From Graphic Units to Unrecognized Landscapes of Expression: New Approaches on Amerindian Graphic Communication Systems

Christiane Clados[1], Anne Goletz[2] y Ernst Halbmayer[3]

Abstract. Many studies, even those conducted in the field of the Americas, still argue that graphic communication necessarily builds on coding units of speech. However, in recent years, there has been a growing awareness of the narrowness of this concept by focusing on Indigenous and pre-Columbian societies, who favore(d) non-glottographic systems over written speech. This paper concerns the development of a semiological multidimensional theory and methodology to analyze Indigenous Graphic Communication Systems (GCSs) in Mesoamerica, Amazonia, the Isthmo-Colombian Area and the Central Andes. The aim of this theory and methodology is to understand how and in what ways Indigenous societies communicate and encode knowledge using graphic units. Placing emic concepts and epistemologies increasingly at the center of the investigation comes with a rethinking of Western concepts of writing, and a change of perspective. The proposed model provides access to new analytical dimensions that have not been considered in an integrated way so far. Graphic units are not only studied in relation to each other and on the semantic level, but in the broader context in which they arise. Three examples are used to demonstrate the complexity of graphic communication based on semasiographic principles and test the proposed approach focusing on various forms of Yukpa graphic expressions in Colombia and Venezuela and framed graphic units of the Tiwanaku culture in the Central Andes, Peru.
Keywords: graphic communication systems; the indigenous Americas; semiological theory and methodology; decolonizing epistemologies.

[sp] De las unidades gráficas a los paisajes de expresión no reconocidos: nuevos enfoques acerca de los sistemas de comunicación gráfica amerindia

Resumen. Muchos estudios, incluso aquellos realizados bajo el enfoque de las Américas, siguen sosteniendo que la comunicación gráfica se basa necesariamente en la codificación de unidades de habla. Sin embargo, en los últimos años se ha tomado conciencia de la limitación de este concepto al centrarse en sociedades indígenas y precolombinas, que han favorecido los sistemas no glotográficos frente al habla escrita. Este artículo se dedica a desarrollar una teoría y metodología semiológica multidimensional para analizar los Sistemas de Comunicación Gráfica (SCG) indígena en Mesoamérica, la Amazonía, el Área Istmo-Colombiana y los Andes Centrales. El objetivo de esa teoría y metodología es comprender cómo y de qué manera las sociedades indígenas comunican y codifican sus conocimientos mediante unidades gráficas. Poner los conceptos émicos y las epistemologías propias cada vez más como el centro de la investigación conlleva un replanteamiento de los conceptos occidentales de la escritura y un cambio de perspectiva. El modelo propuesto en este artículo plantea nuevas dimensiones analíticas que hasta ahora no se han considerado de forma integrada. Las unidades gráficas no sólo se

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estudian al relacionarlas entre sí y bajo un nivel semántico, sino en el contexto más amplio que les da origen. Tres ejemplos de aplicación ilustradas demuestran la complejidad de la comunicación gráfica basada en principios semasiográficos y ponen a prueba el enfoque propuesto bajo varias formas de expresiones gráficas de los yukpa en Colombia y Venezuela y unidades gráficas encuadrados de la cultura Tiwanaku en los Andes centrales, Perú.

Palabras clave: sistemas de comunicación gráfica; las Américas indígenas; teoría y metodología semiológica; epistemologías descolonizadoras.

Content: 1. Introduction. 2. Decolonizing Epistemologies. 3. The Model. 4. Analytical Dimensions. 5. Applications. 6. Discussion. 7. References.

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1. Introduction[4]

From the time Europeans set foot on Indigenous land most societies of the Americas were considered to be without "writing", a Western term given to Graphic Communication Systems (GCSs) that denotes sounds in spoken language. Although Amerindian and European GCSs sometimes mixed, written language was the preferred means of communication for the European colonial administration, which considered Amerindian communication systems inferior for ideological reasons. The disregarding of achievements of Amerindian graphic communication was exacerbated by diseases introduced by colonists; these diseases led to a demographic collapse in many regions of the Americas (Cook 1981) that resulted in a loss of Indigenous knowledge and specialists and with them the demise of institutions that had curated graphic communication. As a necessary consequence of the Eurocentrist frame of thought, the diversity and potential of Amerindian graphic communication, -whole landscapes of graphic expression-, went unnoticed in subsequent periods, especially in the regions south of Mesoamerica. The loss of Indigenous knowledge made it easy to declare the European writing system superior to everything else, as it could avoid comparison with other systems. In addition, surviving Indigenous communication systems were always measured against the European definition of "writing". GCSs only have received attention when perceived as possible candidates for a communication system that denotes language. This colonial perspective created a framework by which even contemporary studies of Indigenous graphic communication are still determined.

This paper contributes to the relatively new direction in science on graphic communication which tries to break away from the traditional colonial gaze. It focuses on the study of Amerindian GCSs (Mikulska and Offner 2019) which are overlooked because they do not fit Western epistemologies, and also on GCSs that have not been considered as equivalent to "writing" (Gelb 1952; DeFrancis 1989). Rather than

discussing graphic communication from a Eurocentrist point of view that makes constant comparison with written language, we propose to take a more holistic view of graphic communication and show logics and functions beyond what is considered proper writing. Our view is based on the development of a semiological multidimensional theory and methodology to analyze Indigenous GCSs in Mesoamerica, the Isthmo-Colombian area, Amazonia and the Central Andes. The aim is to understand how and in what ways Indigenous communities communicate and encode knowledge using graphic expressions.

2. Decolonizing Epistemologies

The use of Western scientific epistemologies has had serious consequences (De Sousa Santos 2018) as they have prevented seeing and valuing systems of communication that follow logics different from written language (Rojas Martínez, in preparation). However, in recent years, there has been growing awareness of contemporary Indigenous groups (Severi 1997, 2014, 2015; Santos-Granero 1998; Salomon 2001, 2004; Severi and Lagrou 2018; Rojas Martínez, in preparation) and pre-Columbian cultures (Jansen 1988; Langley 1993; Boone and Mignolo 1994; Houston 2000; Clados 2007, 2016, 2019), which favor semasiographic principles (Mikulska 2015) over written speech, without neglecting its possible presence as well. Scholars have taken a conscious distancing from Ignace Gelb's (1952) evolutionary philosophy to look differently at Amerindian communication. A rethinking of outdated concepts and a change of perspective have led to placing emic concepts and ontologies increasingly at the center of the investigation. Indeed, the knowledge gained about new forms of graphic communication opens up new possibilities of analysis. It is only within the last few years that scholars have started to turn away form a constant comparison of Indigenous and European graphic communications to address mediascapes outside settlements founded by Europeans, pointing to hybrid Amerindian-European forms of communication (Salomon 2004; Déléage 2010, 2013; Salomon and Hyland 2010; Brokaw 2014; Cohen and Glover 2014; Hyland *et al.* 2014).

3. The Model

The model suggested in the present paper positions itself in the theoretical and methodological frame of image theory. It differs from previous models in several respects. First, unlike models focusing on the analysis of graphic expression (Panofsky 1975; Jansen 1988), it is non-hierarchical. Its various analytical dimensions form a loose grouping that allows analysis to be performed at one dimension without performing the analytical steps at another dimension. Second, it includes analytical dimensions of graphic communication which so far have not been viewed alongside each other. Graphic units are not only studied on the syntactic and semantic level, but also in intersemiotic, cognitive and pragmatic dimensions. It addresses questions concerning the meaning of the graphic units as well as under what conditions meaning arises, and in doing so, bridges different and opposite paradigms. Third, it focuses on Indigenous GCSs, which have quite different inherent logics.

The model has six analytical dimensions. The first three refer to the meaning of the graphic units, while dimensions four to six determine under what conditions meaning arises.

4. Analytical Dimensions

4.1. Identifying Graphic Units

The focus of analytical dimension one is on identifying visual attributes at a first level of perception (Panofsky 1975; Jansen 1988; Eco 1996), using graphic units as a basic descriptive unit. This is particularly relevant if the original meaning of a GCS is lost, because there is no access to those who use(d) them. Identifying visual attributes offers a way in which researchers can start to understand the meaning of graphic elements. Based on the observation of the existence of different image contexts (Goodman 1968; Elkins 1999) and operating principles (Mikulska 2015; Dehouve 2021), the analysis addresses a wide range of two- and three-dimensional graphic elements commonly termed glyphs, motifs, framed motif units, geometric figures, or graphic rendering of (mythological) personages, objects, animals, words etc., whose meaning might be contextual in terms of the graphic unit's function. There may always be a sense of incomparability between these elements, which is why we stress the act of visualizing, which includes technologies like drawing, painting, scratching, engraving, and even sculpting, and suggest the term graphic units as basic descriptive units. Graphic units are inclusive, may be disjoint or replete (Goodman 1968; Elkins 1999), or (non-)figurative. They may address a temporal-spatial disjunction, but do not do this as several scholars point to the persistence of parts of prehispanic GCSs (Jansen 1988; Clados 2016; Rojas Martínez, in preparation). Formal features to describe graphic units include shape, pattern, internal structure, profile and frontal view, size, gesture, posture, color, repetition, distribution, and selection (Joralemon 1971; Nicholson 1973; Robicsek 1981; Taube 1992; Clados 2001; Whittaker 2009; Stone and Zender 2011; Mikulska 2015, 2020, and many more). Graphic units may consist of minimal units like *graphemes*, or marks (Elkins 1999: 255, 257, 259). They may correspond to a single stroke of a painter's brush or cut of an incising tool or to several such steps.

4.2. Recognizing Configurations of Graphic Units

Because many GCSs form larger sets than motifs, glyphs, and words, we propose the term "configuration" as another descriptive unit for formal analysis. We define configurations of graphic units as meaningful arrangements or groupings of graphic units, or larger units of syntax composed of graphic units. The second analytical dimension addresses configurations commonly termed as themes, texts, series and sequences of glyphs and framed motif units, scenes, schemata, and various types of composites. Like graphic units they may be characterized by a high degree of semiotic heterogeneity, and may be understood in different ways, depending on the underlying operational principle (Kubler 1967; Jackson 2009; Whittaker 2009; Brokaw 2010; Mikulska 2015; Dehouve 2021). There is a lack of parallel oral sources or a non-continuous graphic tradition that prevent naming the subject matter, configurations with a high

proportion of unfamiliar elements need, in contrast to Panofsky's model, also to be understood as descriptive units in the sense of a first level of perception. Like in the case of graphic units, the analysis of configurations may express culturally determined concepts (Panofsky 1975; Eco 1996) and address a temporal (Jansen 1988)-spatial disjunction. They need to be analyzed in their social, ideological, historical, and ecological context. Formal features to describe graphic configurations include modes like standing lines, perspective, indicators of direction, and types of interactions between the graphic units. Questions concern whether the area is subdivided and bounded, the symmetry and balance of the surface arrangement, metrical arrangements (Mikulska 2015) the amount of space covered, the placement and relation of different graphic units and configurations with regard of proximity, alignment, inclination or slant, size and color, superposition or enclosure (Harris 1995).

4.3. Detecting the Relation between Graphic Units, the Surface and the Broader Spatial Context

The third analytical dimension addresses the relation between the graphic units or configurations, the graphic surface and the broader spatial context. Terms like layout, design and structure (Friedrich 1970; Hardin 1983) refer to where the graphic units and configurations appear on the surface area. Like Harris (1995) we assume that a graphic surface is not valueless but may contribute to the meaning of the graphic unit or its configurations. A graphic unit may determine the surface used for reason of content or for biochemical constraints and may even function as a comment on the surface. The position of the graphic units and their configurations on a surface or a graphic configuration encircling a three-dimensional surface (Clados 2019) also contributes to the meaning. The surfaces used in Amerindian GCSs are diverse; they can be codices like the Mixtec and divinatory codices from Central Mexico (Mikulska 2008, 2015; Kowalczyk-Kądziela, this volume) wooden panels, paper slides or arrows, baskets, bags or faces in Yukpa graphic communication (Halbmayer 2018a, 2018b; Goletz, this article application 3), Tiwanaku stone sculptures, bone engravings, vessels and textiles (Clados 2009, 2021), tortilla napkins like in the Ayöök divinatory systems in contemporary Mexico (Rojas Martínez 2016a, 2016b), engraved rocks like in Northwest Venezuela and south coast of Peru (Juszczyk *et al.* 2017) and many more[5]. Some of these surfaces were purposefully elaborated as media for communication, others were repurposed for this role and still others have another primary function. It is not always clear for all graphic units or configurations where the graphic surface ends and where the broader spatial context begins. Examples include "encoded" personal "possessions" (e.g., arrows, baskets, bags or faces) that only acquire their full meaning by being spatially attached to their owners, whose extension they constitute (Halbmayer 2018a), or "encoded" landscape elements that comment on their spatial environment.

4.4. Identifying the Working of Signs and Tropes to Understand Semiosis

The fourth analytical dimension considers the relation between the graphic units (the signs or representamen), the referent (the "object" represented by a sign) and the

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[5] These exemplary surfaces originate from the five subprojects involved in the AmerGraph research project.

interpretant (the effect or signification of the sign on/for an interpreter). Furthermore, it considers the cognitive processes involved in the creation of meaning. As will likely be clear from the terms used, Charles Peirce's (1931) semiotic theory of signs serves as a basis for this dimension. This theory consists of three trichotomies, the most pertinent being the iconic, indexical or symbolic relation between the sign and the referent. Yet, rather than apply Peirce's trilogy as a theory, we use it as a method while emphasizing a cognitive semiotic approach. This means that we take a trans-disciplinary consideration of meaning-making involving concepts from semiotics as well as from neuroscience, philology, philosophy, psychology and anthropology (Zlatev 2012). Thus, Peirce's trilogy is complemented by approaches that deal with the cognitive processes involved in the creation of meaning of signs. This involves the egyptologist Valerie Angenot's (2021) efforts to complement and rectify Peirce's trilogy with the tropes of synecdoche, metonymy and metaphor, which she under-stands not as rhetorical figures, but as cognitive principles (Lakoff and Johnson 1980). Furthermore, it invokes the anthropologist Danièle Dehouve's (2019, this volume) and Mikulska's (2010) observation of metonymic series in Mesoamerican graphic and verbal ritual language. These observations refer to a series of either graphic signs, words or objects that define the referent through a definition by exten-sion (Dehouve) or accumulation (Mikulska), i.e. the enumeration of signs that belong to a concept (referent).

4.5. Conducting an Intersemiotic Analysis between Sign Systems

On the fifth analytical dimension, the relationship between the graphic units studied and other sign systems, for instance, verbal or musical, is considered. We draw on the anthropologist Carlo Severi's (2014) take on the linguist Roman Jakobson's (1959) intersemiotic translation as a method to study the transmutation processes from one sign system to another. Severi based this method on the observation that in Lowland South America there exist complementary relationships between mythical narrations, rituals and graphic representations in/through artifacts, drawings and body decorations (e.g., Guss 1989; Vidal *et al.* 2000; Severi and Lagrou 2013). The interrelation of different sign systems or media of communication was also high-lighted by the philologist Galen Brokaw (2010) under the term polygraphy or heter-ogeneity *(heterogeneidad)* (Brokaw and Mikulska, this volume), meaning writing in many forms and exemplified on the basis of diverse Andean and Mesoamerican GCSs. Dehouve (2019) and Loïc Vauzelle (2017, 2018) have identified similar inter-semiotic relations between graphic discourse in manuscripts and ritual language (oral speech, theatrical acts performed and objects used during rituals) in Mesoamer-ica and the archaeologists Walter Alva and Christopher Donnan (1993) between Moche iconography and the objects found in the tomb of the Lord of Sipan. These studies show that the transmutation (Severi) or transposition (Brokaw) of a sign into another sign system never relies on an exact sign-to-sign correspondence and trans-lation (Dehouve 2019). Instead, it follows intuitive, although systematic, relations between groups of graphic units, groups/series of words and sounds and between these acoustic, tactile, verbal and visual sign systems as a whole (Severi 2014). This heterogeneity of signs ensures that every sign system may provide additional and complementary information (Martin 2006). Intersemiotic analysis and everyday

transmutational interpretation therefore has to take the different sign systems and their relations into account.

4.6. Analyzing the Pragmatic Use and the Social Context of Graphic Communication

The sixth analytical dimension focuses on the use of graphic communication in its broader social context and the role of the communicators involved. It is of particular interest for those GCSs whose communication processes are analytically accessible, either through the users themselves or through the documentation of their use. GCSs have diverse pragmatic functions and contexts of use, including defining and communicating administrative and social roles in assemblies and social gatherings (e.g., Salomon 2001), as memory aids, for reckoning or registering legal claims (e.g., Salomon 2004; Chrisomalis 2020), or in ceremonial and ritual contexts for divination (e.g., Rojas Martínez 2016a) and for communication with other-than-human actors (e.g., Halbmayer 2018b; Severi 2014). Many GCSs have multiple contexts of use and functions, and their graphic units may acquire different meanings in these contexts. This is why the social context is also a key element in order to understand the working of graphic communication. Some systems are designed to communicate in the absence of either the senders or receivers, others in the presence of the communicators, and some require that the graphically communicated message is complemented by another medium (see dimension 4). In the first case, the perception of a "difference that makes a difference" (Bateson 1979) is conceived as an utterance of an (invisible or non-present) sender and thus understood as communication (Halbmayer 2004a, 2004b). In the latter two cases, those communicating jointly create the course and outcome of the interaction (Martin 2006; Chrisomalis 2020). Furthermore, GCSs show variations in terms of the communicators involved; some are designed to communicate to a broad audience, others to a limited circle, some are directed exclusively at humans, others recognize other-than-human actors.

5. Applications

To illustrate the application of the six levels of analysis, we use three examples. The first consists of two Central Andean Tiwanaku vessels for liquids, the second focuses on Yukpa tio-tio graphic communication and the third is based on Yukpa arrows from Colombia and Venezuela.

5.1. Application 1: Tiwanaku Framed Graphic Units

Framed graphic units of the Central Andean culture of Tiwanaku (ca. AD. 350-1100/1150) (Janusek 2008) have been only briefly mentioned in a few studies (Posnansky 1957; Rojas Silva 2008; Korpisaari *et al.* 2012). They were often used on textiles, sculptures, bone and wooden objects that come from the Tiwanaku heartland and beyond. They superficially resemble the five hundred years later Inca Tocapus, but based on the current state of research it is not possible to say whether they follow the same logics. Tiwanaku framed graphic units on artefacts recovered from a secure archaeological context allow study of the role of distinctive objects in ceremonies

and everyday life, and thus determine the relation between graphic communication and pragmatic use (dimension 6). Framed graphic units were applied on surfaces of ceramic vessels, stone stelae, bone and wooden snuff trays, and woven into clothes. They comment on the woven structure of fabrics, the content of storage vessels, and the smoke coming out of incense burners, and in doing so they extend the graphic space (Kowalczyk-Kądziela, this volume) (dimension 3). There is evidence that the meaning of Tiwanaku framed graphic units is based on underlying operating principles, for they occur both in scenes (Figure 1a) and in series (Figure 1b, left). The entire repertory of Tiwanaku graphic units supports the view that the producers were seeking forms of clarity. Framed graphic units are clearly separated from each other by contour lines or different background colors, and are thus syntactically disjoint. All media are multimodal in layout, combining different types of graphic configurations, e.g., rows of framed graphic units together with pictorial representations. Like Inca Tocapus they are square or rectangular in outline. They are either "filled" with a figurative central motif, like the severed heads of (black) jaguars on a small drinking bowl (aymara: *umaña*) (Figure 1b, left), a geometric figure, or a pattern-like internal structure (dimension 1). There are single "three-dimensional" framed graphic units encircling drinking vessels (aymara and quechua: *keru*), with a horizontal direction that shows no starting or ending point (Figure 1c). In some configurations, framed graphic units are included in scenes (dimension 2). In the "feline basic theme" (see Figure 1a), framed graphic units that show an S in the transverse position as the main motif appear on the feline's body. The S-shaped graphic unit does not fit the merely figurative syntax of the represented protagonist; it is what can be called an

Figure 1a. Framed graphic unit 'filled' with S-motif depicted on a feline's body, storage drinking vessel (Staatliche Museen zu Berlin,Ethnologisches Museum, V A 10493, photograph: Martin Franken, drawing:Christiane Clados, right).

embedded or counterintuitive sign (Berlo 1989; Domenici 2017). Its identification is difficult due to its perceived non-figurativeness by a viewer who is only familiar with Western conventions of figurativeness. The meaning can only be determined through comparison with other objects. On the *umaña* (see Figure 1b) the framed graphic units with severed jaguar heads are altered with a variation of the S-shaped graphic unit (Figure 1b left, closeup) depicted on the feline's body in Figure 1a, this time varied by a 90 degree rotation to form a separating band between the jaguar heads. Two red bands ending in semicircles, the representational convention for "drops'", are inserted. They identify the red-colored S-shaped graphic unit as red liquid, which in combination with the severed jaguar heads can be decoded as blood. It functions as a double index (dimension 5), both for the liquid the vessel originally contained as well as for the activities (offering ritual), which resulted from the perception of the framed graphic unit.

Figure 1b. Series of framed graphic units showing a severed (black) jaguar head and an S-motif with inserted 'drops' (right, closeup), *umaña*, Tiwanaku IV (rollout by A. Posnansky 1957: plate XXXVIIIa).

Figure 1c. 'Three-dimensional' framed graphic unit 'filled' with wavy lines encircling a beaker (keru) (Staatliche Museen zu Berlin, Ethnologisches Museum, V A 64437, photograph: Martin Franken).

5.2. Application 2: Yukpa Tio-Tio

Tio-tio graphic communication among the Yukpa of the Venezuelan Macoita, Rionegrino and Parirí subgroups became known as a way of writing and reading in the 1950's (Cruxent 1952; Schön and Jam 1953). Its analysis may start with the relations between graphic units, surface and broader context (level 3). Graphic units were applied on wooden surfaces of different sizes which became later substituted by paper (see Figure 2a). The different sizes indicate different uses; most but not all tio-tio objects were portable and used for the transmission of messages. Their function changed because of the broader contexts of use, which ranged from painted posts in clearings in the forest (Vareschi 1974), or houses interiors (Hitchcock 1954), to social encounters (Cruxent 1952; Schön and Jam 1953; Lhermillier and Lhermillier 1982) and rituals (Wilbert 1960).

Figure 2a. Tio-tio painted by Jesus (collected by Alex and Nelly Lhermillier 26.6.1976).
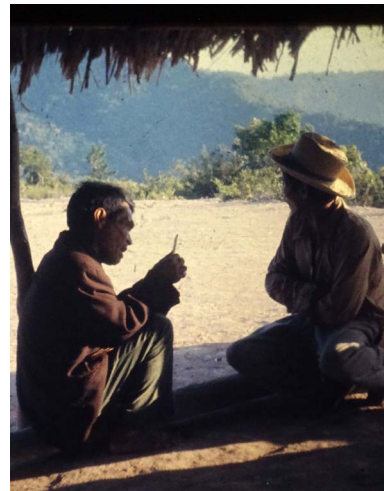
Figure 2b. Jesus reading a tio-tio paper to Luis, in Samamo (photograph Alex Lhermillier).

There are different graphic configurations (dimension 2) or meaningful arrangements. These range from a single graphic unit (geometric form, motif) on a tio-tio (Figure 2c). For example, representing a specific song in the context of rituals, to two common more complex forms. One is a series of maybe 12 to 20 clearly disjoint signs (Figures 2d and 2e), which may encode a message to be transmitted and to be read in a specific linear order by touching the respective sign. Here a sign "is not equivalent to a letter, or to a word or to a sentence, but signifies by itself a message of several stanzas" (Vareschi 1959). The fact that tio-tios may also have a political-juridical function becomes obvious with tio-tios of several signs that do not encode a linear message to be narrated, but document, for example, an exchange of territory, where each sign stands as an emblem for a person or settlement unit affected by the exchange. Tio-tios like that in Figure 2a have such an emblematic dimension, as the form of the sign stands recognizably for a specific author, whose tio-tios
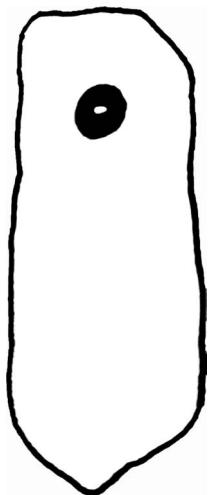
Figure 2c. Tiyotio painted on balsa wood: it is an exchange of a smallholding between Jesus and a man from Aroy (fhotograph Alex Lhermillier).

Figure 2d. Tio-tio with several disjoint signs (photograph Alex and Nelly Lhermillier).

Figure 2e. Redrawing of Tio-tio Figure 2d by Alex and Nelly Lhermillier.

always repeat this basic form. They are not formed by a series of disjunct signs, but by a complex configuration with different parts. Each part may vary in the different realizations, so that the same emblematic motif is repeated, but the tio-tios and the encoded message are not the same. The variations of specific parts of the complex signs encode specific parts of the message, for example, the number of days someone is abroad is encoded by the number of rays of what we call "the sun" in the center of the tio-tio (see Figure 2a). Therefore, what serves as a graphic unit and which graphic elements encode meaning (dimension 1) is dependent on the overall graphic configuration the tio-tio is composed of. Specific signs or aspects of complex configurations may be standardized and generally "readable", whereas other signs or elements seem highly idiosyncratic. The signs used are figurative and non-figurative, and may be iconical, indexical or symbolic (dimension 4). In tio-tio communication, the use of graphs is just another aspect of graphic communication. It generally forms part of more or less strongly formalized non-competitive ritual discourses (Urban 1986)[6],

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[6]   See Rivière (1971) for differently ritualized discourses among the Trio.

going hand-in-hand with differently standardized behavior (standing, small dancing steps or sitting, see Figure 2b), vocalized intonation (a singsong) and ritualized formulas. Different graphic, verbal or musical and bodily behavioral sign systems work together and each partially encodes a dimension of the message in an intersemiotic manner (dimension 5). The analysis of the pragmatic use of tio-tio communication refers to the different broader social contexts of social encounters, communications and rituals (dimension 6) in which tio-tios are used. These contexts are generally characterized by a degree of social distance, potential conflict and need for social coordination in which local political-juridical issues are at stake. Thus, the use of tio-tio communication marks a formal and official discourse, indicates rights and has a mnemonic and documentary function.

5.3. Application 3: Yukpa "Encoded" Arrows

The graphic units that are meaningful in the Yukpa GCS have long been overlooked or dismissed in ethnographic literature as decorative elements on artifacts (Reichel-Dolmatoff 1945; Lira Barbazo 1998)[7]. But the very designation of these graphic units as *yiminorh* or *tumeno* in Yukpa language, meaning its (the arrows', the baskets', the faces', etc.) writing/pattern, point to their meaning-bearing function. People weave and sew these patterns using beige and red-colored yarn in bags and frontal straps, tying different colored threads around arrows, carving notches in bows and painting faces with black or red paint. Most graphic units represent snakes and felines, but they also have an emblematic function (cf. Bolinder 1917; Reichel-Dolmatoff 1945; Halbmayer 2018b). In the context of this application, we will focus on the representation of snakes on arrows. As Figure 3a shows, the graphic units are usually syntactically and semantically disjoint, since there is often one unit on each arrow and each encoded arrow represents one snake. The tie direction, the threads' crossing, the thickness and the distances between the ties, in some cases the colors (not in example Figure 3a, yes in Figure 3b), and the resulting pattern as a whole are decisive for the identification of the represented snakes (dimension 1). At first glance, the resulting pattern seems to be non-figurative. Yet, taking into consideration the whole artifact "encircled" by the pattern, it becomes evident that it is a figurative representation of the snake (cf. Clados 2019 on Tiwanaku vessels). In this figurative representation, the shape and the pattern of the arrow hold an iconic relationship to the shape and the pattern of the represented snake; the arrowhead resembles the head and teeth, the long thin shaft the body and the tie pattern the skin (cf. Halbmayer 2018b). The arrows in Figure 3a can therefore be identified as an iconic sign for the rattlesnake (*tamarhaka)* and the arrow in 3b for the pit viper (*yorhpa*). Arrows are personal possessions and extensions of their user/owner (*ibid*. 2018a) and therefore, their personality contributes to the creation of meaning (dimension 3). This is because there is an analogy between the personality of the user/owner of the encoded arrow and the characteristics of the snake it represents. People in the Yukpa territories know about the individual characteristics and pattern of each snake, not only through personal experience, but primarily through the narration about the origin of

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snakes. This narration tells of how in a distant past, the then still human-like snakes transformed into different snakes by eating different amounts of poison and painting their bodies, or respectively their arrows, with the pattern that distinguishes them today. Before transforming, each of them voiced the characteristics it would bear as a snake. The knowledge of this narration complements the encoded arrow with important information (dimension 5), for it is only through this knowledge that the indexical relationship between the encoded arrow, or respectively its user/owner, and the potential danger it communicates to a knowing observer becomes explicit (dimension 4). The communication of this message is context-dependent and is especially meaningful when carrying bow and arrows in assemblies and social gatherings and when hunting, making the other participants or the owners of the animals addressees of the graphic communication (dimension 6). In Figure 3b, for instance, the user/owner of the arrow with the pattern of the pit viper communicates the following message to the other attendees of the assembly: "If you bother me, I will bite [harm] you immediately. If you leave me alone, I won't bite [harm] you".

Figure 3. a) Small arrows with the pattern of the rattlesnake, crafted by Jesús Pérez Restrepo; b) Participant in an assembly holding his arrow with the pattern of the pit viper (photograph Ernst Halbmayer).

6. Discussion

The model proposed arises from the intention to understand graphic communication beyond the history of the alphabet and a discourse that sees efficient communication solely as procedures that denote sounds of spoken language. "Writing" in its narrow definition is just another theoretical construct of Western epistemologies used to de-

clare written speech as a superior communication tool. The epistemic violence inherent to this concept hides forms of graphic communication of all those world regions that go beyond the encoding of language. In order to "provincialize" this narrow definition of writing, it is therefore necessary to grasp the epistemologies of those who had been continuously left out of the scholarly discussion. This also implies the active adaptation of the term "writing" by anthropologists and Indigenous scholars for a variety of GCSs (e.g. Severi 1997; Santos-Granero 1998; Alejandro Huatta in Zorn 2004; Hugh-Jones 2016; Garcés 2017; Franchetto 2021) expanding the concept of writing, this time by those who have not been able to shape Western epistemologies so far.

The model proposed focuses on the mental frameworks of Amerindian past and present Indigenous societies by acknowledging that they are crucial sources for understanding Indigenous GCSs. Such a model has to be integrative and study graphic communication in its entire sphere of action. It takes the graphic expression out of its narrowed object-icon relationship and involves the region-specific broader context, which is to be considered an extension of the graphic expression. This opens up new possibilities for the study of graphic communication and leads to the interdisciplinary application of analytical tools, be it the more in-depth study of the syntactic and semantic level of graphic expression of contemporary Indigenous groups or the analysis of the pragmatic, intersemiotic, and cognitive dimensions in the context of pre-Hispanic graphic communication. The applications discussed in the present paper bring the "environment" of graphic communication more into view and show the contextualization that the history of the alphabet is ignoring: the tiotio serves as a guide to standardized behavior and vocalized intonation, the Yukpa arrows revealing the owner as dangerous like a pit viper, and the indexical use of a framed graphic unit standing for blood, serves as a label which refers metaphorically to the (red) liquid of a Tiwanaku drinking vessel. These applications show a previously unknown spectrum of new forms of the interplay of graphic units, configurations, and surfaces, and the often-non-verbal messages inscribed on them, and on the other hand, a significance of graphic communication far beyond Western categories, as a tool with its own agency and which permeates human existence in many ways.

7. References

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