meaning of this symbolic drawing – if it stands for a special caste of 'bean' warriors up to combat, up to manipulating and passing on information – might elude us for now. Nevertheless, the recurring figures of 'beans' and the



**Figure 3.** Anthropomorphic Lima bean representation.

assortment of human-like ‘legumes’ on the ceramics, demonstrate that the Moche were overly concerned with their significance and role. The drawing is based on von Hagen (1966).

Then again, if 300 is a fairly acceptable figure when Larco Hoyle (1942: 103) made the description, the amount of single or interlocked patterns, although unregistered to date, must have increased with the discovery of additional material in the following years. Therefore, one can imagine the possibility of variation and systematization that this design might produce. The capacity for information encryption apparently was enormous, and the figure of the encoder-decoder is not absent from pottery, supporting the discussed event.

McClelland & McClelland *et al.* (2007: 76–81) present both bichrome and polychrome reproductions of the Bean and Stick Ceremony based on vases excavated at San José de Moro (Jequetepeque lower river valley), where two central symbolic figures, code-named “Wrinkle Face” and “Iguana,” are engaged in an activity that involves ‘incising sticks’ and ‘beans.’ Technically, the general or particular information (numerical and/or plausibly non-numerical) intended to be transmitted, was likely used for tracking wide-ranging lists of supplies – formatted almost certainly in local designations of measures of capacity and



**Figure 4.** An anthropomorphized Lima bean is portrayed in this bottle-shaped fine-ware deposited at Museo Larco, Lima, Perú (catalogue number ML002445). Photo reprinted with the kind permission of Museo Larco, Lima, Perú, specifically from Arql. Isabel Collazos Ticona.

*Figure 1*



*Figure 4*



*Figure 8a*



*Figure 8b*



area –,<sup>14</sup> economic deals/contracts and agricultural reports, intervening civil and religious events, or, minutes on emergency situations, natural disasters, enemy troop movements and related logistics. Most plausibly, in view of the monumental work carried on by the Moche communities – major temples, irrigation canals, roadwork –, such logistics would have required a permanent use of data. In other cases, astronomical, astrological and meteorological observations may have been filed (cf. Benson 1992: 311–312), though this should be taken with some reservation since the argument seems to customarily relate to other identified, or to not-so-well understood and unidentified sign systems detected in other areas of the globe (see Lounsbury 1989: 214; Diringer 1990: 118–119; Bauer & Dearborn 1995; Aveni 2001; Magli 2005: 22–32; Corliss 2005). K. Berrin (1997: 142; see also Larco Hoyle’s 2001 [1938]: 164 figure 186), in photo No. 81 in regard to a ceramic vessel with bean markings, suggested that “*One might also wonder if the placement of the beans on this bottle composed a counting device.*” Through human history, many cultures are known to have employed visible systems and methods computing and registering discrete, or grouped items, essentially “...without the intermediary of language” (Gaur 1987: 18). Examples would include sundry counting and genealogical knot devices in the Americas, Asia and Oceania; the financial tallies of England and China; arrangements if the form of knots in rope and cords in Incan Peru; some brief record keeping in archaic Sumer; the message sticks of the Australian aborigines; abacuses, first of all Babylonian, still in use in the Middle East, China and Japan (see Day 1967; Bankes 1977: 85; Ascher 1983; Sampson 1985: 47; Gaur 1987: 18; Laurencich Minelli 1996; Fischer 1997: 167–168; Arellano 1999: 215–262; Quilter & Urton 2002; Salomon 2004; Robinson 2007: 34–37; Urton & Brezine 2007: 357–384). Being categorically negative as to the abilities of Old Moche priests, the epoch’s intellectuals, to have engineered and applied an information-sharing system, similar and viable in nature to the listed applications, is not prone to an epitome of truth.

Analytical intelligence is not an exclusive trait of modern-day sages, or of other recent human beings. In this context, it would not be a bombshell to say that some conceptual or abstract data were equally encoded in the surface of these legumes (*Fabaceae*). Yet, the quantity of such semantic data is not known or is hard to assess, as the default properties of the system remain secreted, hence assumptions would entail susceptibility to error. In the same way, hypothesizing *major*, or *sporadic* phonetic encryption in certain or all the indications (see de la Jara 1967: 246–247) would mean crossing the red line, if the claim is not validated by direct and incontestable evidence. This would consist of multiple and detailed comparisons between the syntax of the ancient Muchic language, or “...the language of *Yunca-Indians*...” (cf. del Busto Duthurburu

1983: 144–145; Kulmar 1999: 57, and Jackson 2008: 116–122) and the structures obtainable through combined Lima beans patterns, a task deemed so far confidently unreal, or at worse, vain and pretentious. Before attending more this hypothesis, it must be mentioned that unknown systems or artifacts prompt several interpretations each, thus information may be imagined where it does not exist in the first place (cf. Corliss 2005: 115). Whatever the case may be, a goal to be followed is looking into systematic regularities that may emerge in differing proportions, since they are fundamental to interpreting the data and a reasonable way to extract information of value. Therefore, we may rightly ask, (a) can we literally interpret the drawings, i.e. the data at hand, containing discrete beans, sequentially related beans or contoured figures that evoke a strip cartoon? (b) is the structural and statistical approach applicable here, as with other unidentified codes, writing or symbolic systems: Voynich MS, *rongo-rongo* of Easter Island, Linear A, Indus Valley symbols, Cretan hieroglyphics, Phaistos disc signs, rock art motifs (see, e.g., Poundstone 1988; Guy 1991; Pozdniakov 1996; Sproat 2003; Duhoux 1989; Godart & Olivier 1976–1985; Parpola 1994; Olivier 1989; Jackson 1999: 19–30; Bouissac 1994: 356–358)? It is important to realize that samples, or better said, the remaining subsets of a once considerable corpus, appear in isolation (within the physical dimensions of a ceramic vessel), with a restricted number of arrangements. As a result, pattern detection is not that complicated *per se*. At a cursory look, I do not see evidence of affixed compounds, or ‘complex graphemes’, orthographically speaking, subject to constituents’ recognition, so the notions of distinctivity and decomposition (see Dahl 2005: 15–16; Mačutek 2008) are to no avail here. Then again, the notion that the applied designs, alias tokens, are inspired by real objects used in historical times by Moche, or if they are conventionalized by agreement, will remain guesswork for the moment. Moreover, any similar historical antecedent in other cultures should be treated with discretion.



Figure 5a. A set of realigned mottled Lima beans.

Fig. 5a presents a set of realigned mottled Lima beans found in a single vessel, cf. Larco Hoyle (1942: 102). In Fig. 5b, checking Fig. No. 174 in Larco Hoyle (2001 [1938]: 151), we see an artificially arranged and condensed sample of

*Figure 13*



*Figure 14*



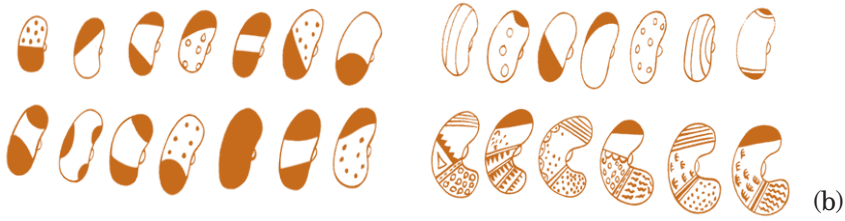


Figure 5b. Artificially arranged and condensed sample of marked Lima beans.

marked Lima beans. While the first row and the first section of the second row are simply patterned, the second section of the last row benefits from mixed patterns, arguably operative of numerical and other semantic data. The Peruvian researcher de la Jara (1967: 246; 1970: 32–33) proposed a classification involving two systems in respect to Moche *pallares*, “*Mochica A*” and “*Mochica B*,” where tag “B” was assigned to revamped tokens with an advanced degree of complexity.

Given that the illustrations are limited and arbitrarily set, we have to think again of the original size of the designed system and occurring permutations back in the times of Moche culture’s heyday. To this aim, points to be considered are, (a) were there fixed correlations between two specific ‘tokens’ (a ‘token’ defined as a bean distinctively patterned in the corpus and sharing some combinatory rules, see esp. Bouissac 1994: 356)?, or (b) if a token could be recombined or interlocked with others in a limited set, or (c) if recombination was in effect boundless, or (d) if other estimated short-lived variations and accidental flawed designs were included. Due to common features, analogies with other memory aids are understandable and may be anticipated (cf. Manansala 2006). However, to remove any possible and escalating confusion, above all when one thinks of the interposition of time and space amid these aids, they will be disqualified.

In Fig. 6, Moche bean-tokens are realigned for a better perception. The permutations obtained just from this arbitrary sample must have been considerable, if they were alternatively and progressively disposed in a dyadic, triadic, and further multipartite fashion. The hypothetical stored information is



Figure 6. Moche bean-tokens realigned.

thought to have been proportional to such permutations. The image is retrieved from Larco Hoyle (1944: Lámina I), under the caption “*Ideogramas Mochicas*” [Moche ideograms].

I checked also in the clusters for iterations, suggestive of a sequential and a working order, and yet there are repetitive ‘modeled’ Lima beans that seem to appear more often than the others, and in all probability pointing at non-linguistic structures, while implausibly conceived to strictly gratify the human sense of sight. Hereafter, the non-linguistic premise would require more questioning and reflections on any further examination and decisions. These frequencies, scant as they are, would still seem to insinuate a basic, required role in the ongoing Moche mathematical and statistical operations. In another instance though disjointed from, and subjective to our context – the situation would remind us of a linguistic communicative system where the notion of frequency of use based on practical and grammatical criteria, would dictate the choice of lexical units. By this means, in a non-specialized good-sized English book, the rate of recurrence of nouns like ‘*harpsichord*’, ‘*disrespectfulness*’, and ‘*asymmetry*’, or the adjective ‘*endoparasitic*’, is likely to be less than that of the adjective ‘*true*’ and the noun ‘*apple*’, in their turn, less common than the preposition ‘*in*’, or in a final instance, less common than the ubiquitous definite article ‘*the*.’ If a decimal, or a non-decimal system was implicated in ‘ciph-ering’ the quantities this must be open to discussion, in hopes of a better collection of evidence. The Lima beans were a human-made system, so there surely must have been a set of conventions or rules, consensually accorded and projected for use and associated problem-solving. On condition that the consensus was ordered by a higher body or reached at a personal-local-regional level (from then on a degree of variation and restoration in the system can be inferred), this is another impending matter, too. However, in the sense and to the extent we understand the present vessel drawings, I am disposed to say that combinatorial properties in these illustrations or sequences are not known. For the time being, the careful acquisition and exposition of the data seem a better option than ‘reading’, or ‘interpreting’ them.

Sample (a)



**Figure 7a.** Lima beans appearing in a Moche vessel as per Larco Hoyle (1942: 103).

In Fig. 7a, a set of Lima beans appearing in a Moche vessel as per Larco Hoyle (1942: 103), displays varying patterns, some of them remarkably different from the others. The selection has been horizontally rearranged for better recognition and display, in contrast to the original source.

Sample (b)



Figure 7b. Another set of Lima beans in a different Moche vessel, see Larco Hoyle (1942: 103).

Fig. 7b presents another set of Lima beans appearing in a different Moche vessel as indicated by Larco Hoyle (1942: 103). The two samples, extracted from two different environments and allegedly encoding dissimilar information, show some interesting features. Tokens ‘1a’ and ‘1b’ belonging to different samples, share a reversed fashion, the painted area plus the adjacent striped area. The design of ‘1V?’ parallels the previous tokens pointing at a ‘variant’, or at a different semantic event. In sample (a), tokens labeled ‘2a’, if not variant forms, are the same, therefore denoting repetition. Tokens ‘3b’ also appear identical. Tokens ‘4b’ are depicted in a mirror-like fashion, say, like /d-b/ in “Brad-bury,” and may reflect the same quality noted in tokens ‘2a.’ As expressed by de la Jara (1967: 246–247), the mirror images may answer for the concept of “duality” or “dualistic oppositions”, known to have been present in the ancient Andean lore, see also Carmen Arellano (1999: 246). Likewise, I perceive the parallel occurrences in different or within the same context, inserted among other varying tokens, to signal simple mathematical patterns. It would not be outrageous if some of these or other arrays (providing that they are faithful copies of configurations made by the olden Moche masters) contained “arithmetical sequences of an inventory” (Salomon 2004: 30), or in other respects, any type of numerical record. On the other hand, it might be indeed impressive, yet far-fetched, if someone discovered a ‘poetic composition’, or an ‘epic chronicle’ underlying the painted beans. The nature of the inventory could have been anything formulaic: from tributes to be paid, to lists of food rations to be delivered, lists of manufactured goods, i.e. textiles, ceramic, or metallic vessels, tools, and so forth, to messages on military convocations, or religious celebrations. One unavoidable question to be raised here is: how to confront the historical truth with the speculative steps made thus far?



**Figure 8.** A high-quality bottle-like ceramic Moche vessel depicting a complex scene of ‘encoding’ and ‘decoding’ of Lima beans by zoomorphic characters. The original photos of artifact ML013623 are reprinted with the kind permission of Museo Larco, Lima, Perú, specifically from Arql. Isabel Collazos Ticona.

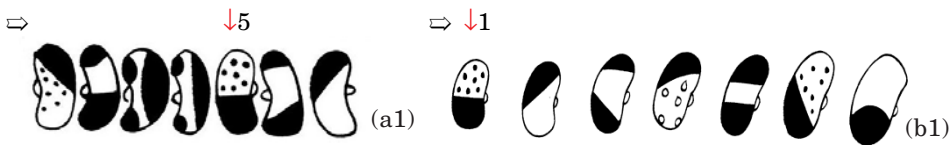
The difficulty is augmented because the analysis is undermined by a lack of linearity and boundaries amid the mottled beans, apparently implying an indiscriminate dispersion on the surface of the examined material, that is, ceramic, see, e.g., Fig. 8 and Larco Hoyle (2001 [1938]: 152, Fig. No. 175).



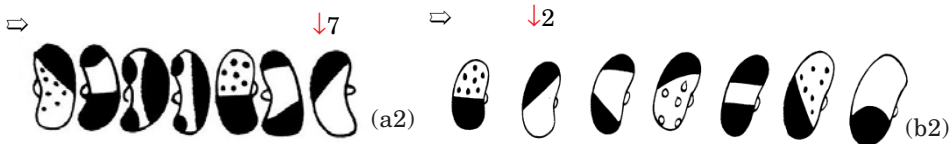
**Figure 9.** Rollout drawing of ‘painted beans’, bean-related specialists and toolkits, based on artifact ML013623, see Larco Hoyle (2001 [1938]: 152, Fig. No. 175). Material distribution in this visual narrative does not imply any precise order which might point at the beginning of a ‘text’, and sequentially affiliated grammatical constructions. The bean clusters appear to comply with the general idea intended to be transmitted on this piece of ceramic, rather than referring to specified data, numerical or not.

The fact that there is no clear structured beginning or end, may well point at the non-inscriptional, i.e. symbolic character of the sample, see, e.g., Jackson (2008: 144–148), in line with a type of ‘visual language.’ It may be burdensome also to judge the various levels of performance or expertise – first in the encryption phase, and later in the decryption or ‘reading’ phase – by individual Moche specialists, who most likely were full-time, highly trained professionals, even by present-day standards (unless I err), and not occasional practitioners of such complex activities.<sup>15</sup> One can imagine the intricate nature of the system linked for the most part with the vast, tentative number of tokens/patterns in use – already invented, and subject to re-invention and constant recombination, which had to be “...committed to the users’ memories” (Sampson 1985: 39).

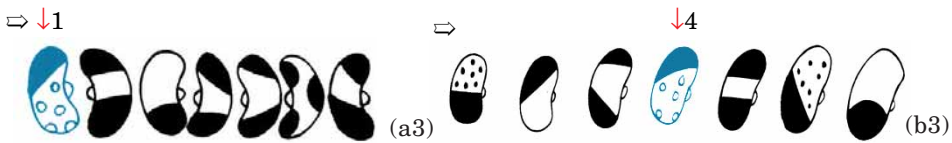
**Multi-Figure 10.** Comparison of two presumably arbitrary samples of Lima beans, named (a) and (b), published by Larco Hoyle in (2001 [1938]: 151, Fig No. 174) (b), and 1942 (a).



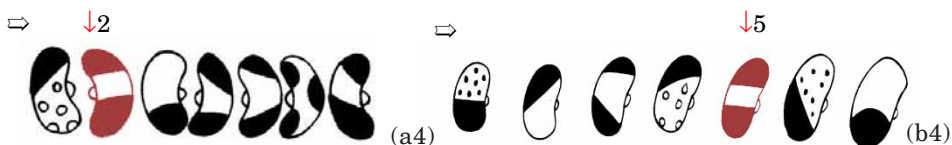
In sample (a) in the first row, token 5, starting from the left, is the same as token 1 in first row of sample (b).



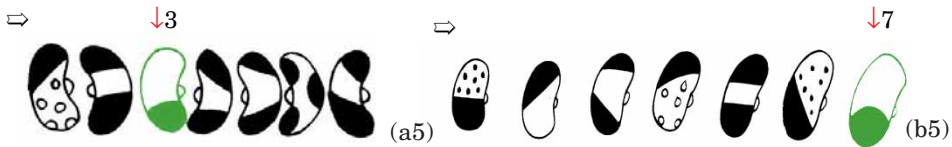
In (a) in the first row, token 7, starting from the left, is the same as token 2 in the first row of (b).



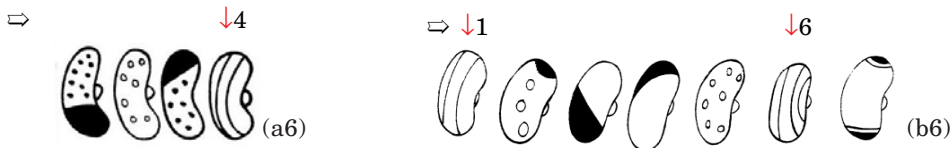
In (a) in the second row, token 1, apart from the slightly oblique line manifested on token 4 in string (b), is almost identical to it.



In (a) in the second row, token 2, is a mirroring image of token 5 in the first row of (b).



In (a) in the second row, token 3, is apparently similar to token 7 in the first row of (b). As regards the marked obliquity in token 7 in string (b), compared with that of token 3 in string (a) we may propose answers, but none of them verifiable. Thus, we may be dealing with variant forms of the same token bearing non-essential differences, or their semantics may differ as letter ‘d’ from letter ‘b’ in English in the words ‘duck’ vs. ‘buck’. Nonetheless, this is an illustrative example and in no way should be interpreted as support for coded speech in painted Lima beans system.



In the fifth string of sample (a), token 4 is almost certainly the same as token 1 in the third string of sample (b). However, token 6 in sample (b) consists of an additional oblique line close to the germinating sprout. If this added stripe in token 6 is semantically contrastive with the prior analyzed tokens, this is conjectural.

In Multi-Fig. 10, in comparing two presumably arbitrary samples of Lima beans, tagged (a) and (b), published by Larco Hoyle in different time periods, (2001 [1938]: Fig No. 174) (b) and 1942 (a), examination shows some tokens to be quite similar, if not equal. It would seem that these tokens were frequently used by Moche experts, and they may have been part of a ‘core set’, willingly used in recombination and generating a variety of patterns in order to deliver ‘painted’ messages. The behavior of these occurring tokens was most probably reciprocated and conditioned by the behavior of other less repeated tokens, in accordance with the intentional environment, or message.

The whole notion of regional or temporal variations<sup>16</sup> in the marked Lima beans system, generating *symbolic variants* (a term replacing ‘orthographic spelling variants’), see Multi-Fig. 10, though likely, will be on hold given the insufficiency of the material recovered. Even so, we have to consider the fact that special purposeful structures, e.g. ceramic workshops among others, must have existed not only in the heartland of Moche political entity<sup>17</sup> (see also Kulmar 1999: 57), but also in other major or minor civil and political centers of the northern and southern polities (cf. Moseley 2001: 183–184; Pillsbury & Leonard 2004: 278–285; Pillsbury 2005: 11; Kaulicke 2006; Castillo Butters & Uceda Castillo 2008: 715–722). Thus, the specialized painters working most likely near, if not next to the potters, knowledgeable somehow with the communicative system, applied local features to a certain extent during painting,

I assume. In doing so, they were reflecting regional tendencies infiltrated in the mottled beans system in a particular period of time, aimed to meet specific needs as the system underwent changes.

## **THE MOTIF OF THE RUNNING FIGURE IN *MOCHE* ICONOGRAPHY**

The motif of the running messenger or *chasqui* is a recurrent theme in the Moche ceramic artwork. It is pertinent to mention that such motif appears also on other media, e.g. on a precious portable artifact identified as an ‘ear-plug’ [*orejera* in Spanish] according to de la Cova (1997–2006). The fact in itself may point at the value-laden symbolism that *chasquis* enjoyed among the Moche culture. Accordingly, V. W. von Hagen (1966: 151; see also de la Jara 1967: 241; 1970: 27), makes a reference to the concept’s semantics, “*La palabra quechua chasqui significa intercambio, dar o tomar...*” [The Quechua word *chasqui* means exchange, give or take...]. This itinerant character appears often formalized and embedded in scenes pervaded with a naturalistic or a ritualized environment. For sure, these running figures are consequential in content and outlined details, and denying this would be to oversimplify a long ago certainty. The assessments of the samples on hand lead me to point at the following: I far from believe that any Moche artist in his sound mind and living in a tightly-knit social and religious community, where political and mythological elements flourished, would have massively drawn vagrant and fancy-clothed laypeople roaming through deserts and other inhospitable habitats just for the sake of it. They may be portrayed as normal humans walking or making a dash for a destination, notable for their exotic and detailed headdresses and the leather pouches in their hands (see del Busto Duthurburu 1983: 152; Stierlin 1984: 91; Larco Hoyle 2001 [1938]: 147, Fig. 168; Bourget 2006: 29), or in another case, rendered as partly-human, partly-zoomorphic creatures running at full speed and accompanied by flying birds, where the animal attributes and extra-additions promote the idea of determination, swiftness and competence (see del Busto Duthurburu 1983: 153; Larco Hoyle 2001 [1938]: 149, Fig. 171). In this context, it is of interest to observe that anatomical proportions of the human body or of the zoomorphs do not seem to have been a priority in Moche artists’ schedule. They were less important to the main concepts intended to be expressed, and also submissive to the size of object, artists’ perception of space, texture of object, painting-incising tools, other possible idiosyncratic whims, and to a set of expressive rules applied in agreement with general or regional

canons in the Moche communities of pottery makers (cf. Larco Hoyle 1966b: 91; Donnan 1978: 29–34). Human-like beings with varied size of bodies and tails, presumably birds, foxes, vizcachas, lizards, and dragonflies, are depicted in Donnan's (1978: 31) Fig. 54, of a stirrup-spout bottle.<sup>18</sup> These beings, presumably messengers – Benson (1992: 309) portrays them as “runners”, Donnan (2005: 129) refers to them as participants in “ritual running”, whereas Bourget (2006: 27) describes them as “ritual runners” –, appear to be running, wearing some sort of headdress which hardly can be ignored, and carry invariably a leather small bag or a pouch in their right hand, supposedly containing messages in the form of mottled and arranged *pallares*. Their running apparel is made out of shorts, like today's athletes, which would make sense and suggest practicality in long or mid-distance running, if this was their planned mission. On the other hand, however emblematic and ornamented, the conspicuous headdress would be awkward, if not somewhat annoying in an actual, demanding physical exercise (see, e.g., Verano 2005: 113), as long distance running is through the “*arid coastal desert*”, or “*high-altitude areas*” (see Topic & Topic 1983: 240). An exception to the above formulation would be considering some exaggeration by the responsible artist / ceramicist. In the same way, one has also to think about the texture, the light fabric and any practical function of the headdresses during the peripatetic scenes. Conversely, Larco Hoyle (1942: 95) referring to his painstaking observations of more than “...28,000 vasos...” [28,000 pots] (1942: 96), claimed that there were four types of “...*tocado de mensajeros*...” [messengers' head-dress], based on their supposed shape and fitted emblematic elements: “*warrior messenger*”, “*religious messenger*”, “*civil messenger*”, and “*governmental messenger*”. He ends by saying that these head-dresses stood as a mark of social stratification, a shrewd and even persuasive remark (see also von Hagen 1966: 86; Verano & Anderson *et al.* 2000: 183; Houston 2004: 288). If the remark holds true, it speaks of an important aspect of the Moche speedy ‘telegraphic system’, metaphorically speaking. Thereby, the current picture argues in favor of an organized pre-capitalist establishment connected to Moche high nobility and to other royal courtiers, sparing no details in categorizing messengers via distinguishing insignias and other possible ‘badges’, while yearning for hierarchy, i.e. group membership,<sup>19</sup> militancy and effectiveness. Literal interpretations apart, this supposable event reminds us of a similar situation: the military rank paraphernalia in modern-time armies (cf. Robinson 2007: 205). Nevertheless, I would say that formal and ritualistic factors (cf. Donnan 2005: 129), as those depicted in secular or mythological combat scenes (see Donnan 1992: 56, 67–68), may suggest the significant esteem that this activity enjoyed within that society.

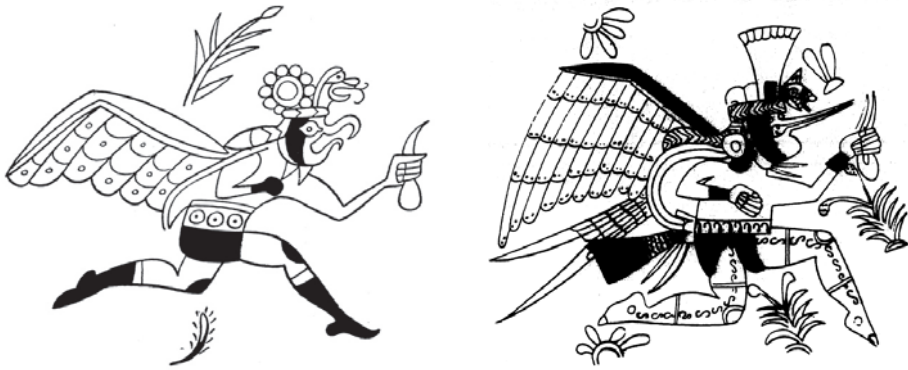


Figure 11. Ornithomorphous Moche couriers.

In Fig. 11, ornithomorphous couriers with *falcon* and *hummingbird-like* beaks are figuratively rendered while carrying out their assigned ‘job’. Their function, similar to that of the blood circulatory system in the human body, maintained vital and operational the institution. In consequence, the figure under examination must have been widely valued and artistically described in ceramics, see for instance Larco Hoyle (2001 [1938]: 148, Fig. No. 170); the varied zoomorphic ‘runners’ in Donnan (1978: 31, Fig. 54); the so-called ‘*Runner Bottle*’ in *The Metropolitan Museum of Art* (2010), and elsewhere. Drawing (a) is retrieved from von Hagen (1966); drawing (b) is retrieved from Larco Hoyle (1942).

Under the same theme, in Fig. 12 (see Donnan 1978: 74, Fig. 119; ARTIC 2010), we see again a procession of runners in pieces of clothing, this time, clearly looking like male human beings. The believed messengers have headdresses or turban-like caps; they are carrying small leather bags in their outstretched arms; they have on some kind of short skirt, or a short tunic, some relatively long ‘socks’, or ‘sandals’, and surprisingly they sport a round object known as a nose ornament (see, e.g., Stierlin 1984: 98; Cordy-Collins 1996: 1; King 2004: 134). Common sense tells one that if we want to send a message, say, two or three miles away, we would *not* wear those oversized discoid or trapezoidal headdresses, and especially big round accoutrements (equally unhelpful), or in general, large ‘piercings’, while sprinting forward in a desert environment. I tend to agree with Donnan (1978: 74) that these figures stand symbolically for a well-esteemed activity: data transmission in the pre-Inca Moche polities, part of a ritual performance where exalted, wealthy individuals are emphatically depicted. However, a degree of relationship should have existed between the imagery and real life (see examples in Castillo Butters



**Figure 12.** The roll-out drawing is retrieved from Donnan (1978: 74, Fig. 119). The ceramic vessel (h. 27 cm x w. 19.7 cm) is at the Art Institute of Chicago, Chicago, Kate S. Buckingham Endowment, catalogue No. 1955.2291, see ARTIC (2010).

2000: 8–9; Pillsbury 2005: 16), and we can presume more practical or simplified attires for the male runners, regarding shape or materials used. In this context, the foundation upon which to base safer arguments *would be* to study the Moche iconography in combination with current and future archaeological evidence (see in particular Shimada 1994: 20; Kaulicke 2006: 85–111).

### THE MOTIF OF THE DECIPHERER, ALIAS ‘EL ZORRO’, IN MOCHE ICONOGRAPHY

Another known frequent theme in Moche paintings is an anthropomorphous figure, easily identified and akin to a male fox, or ‘*un zorro*’ if rendered in Spanish. This motif, confirmed to have been in effect in ancient times throughout the North Coast as well as the South Coast areas such as Paracas and Nasca, is held to be of special importance in the broad Old Peruvian visual notations (see, e.g., Sawyer 1961: 289–290; 1979: 142–143; von Kessel 1994; CCEM 2001: 314–315). In the Nasca iconography, the Lima beans appear correspondingly, see Proulx (2006:164, Figs. 5.230 and 5.231, referring to Yacovleff and Herrera (1934: Figs. 1 and 2), and in Nasca-style textiles, see Frame (1999:

262–263, Lámina 1 / Plate 1), about a polychromatic mantle covered diagonally with monotonous series of beans.

The animal is represented also in Moche art in the shape of a clay container (see Donnan 1996: 141 and Fig. 14), or it emerges incidentally also mo-



**Figure 13.** A Nasca 5 bowl, 400–450 AD, featuring geometric, anthropomorphic and zoomorphic figures, possibly foxes (cf. CCEM 2001: 314–315).

**Figure 14.** Moche ceramic vessel styled in a 'fox head' shape, catalogued as artifact ML002557, at Museo Larco, Lima. The sequences of beans decorating its head-dress imply an interconnection between them, possibly relating the 'fox,' or his virtues, to the function of the 'decoder'. Reprinted with the kind permission of Museo Larco, Lima, Perú, specifically from Arql. Isabel Collazos Ticona.



deled on the top of the vase, next to the stirrup-spout (see Larco Hoyle 2001 [1938]: 155, Fig. No. 171). R. Larco Hoyle (1944: 62) briefly addresses this point, “*El zorro antropomorfo simbolizaba al descifrador lo mismo*

*que el felino y la vizcacha (ardilla de los Andes), ambos antropomorfizados.*” [The humanized fox symbolized the decipherer, same as the feline and the vizcacha (the Andean squirrel-like rodent), both anthropomorphized]. Later authors (e.g. von Hagen 1966: 156; del Busto Duthurburu 1983: 142; Regal 2002: 64), referring to R. Larco Hoyle (1944; 2001 [1938]), reword his idea and agree that the painted figures with a fox head were specialists that ‘read’ the patterns on Lima beans, and the symbolism included an animal “...*conversant with many secrets*” and “...*the moon’s great friend...*” Comprehensive samples on this subject include, e.g. the catalogued item ML001705 (cf. Larco Hoyle 2001 [1938]:152; Ramírez Prada 1994: 126) and ML002557 (see Fig. 14) in *Museo Arqueológico Rafael Larco Herrera* in Lima, Perú. Beyond doubt, further investigation in a number of museums in the Americas, or in Europe, is likely to reveal more exemplars portraying this figure.

Larco Hoyle (2001 [1938]: 159, 162) himself thoroughly describes the scene and quotes Garcilaso de la Vega. The Spanish-Inca scholar, who talked about the mythology and religious beliefs of the ‘Indians’ of the northern coast of Peru, is known to have said that natives adored the male fox due to his knowledge and cleverness. Thus, the depicted ‘foxes’, holding or gleefully pointing at the painted beans would have been “...*el alma y cerebro de la institución*” [...the soul and brain of the institution]. Indeed, Larco Hoyle (2001 [1938]: 159), finds no surprise in this, and identifies the figure inserted among other zoomorphs, as the interpreter and transmitter of the messages. Further evidence is offered via the modeled clay sculptures that appear as full vessels (Larco Hoyle 2001 [1938]: 156–158; Bourget 2006: 37), or as a fox-like mini-sculpture on the top of a vessel that exemplifies running figures or *chasquis* (Larco Hoyle 2001

[1938]: 155). From a rather optimistic point of view, we may deduce that the iconography of the 'fox', due to his virtues, complies with the role ascribed by Larco Hoyle. From a pragmatic point of view, it is not fortuitous the correlation between the runners and the seated 'fox', revealed in a serene and majestic posture, which appeals to a causal and intimate relation between them. J. A. del Busto Duthurburu (1983: 148–149) advances other comments, "*Se les ve corriendo apresuradamente por el desierto de arena para luego entrar a un templo piramidal y entregar la bolsa a un zorro descifrador, esto es, un sacerdote encargado de leer su contenido.*" [They are seen running hurriedly through the sand desert to enter later in a pyramidal temple, and deliver the pouch to a deciphering fox, that is, to a priest in charge of reading its content]. Permissibly, we may return to Larco Hoyle's (2001 [1938]) idea and say that if a certain figure, the fox in our case, is repeatedly represented in a range of activities in a consistent relationship with the surrounding environment (*beans, pouches, sticks*) and other mammal companions, then this stable model gains grounds in our analysis and we may now infer causality (see Donnan 1978: 8–9). Furthermore, a sufficient number of samples would be needed in any examination conducted to secure conclusions on the significance of the 'fox', though theoretical digits are inexact, as they are also dependent on new findings. Still, on the supposition that there were encoders and messengers, it is logical to expect the complementary link in all this construction: the reverse of the encoders, the decoders. It may be theorized that the function of encoders and decoders was unified for the sake of standardization, though a slight division in their tasks cannot be dismissed, due to social, geographical, infra-structural and individual factors. There might have been nested 'schools' with experts ascribed to them, where prospect 'encoders' and 'decoders' received qualified training and know-how. A present interrogative is *if* they were trained across all the Moche settlements, or *if* one hypothetical center prevailed over the other satellite-like hubs in such an important 'academic' business. Other pertinent questions that now arise are: did the experts (local, regional, or not) have the liberty to modify, or experiment with Lima beans motifs and patterns in search of more expressive and communicative power, or did they have to ask for authorization from the main headquarters, whether that be the royal court or a major ritual center, where the real masterminds led and manipulated a system that tracked life and death in an area of non-negligible proportions?<sup>20</sup>

## CONCLUSIONS

• The studied samples of Lima beans recovered from several scattered sources (with some of them escaping scientific control) are inherently skewed, so results cannot be fully verified. For sure, they “... constitute just a small part of all the ceramics that were (historically, my note) produced” (Donnan 1992: 11), so one can visualize the impending work in order to reconstruct a partial, or in much better scenario, the complete picture of this pre-Hispanic mnemotechnology. The attempt should be deemed as valid and compelling for future and responsible research, which perhaps will have at hand a more complete body of evidence. Therein, a close inspection of all available Lima beans samples (or Lima beans-related accomplishments) in the main repositories of the earthenware Moche vessels, such as in *Museo Arqueológico Rafael de Larco Herrera*, Lima, Perú; *Museo Nacional de Antropología, Arqueología e Historia*, Lima, Perú; *Museo de Arqueología de la Universidad Nacional de Trujillo*, Perú; *Museo de Arqueología José Cassinelli*, Trujillo, Perú, *Museo Nacional Enrique Bruning* de Lambayeque, Perú (cf. Fuertes Medina 2000: 37–42); and in other world museums and institutions, e.g. *Museo Chileno de Arte Precolombino*, Santiago de Chile; *Museum für Völkerkunde*, Berlin; *Staatliches Museum für Völkerkunde*, Munich, Germany; *Museo de América, Madrid*, Spain; *the British Museum*, London, U.K.; *the Brooklyn Museum*; *The Metropolitan Museum of Art*, New York; *the Art Institute of Chicago*, Chicago; *the National Museum of American History at Smithsonian*; *the National Gallery of Art* and *the Dumbarton Oaks Research Library and Collection*, Washington D.C.; *the Moche Archive* directed by Christopher Donnan (2010) at University of California, Berkeley, USA; *the Museum of Cultural History*, Los Angeles, USA; *Musée de l’Homme*; *Musée du Louvre*, Paris, France, etc., rises as precedence. Such an on-the-spot project would be costly and prolonged, and will require teamwork of a major order. Nevertheless, nothing truly good comes free of charge. In view of this optimism, or thanks to it, the conception of an ‘inventory’ or a ‘register’ that indexes all the attested token occurrences is urged. Ensuing quantitative and contextual analysis may get us closer to a better understanding of the Moche Lima beans system. Results may be tabulated, digitized – through off-line devices –, formatted in an electronic archive in the fashion of an “*image-based edition*” (McGillivray 2005: 48), and set in the public domain for quick access and constant scholarly research. The configuration of tokens (painted or incised beans) is 2D, so re-drawings can be digitally photographed without going through the technical difficulties and copyright issues implied in 3D sample retrieval. At present, a collection of ceramics depicting the theme

of Moche beans is placed online by *Museo Larco*, Lima, Perú, at the benefit of the general public, see <http://catalogomuseolarco.perucultural.org.pe/> (2010). Typing the entry *pallares* in the corresponding box yielded 230 available items. This great project will be even more helpful to researchers when enlarged and higher resolution photos are bound to be displayed, resulting in a better discernment of iconography and patterns. The following studies may build up hereby on this model and expand on systematically.

- Building enthusiasm as to find out the fundamental principles ruling this “*system of information exchange...*” (Kulmar 2008: 135), was not pursued nor recommended due to the paucity of knowledge we note in this domain. In this respect, offering a revolutionary hypothesis may breed more dissension than that we already have, unless an immense record of Lima beans drawings is firstly planned and later comparably examined. The patterns found during the analysis account to some extent for a rule-based structure, developed over time and resting upon acumen and tradition. It is safe to assume that we are **not** dealing with a vacuous Moche contraption, as it is safe to tell that significant ‘ideas’ or ‘messages’ coded through symbolic patterns no longer in active use, seem to be time-sensitive and exceptionally culture-bound. In the face of natural damage and human looting and destruction of the Old Moche sources (shrines, assorted dwellings, numerous burial sites and other monuments related or not to the reigning oligarchy), and without direct access to the rest of the understood historical database, we are confined at best to describe and speculate about their meanings. However, the ultimate understanding and confirmation of the integrated patterns is another matter. Evidently, there is no smooth ride while attempting to interpret such marks since they were a product of a specific way of thinking, laden with an implicit symbolism and statistics known only to their authors. The realistic estimations of scholars, such as the Argentinean José Imbelloni (1942: 225),<sup>21</sup> the French André Leroi-Gourhan (1992: 333),<sup>22</sup> the American Georgia Lee (1993:120),<sup>23</sup> and the other French intellectual, Jean Bottéro (2000: 23)<sup>24</sup> in regard to tacit mnemonic codes, the inventory of signs in several Paleolithic caves in the Franco-Cantabrian area, Old Rapanui petroglyphic art and the Proto-Cuneiform signs (see also Sampson 1985: 50–51) would seem to unfortunately relate to our context. The viewpoint that Lima beans patterning was part of a game to amuse the mind of high or low-status members of Moche society (see Vivante 1941; Depaulis 1998: 26,<sup>25</sup> 38–39), is not approved. Neither is the perspective that patterning was fundamentally phonetic, alphabetic or pre-alphabetic, if by this is understood a mixed phonetic and logographic script after the fashion of ancient Egyptian hieroglyphs or Maya glyphs (cf. de la Jara 1970: 32–33; Rowe & Rowe 1996:

463). Such a radical claim, while challenging the paradigm that no writing system existed in the pre-Conquest Peruvian area, has to meet a set of conditions, being the foremost, the production of a meaningful text and further replications by independent researchers in other samples with regard to its soundness. Likewise, any suggestion that we are dealing with esoteric, or anomalous objects that enclose deep ‘mysteries’ in the fashion of the Olmec Calendar mosaic (Marshack 1975: 341–379; Corliss 2005: 99–101), the intaglio figure of the Atacama Giant in Chile (Corliss 2005: 44), or the Oronteus Finaeus Map (Corliss 2005: 130–131) should be regarded as highly suspicious, and turned down.

- The question of when ‘Lima beans’ system sprang into existence is as attractive as it is hard to answer. One may think also that the system underwent developmental periods: tentative, pre-formative, formative and so forth, given the fact that the experts/priests with a full workload must have been flirting with possibilities for improvement and further adequacy in storage space and data transmission. The shapes of patterns and the content of information supposedly evolved in keeping with the Moche social organization and the development of economy, increasingly hierarchical and committed to mass-production and public architecture. Schmandt-Besserat (1994: 306–309) describes a similar phenomenon for a token-based accounting system in Mureybet, Syria and in Uruk and Susa, Mesopotamia, where complex clay tokens had to respond to the emergence and needs of a state-like economy, characterized by the collection of taxes and tribute, monumental architecture, and a growing bureaucracy.

Banishing old combinations from the Lima beans repertoire and finding new ones, impermeable to accidental, or intentional decryption (unwanted either way) could have occurred more often than not across the ‘mnemonic workshops’. If the suggestion proves to be true, a level of mathematical and cryptographic knowledge needs to be taken into consideration. Incidentally, Paul Bouissac (1994: 353) has pointed also at “... *some degree of cryptic protection*” found in the content of pictographic and petro-glyphic messages made by “...*palaeolithic populations*” in order to be “*selectively communicated across time... or across space...*”

- Choosing possibly large Lima beans (and not ‘baby’ ones), and complementary llama hide pouches as raw and basic material from their closest environment – see Padre José de Acosta’s narrative quoted by Porrás Barrenechea (1986: 383–384) on the importance of llamas and guanacos in the economy of the pre-Hispanic Peru – was deliberate by the Old Moche in times of their

social, military and cultural supremacy. It demonstrates the pragmatic and flexible mind of the committed experts to keep running the system at issue in highly efficient costs under the circumstances they chose to live in. The alleged 'links' actively in use and involved in the administrative and bureaucratic 'machinery', were conceived in a chain command-like fashion: (a) higher authorities, the issuers of orders or enactors of messages (*itemized lists, hypothetical decrees, summons, announcements, directions, transactions*, and so forth), (b) encoders, (c) messengers, (d) decoders, and (e) the final recipients and performers of duties. In some cases, it may be considered that the task of issuers or dispatchers of messages had common characteristics with that of encoders and/or decoders. The whole view gives testimony of skill and organization, while seeking *control of information* (see, e.g., Urton and Brezine 2007: 357) through labor division, applicability and transmission of data, crucial to the function, empowerment and survival of Moche polities/principalities. Given that Moche society was hierarchical (cf. Donnan 1996: 123–124; Castillo Butters & Uceda Castillo 2008: 722), it may be suggested that a respected central authority or an institution regulated and controlled the main function and parallel tasks of the inspected system, which in all likelihood must have been a male preserve, allowing for the masculine figures that emerge regularly in the bean-associated activities. In the event of a 'central authority' and a 'directive board of dignitaries', so to speak, headquarters and attendant architectural infrastructure may be presumed (see Pillsbury & Leonard 2004: 278–281), though their subsequent location remains unidentified so far.

- It is conceivable that the numerical and prearranged data were destined largely for official counting and measuring, trade and news exchange, and likewise as a reminder of other semantic matters. Latest professional publications on Moche's visual culture, see Jackson (2008: 115), are similarly inclined to refer the "bean system" to a "...*tactile counting device*...", a view which is gaining credibility, in my opinion. Any assumption on erratic or spontaneous coding of speech (lexical and grammatical units) is more than questionable due to absence of proof, and would not call for comment. The Moche Lima beans' marks can be better thought as a preceding stage or a doorway to a 'proto-writing' system, a very early phase in a developing script, where non-phonetic elements would work mnemonically to recall series of data, events and other diverse activities. Two similar paradigms which seem to fit in the category of information carriers are described below, showing that the Lima beans of the Moche are not an isolated phenomenon in the South American region. Thus, Ibarra Grasso (1953: 36), Bankes (1977: 83) and Prada Ramirez (1994: 127) cite the chronicler Garcilaso de la Vega about a system that involved colored mini-

pebbles, etched grains and other tiny objects of the size of chickpeas, well-known in the area of Cuzco, Peru. It responded to the name of *Chuy* by which the natives learned by rote 'phrases' and 'notions'. D. E. Ibarra Grasso (1953: 49–50) and R. Naville (1966: 43) report also on a 'postal system' among the Guaraní ethnic groups living in Paraguay, named *Parejhara*, representing ideas by way of arrangements of small pebbles, seeds, teeth, miscellaneous fragments, and other undersized objects, with the groupings being 'interpreted' afterward on the ground in the likeness of the Moche Lima beans style. In a broader context, scholars have theorized about the genesis of writing and notation systems. Peter Damerow (2006: 4) draws attention to the fact that proto-Cuneiform "...had precursors in symbolic systems used, at least in part, for the same purposes", while Andrew Robinson (2007: 33) alongside indicates, "Accountancy motivated the development of all early systems and methods of counting". Then, if we are dealing with a somewhat subtle memory jogger, it can be concluded that as long as it met the needs of the Moche society in terms of conception and application,<sup>26</sup> it should be regarded as an efficient device – neither *prehistoric* nor *defective!* – (see also Day 1967; Brice 1976: 40; Sampson 1985: 49; Prem 1992: 53–69; Boltz 1994; Arellano 1999; Kaulicke Roermann 2000: 44–45; Damerow 2006), in the time-space continuum of that civilization, which in a sense must be proud of it. If the earlier statement did not correspond to a tangible reality, then any confirmed 'clumsiness' or 'uselessness' would have prevented its spread, with the ensuing vase painting or symbolic depictions falling quickly into disuse. Mention has to be made that this was not the case. On the other hand, it does not for certain require always a full-fledged or a partial phonetic system to convey information;<sup>27</sup> their advantage is that they can break the barriers of time and space by passing on the messages to future cultures, alien or not to the original one, on the condition that a key is found to 'crack' them (cf. Corliss 2005: 159).

• I should say that my proposal is not the first of its kind. Former authors (see, e.g., Prada Ramirez 1994: 124–127; Sassoon & Gaur 1997: 17–18; Brown 1998: 11) have suggested at a given moment that painted Lima beans of the Moche may stand for a mnemonic form of message transmission, a hypothesis which I consent and view as the most plausible in the whole socio-historical and iconographical context. Nonetheless, aside from Larco Hoyle's considerable and mixed account (as mentioned before), where valuable insights are somehow faulted by a personal fervor in search of a native Peruvian writing system and its implied consequences, there is not much professional work done in this direction. Unsurprisingly, controversial views are to be expected, on condition that investigators have the inclination and physical time to devote to the Lima

beans' system. Any acceptable interpretation of the current phenomenon would require access to the legitimate corpus, as well as intensive and cooperative efforts from specialists in the humanities and other exact sciences.

- The demise of the Moche culture, however, did not coincide with the abrupt end of this instituted system. Authors (cf. von Hagen 1966: 151–153; de la Jara 1967: 246; 1970: 30; del Busto Duthurburu 1977: 136; Davies 1995: 120; Kulmar 2008: 138; see also Donnan & McClelland 1979: 12; Arellano 1999: 239 in a more general context) mention that the new cultural entity, that is, the Inca, possibly inherited features<sup>28</sup> of a numerical nature from the residents of the invaded territories, the Chimú (of the kingdom of Chimor), among others (see Stone-Miller 1994: 167; Cordy-Collins 1996: 223–224; Valle Álvarez 2004). The Chimú are known to be the over-takers and successors of the Moche (cf. Pillsbury & Leonard 2004: 267–268; Castillo Butters & Uceda Castillo 2008: 708), who possibly infused the Moche information tradition into the *kipus*, another debatable non-phonetic technology for data storage, still occupying and perplexing scholarship.

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## NOTES

- <sup>1</sup> See Pillsbury (2005: 9), “*The Moche themselves left no written record, as alphabetic writing systems were not used in the ancient Andes.*”
- <sup>2</sup> See also Burger (1996: 82), “*Throughout the central Andes, the fruits of the bottle gourd (Lagenaria siceria) were dried, and then used as containers and for serving and storing liquids.*” Similarly, Shimada (1994: 101) mentions about “*...numerous gourd bowls...*” retrieved among other items, from an elite burial site in the Virú Valley in 1946.
- <sup>3</sup> “*The interpretation of the rich iconography of ancient Peruvian vessels and textiles or of elaborate stone reliefs can be taken as a legitimate task of Peruvian Studies, but it is not within the range of tasks involved in the research on a writing system.*”
- <sup>4</sup> See Donnan (1992: 11), “*...it is often their ceramics that provide the best means of identifying the distribution of these cultural groups (ancient Peruvian civilizations, my note) in space and time... Thus ceramics have become a primary means of reconstructing the culture history of ancient Peru.*”
- <sup>5</sup> “*They (the Moche, my note) did leave behind a remarkable artistic corpus, full of rich detail of ritual, supernatural and perhaps daily life.*”
- <sup>6</sup> “*El pallar que presentamos no es redondo sino de forma arriñonada e idéntica a la que se observa en los vasos.*” [The Lima bean that we present is not round, but rather kidney-shaped and identical to that observed in the vases.]
- <sup>7</sup> “*Overall, Moche ceramics are among the most remarkable ever made in the Andean area. Unsurpassed for their artistic realism and for the variety of subject matter depicted, they provide an excellent documentation of the people who produced them: their material culture, environment, activities, and supernatural realm.*”
- <sup>8</sup> “*The larger the sample, the greater the potential for making correct observations.*”
- <sup>9</sup> “*Since the data was collected from a sample, this number alone is not sufficient to make any claim because of the potential for sampling errors.*”
- <sup>10</sup> “*As with Moche architecture and metalworking, our knowledge of ceramics has benefited from recent archaeological discoveries, such as those at Galindo and Cerro Mayal. Both sites have a ceramic workshop at the periphery; the workshop near Galindo was located on the road to the coast so as to accommodate the llama caravans bringing in materials and out finished wares... the late Chicama valley ceramic workshop at Cerro Mayal was located near Mocollope and covered over 29,000 square ft (9000 square meters).*”
- <sup>11</sup> “*The depictions of beans with extremely varied markings especially on ceramics but also found on textiles, should be understood rather as gambling counters (analogous to the use by recent Chaco tribes).*”
- <sup>12</sup> del Busto Duthurburu (1983: 149) while supporting Larco Hoyle’s claim, says, “*La hipótesis es muy convincente, pero hay también que contemplar la posibilidad de que tales pallares fueran amuletos mágicos, fichas de juego o monedas.*” [The hypothesis is very convincing, but one has also to consider the possibility that such beans were magic charms, game chips or tallies.]

- <sup>13</sup> See the Queens Museum Exhibition (1975), “*Studies coming to light indicate that ceramics once thought to be scenes of everyday life have deeper significance. A less trivial and more religious aspect of what these pots may have meant is evolving.*” See also Bouissac (1994: 352), “*This alternative to the stylistic approach is the semiotic hypothesis – i.e. the heuristic assumption that pictographs and petroglyphs have communicative rather than expressive or deictic functions and therefore call for a markedly different pragmatic context than the one which had been pervasively taken for granted so far.*”
- <sup>14</sup> The Old Moche must have had their measuring units and a related capacity terminology. Bearing in mind their patent craftsmanship; the agricultural and technological achievements (metal and pottery mass-production; cultigens and animal domestication; monumental works of a secular and religious nature, irrigation channels and ‘highways’), one assumes that Moche had to systematically notate and measure operations in all areas of life that involved planning, timing, intercourse and redistribution of supplies, storage, and calculations (see also Larco Hoyle 1942: 94).
- <sup>15</sup> See Gaur (1987: 25), “*Memory aids hold a transitional position between oral tradition and writing, often being made legible only by skilled interpreters conversant with their own cultural heritage and traditional methods of explanation.*”
- <sup>16</sup> The notion of variability in someone’s calligraphy over time, as well as the variety of character shapes and styles produced by the same writer or by different writers has been confirmed by authors (see Dimauro & Impedovo *et al.* 1992: 216; Jain & Lazerini 1999: 4). For sure, the comments relate to hand-written or hand-printed events; nevertheless, measurable hand-painted Moche figures tend to show also stylistic, individual, subconscious variation, probably not at the level of writing, but still worthy of attention. See especially (Donnan 1978: 9–10), “*There are two additional points that can be made by the analogy between Moche art and a spoken language. First, one can expect individual variation in the way in which the systems are expressed. Just as all individual speakers of a language express themselves in a unique way, so each artist has unique style that may experience some modification during his lifetime. The depiction of the same scene... or the same individual may vary considerably because of individual style, but these variations are not necessarily significant in terms of the message being communicated. Distinguishing between stylistic peculiarities and variations in messages is often difficult. Nevertheless, an awareness of both possibilities is crucial.*”
- <sup>17</sup> Pillsbury (2005: 11) comments, “*Until recently, the prevailing view of Moche political organization was that of a centralized state with a capital at the site of Moche... The majority of archaeological research concerning Moche centered on the Chicama, Moche, and Virú valleys, the three valleys considered the core area of the Moche state. As more field research is carried out in this area and other valleys, however, finer distinctions are becoming evident in the archaeological record.*”
- <sup>18</sup> Larco Hoyle (1944: 62) is among the first authors to report on these entities, “*Así el Chasqui, era simbolizado por aves, cientopiés (ciempiés, my note), libélulas, etc., antropomorfizados, con el objeto primordial de dar la idea de la velocidad en el desempeño de sus funciones de mensajero.*” [Thus, the Chasqui was symbolized by means of birds, centipedes, dragonflies, etc., anthropomorphized, with the main intention to convey the idea of velocity while performing his functions as a messenger.]

- <sup>19</sup> Lechtman (1996a: 30) offers a clear picture on the importance of cloth and personal kits as means of social and occupational distinction and class hierarchy in the pre-Hispanic Andean world, “*Things made of cloth or metal served throughout Andean prehistory to help define and signal relations between people. This was patently so when worn as items of adornment, to mark ethnic affiliation, status, ritual, or political office. What mattered was not only what you wore, but what you were allowed to wear.*”
- <sup>20</sup> See Donnan (1996: 123), “*At their greatest period of influence, the Moche occupied... the valleys from Piura to Huarmey, a distance of approximately 550 km north-south.*”
- <sup>21</sup> “... *me permite recordar que si de las mismas escrituras ideográficas del Mediterráneo ha sido imposible todo desciframiento hasta poseer textos bilingües, en el caso de escrituras mnemónicas basadas en señales establecidas convencionalmente, la ausencia de clave ha de excluir terminantemente toda clase de esperanzas.*” [...it allows me to recall that if for the Mediterranean ideographic scripts, has been impossible any decipherment until bilingual texts were obtained, in the case of mnemonic scripts based on signs conventionally established, the lack of the key must exclude all kinds of hope.]
- <sup>22</sup> Bouissac (1994: 360–361) while commenting on the typology and figurative designs of engraved signs in Old Stone Age caves across France and Spain quotes Leroi-Gourhan (1992: 333), “...*we can very well see that we are in presence of something which is not a mere formal play, but the knowledge of symbolism which would make the messages explicit has disappeared with the last member of this humankind without writing.*”
- <sup>23</sup> “*The designs carved or painted on the rocks were neither idle nor casual markings; they had meaning and purpose, even though such information may not be clear to us at this distance in time. When we see the repetition of certain rock art motifs which display little variation of design we know that these functioned as a precontact communication system which likely contained levels of meanings understood by (at least) a certain segment of the population.*”
- <sup>24</sup> “*Since it places only concrete, material realities side by side, such writing is necessarily ambiguous. What is the exact meaning of a series of juxtaposed “things” such as foot + river + fish + woman? Only the person who inscribed those signs to recall an episode in his life would have been able, by calling upon his memory, to reintroduce the notions and correlation that governed the true meaning of the whole: I went to the river; I caught a fish there, which I gave to my woman/wife. Thus composed only of signs for things, writing could recall only to those who produced it the complete and exact meaning of the activity or events in which they had been involved and of which, as good accountants, they wanted to keep an accurate record. In this elemental form, writing was and could only be a mnemonic device, able to recall the known but incapable of teaching the new. This is why the most ancient documents, their complete truth and exactitude, are indecipherable and incomprehensible to us, since we were not witnesses to the dealings that were so laconically recorded in them.*”
- <sup>25</sup> “*We know almost nothing of these games these peoples played (referring to civilizations of Chimú, Wari, Tiwanaku, Nasca, my note), except for the Mochicas who have left us many representations of their everyday life on their delicately painted vases.*”
- <sup>26</sup> See in particular Damerow (2006: 7), “*The development of writing cannot be adequately described on the technical level of coding information only. The social environ-*

*ment has to be taken into account because it obviously had a great influence on what was written down and how. Writing is not just a technique developed to serve a universal human need, but rather it is a social process of knowledge representation based on human interaction and historical continuity.”*

<sup>27</sup> See Brokaw (2005: 571) talking on the nature and functions of the quipu, “*The implication is that although writing per se may not be indispensable, other material media may fulfill the same function to one degree or another.*”

<sup>28</sup> During their imperial quest, the Inca must have noticed socio-cultural mechanisms and ideological institutions in the subjugated states or tribes that were beneficial to their own militaristic-religious society. See, for instance, Arthur Demarest’s and Geoffrey Conrad’s (1983: 389) comment on the fact that Inca adapted or imitated the “*split inheritance*” (“*the property rights of the dead*”) notion from the Chimu, “*In typical fashion, Inca oral history credited Pachakuti with the establishment of split inheritance, but his creativity need not be exaggerated. Such a royal cult of the dead existed previously among the Chimu, whom the backward Inca probably consciously imitated.*” See also Stone-Miller (1994: 167), “*Although the Incas conquered the Chimu in the late 1400s, they were heavily influenced by their formidable foes, whose culture was allowed to continue fairly unchanged.*”

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