

Abstraction through the Merger of Iconic Elements in Forming New Allographs: The Logogram 539 <WAY>

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One contributor to the calligraphic complexity of Classic Maya writing is the ability afforded by the script to create allographs. There are allographs of distinct iconic origin, as best illustrated for example by the abundance of different graphs for the syllabogram **u** (Stuart 1990:219-212), or the line of evidence in identifying three different **sa** signs (Schele 1991:21-23). In any classificatory scheme, such allographs require unique sign identifiers.

On the other hand, the script also demonstrates a principle of graphic allomorphy, i.e., the manipulation of the graph outline in order to create a related, derived allograph while keeping the graph's identity (the iconic elements that make it unique). The best-known principle is the 'head variant' transformation of graphs (Stuart 1995:52, 71). The segmentation of multipartite graphs was first described as "superimposition" (Stuart 1995:38, 65), i.e., the 'overlay' of one part of a graph with another graph. Just recently, it has been demonstrated that individual graph elements can be used as fully individual allographs (Prager & Gronemeyer 2018). Perhaps the idea of a 'three-dimensional' reading order is only a misperception of standardized sign transpositions.¹ The segmentation principles are best described in a taxonomy (Prager & Gronemeyer 2018:157-164) based on full forms which may reflect, at least in parts, emic conceptions of graph morphology as well.

¹ One example commonly referred to (cf. Stuart 1995:38) are readings with 168bt **AJAW**, where e.g., substitutions of the counted *K'atun* title prove that the standard graph order 'number'-**AJAW**-**WINIKHAB** reads 'number' *winikhab ajaw*. The Emblem Glyph would be another instance. But Lounsbury (1973:134) may already have provided the most compelling explanation: that the arbitrariness of reading orders is the result of spelling conventionalisation. Consider Egyptian writing, where god names are usually put in first position (Gardiner 1957:§57). If the appearance of the upper part of the **AJAW** sign 168 always involved superimposition with an inherent change of reading order, the usual phototactics of expressions like **ti-AJAW-le** for *ti ajaw-le* (e.g. CNC: P. 1, J2) would violate this rule. An Emblem Glyph on UXM: Alt. 10, D1-E1 confirms this with **e-wi-tzi-AJAW-wa** for *e[w] witz ajaw*, in which 168bt **AJAW** is written after the toponym. This, in my opinion, clearly indicates that the Maya perceived their hieroglyphs as multipartite entities, where each segment could be used as if it were the full form.

Allography by Segmenting Graphs

For example, the sign 74,² the syllabogram **ma**, has in its full form a vertically ordered, tripartite configuration. In our new classification scheme, the suffix ‘tv’ (= tripartite vertical) is added to specify this full form. From this, either the top or bottom part can be used (old T74 and T142, respectively), indicated by ‘tt’ (= tripartite top) or ‘tb’ (= tripartite bottom). Both segments can also frame another graph in the center (‘tf’ = tripartite frame), or the upper part can be further subdivided (‘dt’ = division two-third). In rare instances, this primary segmentation axis is rotated and only the left half of the full form 74tv is retained (‘bl’ = bipartite left), e.g., on TIK: St. 10, G10.

The advantage of this new classification scheme is that one distinct hieroglyph and all its derived variants have only one sign number, which is then distinguished by a suffix to denote a specific allograph. This makes the project’s new sign catalogue – currently under development – more systematic and allows comparison between allograph formations for structurally parallel hieroglyphs (e.g. sign 68, the syllabogram **tz’a**, old T68). In the process of segmentation, the original outline of the part that now represents the full form *pars pro toto* is retained and the individuality of the hieroglyph is thus guaranteed.

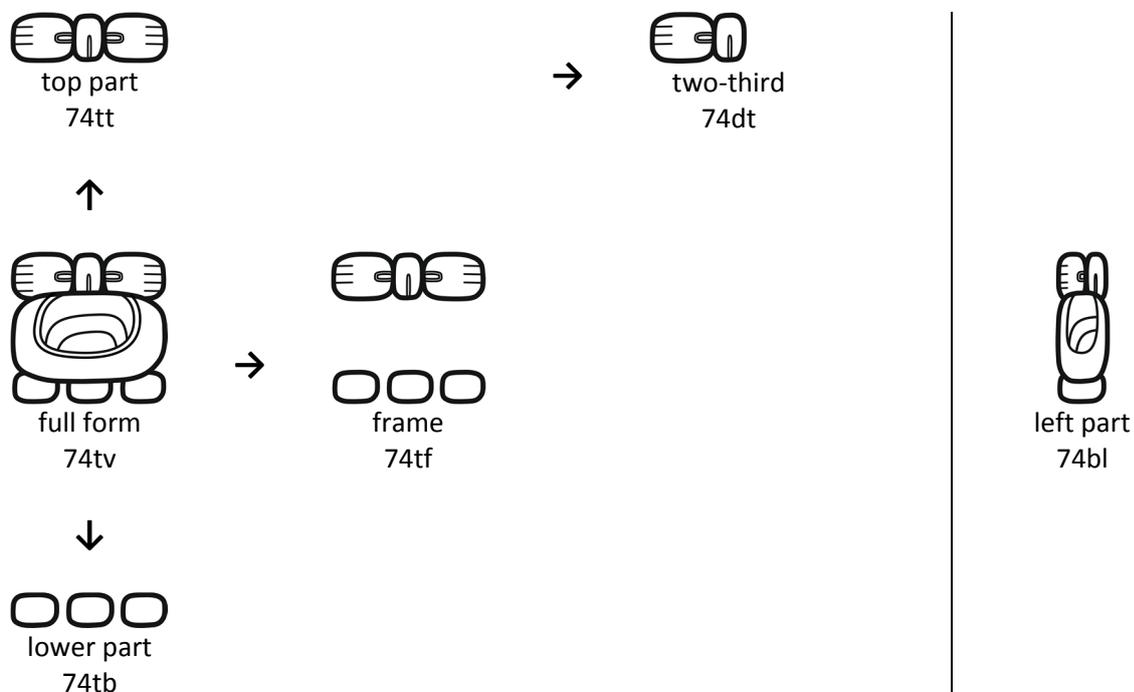


Figure 1. Different segmentation processes for sign 74, the syllabogram <ma>. Drawings by Christian Prager.

Allography by Extracting Iconic Elements of the Graph

Another principle of allographic reduction is the extraction or simplification of certain diagnostic elements or iconic markers that make the graph unique. While this process still ensures the graph’s

² As a general rule, the sign numbers applied by the project follow Thompson (1962) when there is a direct correspondence (e.g. T12 = sign 12 = as variant ‘st’ for **AJ / a**), or there is an implicit concordance or merger of multiple signs in his classification (e.g. T181 and T683b = sign 181 as variants 181br and 181bh for **ja**); in the latter case, the more common or unambiguous sign number is used. As T683a instead represents the number “20” (Stuart 1985:98), Thompson’s T683 combined what are actually two different signs, and the number 683 is thus discontinued in the new sign catalogue. New classifications start with the sign number 1500.

individuality, its outline changes. Hence, this principle taxonomically constitutes a possible transformation, along with the animation of graphs as head variants (Prager & Gronemeyer 2018:165-170) or multiplication, rather than an instance of segmentation.

Extractions are notable for forming allographs among graphs that *sui generis* have head variants, because they depict and often refer to animals or supernatural beings, etc. Frequently, the element being extracted is the eye (Figure 2), as with signs 524 **HIX** and 680, for which Stuart (2012a:4) has proposed the reading **BOLAY**.



Figure 2. Process of extracting the eye as a diagnostic marker to create allographs. a) Sign 524 <HIX>, b) Sign 680 <BOLAY?>. Drawings by Christian Prager.

The functional equivalence of 524st and 524ex is proven by spellings on several painted ceramics of the emblem glyph of *Hix Witz* (Martin & Reents-Budet 2010:fig.4), associated with ruler *Janab Ti' O'*. The specific rendition of the eye in the full head form 524st is also a diagnostic separator from the otherwise very similar sign 751 **BALAM**. 680st and 680ex substitute in calendrical contexts: as the 'feline form' of Glyph C (Linden 1996: tab. 3; Thompson 1950:figs.36-37), and as the patron for the month *Wo* in the ISIG on PMT: Mon. 5 (Thompson 1962:282). While Thompson (1962) did not classify the head variant of sign 524, old T680 and T1018c can now be merged under one sign number, 680. Here, the reduced variant combines the 'god eye' marker, the surrounding cruller typical of the 'Jaguar God of the Underworld' (Schele & Miller 1986:50), and black markings.³

Other integral parts that may be extracted include the ear, e.g., with the syllabogram 1506 **e**, or qualitative markers, as with sign 544 **K'IN** (Figure 3). Thompson (1962:322) primarily considered the toad head glyph T741a to be the zoomorphic form for *Winal*, but his catalogue also included instances where the syllabogram is written and – moreover – conflated with other signs, e.g., 764 **CHAN**. Because of the strict relation between a sign and its graphs, **WINAL** / **WINIK** is reclassified in our catalogue as 1519, as 1506ex never substitutes for it in calendrical contexts.⁴ The development of 1506ex is not seen until the Codices, where the graph with just the parotoid gland is used in **u-che-e**, *u-che'* "his tree" (C. Ma. 42c), for example. Its final attestation is in the Landa 'alphabet'.

The head of the Sun God is typically displayed with one or two sun markers to designate him as bright and hot (Houston, Stuart & Taube 2006:17). There are substitutions of 544st and 544ex in a variety of functionally equivalent contexts, notably within the month name *Yaxk'in*, where its reading is strengthened by a 116 **ni** complement, e.g., QRG: St. D, A17b, as well as in the month patron of the ISIG (Thompson 1950:fig.17, 22). Another context is the name of the Sun God himself as *K'in Ajaw*, once written with the head variant as **K'IN-AJAW-wa** on PAL: TI-M, E4 and with the 'regular' form as **AJAW-K'IN-wa** in C. Dr. 5a (Berlin 1963:fig.7, Taube 1992:fig.22a).

³ In this case, the 'New Catalog' (Macri & Loooper 2003) indeed correctly merged both T-Numbers, subsuming them under the three-digit code ST7.

⁴ In the 'New Catalog' (Macri & Vail 2009), both variants T741a and 1506ex are recorded under AA7, but also with both readings **e** and **WINAL** / **WINIK**.

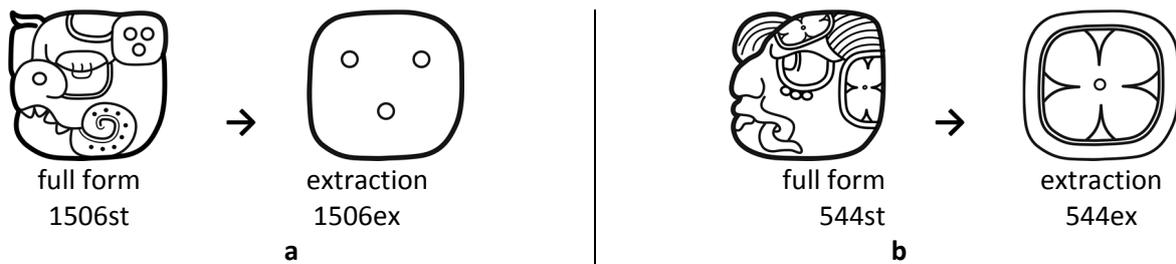


Figure 3. Extraction processes of other cranial diagnostic markers to create allographs. a) Sign 1506 <e>, b) Sign 544 <K'IN>. Drawings by Christian Prager.

There are also examples with multiple stages of extraction and simplification (Figure 4). However, this poses a problem in the taxonomy, because there is only one variant reserved for extraction. Subsuming all different stages under one variant 'ex' would undermine the scheme's goal to provide very granular designations for statistical, graphotactic, and palaeographic investigations. To cover such cases, compromises need to be made to find the closest possible alternative designation according to the principles of the classification scheme.⁵

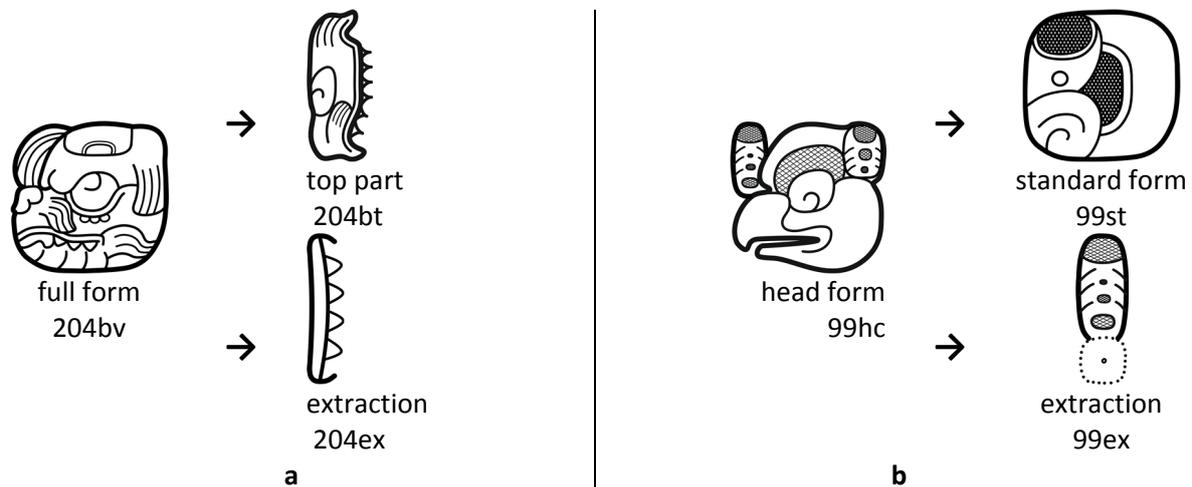


Figure 4. Multiple simplification processes to create allographs. a) Sign 204 <u>, b) Sign 99 <o>. Drawings by Christian Prager.

The so-called 'Xoc-Fish' (Thompson 1950:162) T738c was shown by Stuart (1990:219-220) to substitute for T204 in the ADI and PDI as the syllabogram *u*. It went unnoticed until the 'New Catalog' (Macri & Loooper 2003) that old T204 is merely a simplified, compressed variant of T738c, with the mandible and the upper part of the cranium but without the mirror element. Thus only the eye, front and back fins, and the upper teeth remain. As the utmost possible reduction, we find just the upper teeth, the old T10, in the codices (Macri & Vail 2009), e.g., substituting for each other in *u-ku-chi*, *u-kuch*, 'his burden' in C. Dr. 18c. In order for this latter variant to be labelled 'ex', we decided to classify the old T204 as a 'bt' variant for the upper segment of a bipartite graph. This is only a makeshift solution, as 204bt does

⁵ One has to keep in mind that the allograph taxonomy is less an emic classification than a descriptive one. I am fully aware that no classification scheme can possibly ever cover any type of variation while still being manageable.

not entail a full retention of the cranium and thus does not qualify as a segment. Most importantly, however, there is a change in the outer contour, the prime argument for the principle of extraction.⁶

Another sign is the so-called *O'*-Bird with three allographs (old T99, T279, T280, T694, and T1066), here assigned the sign number 99. The 'ex' variant is attested in the Landa 'alphabet', while the other variants were recognised by functionally equivalent substitutions in spellings of **ko-o-ha-wa** on PNG: P. 2. In its full form, as variant 99hc, we find an avian cranium with a black supraorbital area and two prominent spotted feathers. The large front feather seems to be the diagnostic body part and is used for extraction to create a narrow allograph with a wider range of graphotactic applications than the squarish full form. With the 'st' variant, we see not only extraction of one diagnostic feature, but abstraction of three features into a 'main sign' shape: the front feather, the beak, and the supraorbital part. Although simplified, these elements are retained in their anatomical order.

Allography by Merging Iconic Elements of the Graph

The manner in which the head of the *O'*-Bird is simplified into an abstracted version almost provides a role model for the actual focus of this article, the sign 539 **WAY** (Houston & Stuart 1989). It was originally dubbed 'hidden lord' or 'jaguar lord' by Linda Schele (1985; 1988:298) because of the iconographic components of the graph: the sign 533, possibly **BAK** (Gronemeyer & MacLeod 2010:49), **SAK** (Stuart in Tsukamoto 2014:287), or **MOK** (Polyukhovych 2015) – which is also used as the standard form of the day sign *Ajaw* – with one half of it covered by jaguar fur. Later, Grube and Schele (1994) found another **WAY** logogram on TIK: Alt. 5 featuring a jaguar head with the icon of sign 533 infixed in the eye. I propose that these two forms are not individual signs, but instead represent two allographs of the same (Figure 5).⁷



Figure 5. The simplification of the feline head graph <WAY> into the common form. Drawings by Christian Prager.

Initially, it seems that the process through which the eye of the feline **WAY** is extracted is identical to the case of sign 524 **HIX**, but this method would only generate a 'duplicate' of sign 533. In order to create a unique graph, another distinctive part of the feline **WAY** icon is merged into the allograph:

⁶ Among the types of allomorphy with outline shape modification, there is also 'multiplication' (Prager & Gronemeyer 2018:168-170), as is not uncommon for the sign 25 **ka**, e.g. on DPL: HS. 3-II, B2 in **chu-ka-ja**. Several signs whose graph represents an anatomical part, usually in profile view, can also be 'duplicated' so as to appear in front view. Sign 204 has a unique example of this on YAX: HS. 5, 156, in **i-u-ti**. Another example is the mandible sign 590 **cho** which is only rarely displayed with both joints, e.g. YAX: HS. 5, 42, in **cho-ko**.

⁷ Although the full form proposed here does not have a T-Number, it was included as AT2 in the 'New Catalog' (Macri &Looper 2003), while old T539 became AM7. Its placement into the category "animals, monkeys" seems doubtful, though, with *saak* as "seed" and the graph icon representing a (maize) kernel.

the spots on the fur. Therefore, and unlike in the simplification of 99hc to 99st, different anatomical features of feline **WAY** are merged into one another in the most quintessential way.

The classification of a full ‘standard’ and a simplified, ‘extracted’ allograph is, of course, above all a descriptive concept from modern perceptions of the script. It is not based on which allograph occurs first. In fact, for sign 99, for example, Grube’s (1990) survey suggests that 99ex is the earliest form and its ‘full forms’ are actually graphically ‘reverse engineered’ based on the underlying concept, as playful calligraphic variants. On the other hand, some more simple allographs are late (codical) inventions, like 204ex and 1506ex, and are definitely true extractions. Conversely, the *pars pro toto* allographs 524ex and 544ex are in fact the ‘standard’ in terms of quantity. Instead, the question maybe one of “economy in writing” (Gelb 1952:27).⁸ But in contrast to how Gelb applies it in his evolutionary view, this term can also be used for principles of text composition. Writing can be made more economical by reducing the complexity of graphs, and hence the number of brush strokes or surface cuts (cf. Gronemeyer 2014:469, 473).

Whatever the direction in which allographic morphism proceeded in each individual case, comparison between related variants and their iconicity may shed a clearer view on underlying cultural concepts. Many *way* characters (Grube & Nahm 1994) represent nocturnal or otherworldly figures: jaguars, owls, fireflies, manifestations of death and death gods. There are specific onomastic patterns of species and their quality, associated places, actions and types of death or disease (Sheseña 2010). Several authors point out that in Colonial times as nowadays, the ability to transform into a ‘co-essence’ is reserved to religious specialists with certain powers (e.g. Villa Rojas 1947:582; de la Garza 1987:89-90). Such abilities and forces were possibly restricted to elite members in Classic times as well (Houston & Stuart 1989: 13).

This may explain why the jaguar was chosen as the iconic animal for the graphic representation of the **WAY** logogram.⁹ As the largest nocturnal carnivore in the forests, the jaguar is the paramount animal embodying strength and ferociousness, wilderness and uncultivated land, darkness and invisibility, and thus underworld realms.¹⁰ This also relates to the head variant of sign 509 **WAY(IS)** representing a feline head with the ‘percentage sign’ on the skullcap as a marker for the otherworld and death (Figure 6).



Figure 6. Full form ‘hp’ of sign 509 <WAY(IS)> from an Early Classic jade in the shape of a turtle carapace, block A2. Drawing by Sven Gronemeyer after a photo by Justin Kerr.

Likewise, the representation of the jaguar’s eye with the graph of sign 533 (and that graph’s use as the shape of the ‘ex’ form) has nothing to do with “lords” or its calendrical value as the day sign *Ajaw* (Thompson 1950:figs.10-11). Whatever reading may be correct, all instances of 533 occupy the semantic field of ‘maize’ or ‘(maize) grain’. Its graph represents the living, germinable maize kernel from which the new harvest grows and new life originates (cf. Carrasco 2005:15-16, Martin 2006:158-

⁸ This principle was originally postulated as “[...] the effective expression of the language by means of the smallest possible number of signs.”

⁹ Kerr (2007) considered the iconography of throne cushions functioning as “sacred bundles” to be the origin of the graph icon.

¹⁰ This is also true for the nocturnal aspect of the Sun God GIII as a feline transformation, the so-called ‘Jaguar God of the Underworld’ (Schele & Miller 1986:50).

159).¹¹ The graph of sign 533 is the core element for a whole complex of agricultural rebirth and (royal) power iconography reaching back to Formative times (cf. Taube 1996; Guernsey 2011; Stuart 2012b:127). In a figurative sense, it represents the concept of life force, compare e.g., the *k'a'-ay-i u-...k u-sak-ik'il* expressions for death, meaning something like “it diminished her/his ‘life force’ and pure breath” (cf. Kettunen 2005, Gronemeyer & MacLeod 2010:49).

It has been noted that squarish god eyes often feature different inset designs, probably to express different qualities or types of sight (Houston, Stuart & Taube 2006:170). In the case of the full form of sign 539 showing the representation of a (maize) kernel, it may describe how liminal forces or creatures can create essence. In association with the rebirth concept, it may represent the cycle of transformation into a co-essence and wild nocturnal creature, and the rebirth as a human being into the ordered world with the new dawn. Both graph variants of 539 thus represent this dualism.

Conclusions and Implications

The appearance of several – this is at least the impression – of the more complex forms later in the history of the script’s graphemic lexicon and their much less frequent usage leads to an intriguing thought. One notices that many of the ‘genuine’ head signs (either human, zoomorph, or supernatural) are scarcely attested in the corpus and thus resist secure decipherment or even narrow approximation of their semantic domain. Of all the human head signs listed in the “P” category of the ‘New Catalog’ (Macri & Loooper 2003), for instance, a quick scan reveals that about half are still undeciphered. Many have modifications of or around the eyes, and Category “S” reveals a similar impression. It may be noteworthy to consider that a small number of these head glyphs have been found to just represent a complex or ‘full form’ of signs that had been previously deciphered. These glyphs resisted decipherment for longer not only because of their limited occurrences, but also because their contexts were not clear enough in comparison with the previously deciphered forms.

The most serious challenge in investigating connections between these head glyphs and other signs is lack of understanding of cultural concepts underlying the relation between simplified and abstracted graphs and the complex forms. However, this is not the only problem; even more difficult to assess are graphic transformations based on emic observations of the environment or the chain(s) of associations encoded in a graph. For example, it is not always clear why specific anthropomorphic or zoomorphic crania are used to create allographic head variants of one sign. There is seldom – if at all – any variety in representations of a given variant. The head variant of sign 585 **BIH / bi**, for example, is always realised with a snake head. Two possible explanations for this case come to mind: it is because snakes can easily be encountered walking down a road or because of the homophony between *chan* “four” (the number of cardinal directions) and “snake” (Houston 1984). A third, homophonous word *chan* for “sky” explains why the celestial band is sometimes represented by a snake or reptilian body (Wichmann 2004:16).

I propose that, in future efforts to decipher unknown signs, we need to consider not only context when searching for substitutions. We should also include meticulous comparison of each iconic element of the graph in question with other graphs, as well as meta-levels of graphic representation. With the

¹¹ Compare this to e.g., the very same representation of the maize kernel on several ceramics (e.g. K634, K2723) with a serrated cleft from which the Maize God emerges in rebirth (Quenon & Le Fort 1997:891). Also, compare to the head variant of 533, which is always a zoomorphic, skeletal head representing an underworld quality, where the seed creates the skullcap of the cranium. This may relate to the kernel in the ‘underworld’ of the *milpa* once it has been sown. Also note how a new cacao plant grows from interred bones on the Berlin ‘Transfiguration Tripod’ (Grube & Gaida 2006:127), while the roots are formed by the now-reborn deceased.

digital catalogue created by our project, each graph will be tagged using terms from a controlled vocabulary to describe the nature of its iconicity. This practice will facilitate such comparisons in the future.

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