

The Visual-Cultural Fit of Writing Systems

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Abstract. Writing systems have sometimes been evaluated in terms of their “linguistic fit” to the language written in them, a concept that has pervaded a good deal of literature on writing typology. Here I argue, building on the idea that writing systems also have a broader sociolinguistic fit (Meletis 2020), that the visual-cultural fit of a writing system in its sociolinguistic context should also be considered. This reveals an important principle of writing system development, namely visual distinctiveness. Following an introduction to the concepts discussed in the paper (§1), the ancient writing systems known as Linear B and the Cypriot Syllabary are used as a comparative case study illustrating that linguistic and visual-cultural fit need not and often do not have a strong correlation (§2). Different types of visual distinctiveness in writing are then presented, with a particular focus on systems used for minoritised languages and groups in the modern day, where visual distinctiveness may be particularly important to the community of users (§3). Finally the conclusion acknowledges further practical problems that affect minority writing systems, particularly digital disadvantage and issues related to dissemination (§4). The paper demonstrates that visual aspects of writing deserve further attention in and beyond grapholinguistic study.

1. Introducing “Fit” and “Vitality”

The idea that a writing system can be well-suited (or ill-suited) to a language, or that a language can have an ‘optimal orthography’ (Rogers 1995), has persisted as a tool for thinking about graphic representations of language. The concept of *linguistic fit* can be thought of as a way of assessing the “quality” of a writing system’s semiotic structures (Meletis 2020, 231), or the effectiveness with which linguistic information can be encoded by writers and decoded by readers, with potential for wider ramifications among its users. Real-world applications could be considered to be a separate area of enquiry (cf. the separate categories of “processing fit” and “sociolinguistic fit” suggested in Meletis 2020). To take

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one brief example, the use of an antiquated orthographic system for *Tibetan*, with a considerable mis-match between written and modern spoken forms, has been demonstrably linked with learning difficulty and hence with low literacy rates (Tournadre and Gsang-bdag-rdo-rje 2003, and see recently Schmidt 2024): this is largely a result of political insistence on linguistic and so also written unity in a linguistically diverse state (see Roche 2020, 78; also Roche 2024, 70-75), although the single orthographic system at the same time can be used as a sort of interscript between different language varieties, none of which are well represented by it. Even such a brief example shows that writing systems exist within and interact with messy networks of linguistic and social structures, and their operational effectiveness can only be understood in that broader context.

Thus, although linguistic fit is a *descriptive* tool of grapholinguistics (e.g., Meletis 2020, 231), a contextualised assessment of a given writing system can have positive or negative associations that result in judgements of value or effectiveness (for various takes on this, see Katz and Frost 1992, Seidenberg 2011, Frost 2012, Perfetti and Harris 2013). It would not be unreasonable to suggest that the application of this grapholinguistic theory is a way of testing of its own validity. The present paper takes the position that the application of grapholinguistic theory is of great importance, particularly in this case because it may have some bearing on the global language crisis that today sees more than half the world's living languages in danger of imminent loss within the next century (6,769 languages of which 60% are on the scale between "threatened" and "nearly extinct" according to Glottolog at time of writing: <https://glottolog.org/>). Since writing can play an important role in the fight against *language endangerment* and loss (see Shah and Brenzinger 2021), understanding how writing supports language should be a priority.

Perhaps the most important point to make at the outset is that it does not necessarily follow that a writing system with a good linguistic fit will be associated with high literacy rates, widespread use, or notable longevity (i.e., possible indicators or outcomes of vitality in the sense presented below). In other words, there is not necessarily a straightforward relationship between readability/usability and acceptability, or between linguistic fit and implementation (cf. Dawson 1989, Cahill 2018). The development of orthographies (very often adaptations of the Latin alphabet) for previously unwritten, minoritised languages is a case in point (see Grenoble and Whaley 2005, 102-159; Lüpke 2011; Shah and Brenzinger 2021), as case studies show that devising the orthography is only the beginning of the process, while community consultation and acceptance are ultimately the deciding factors in the system's take-up (see the papers in Jones and Mooney 2017 for a range of examples). Many such orthographies have suffered from limited take-up and/or have gone

out of use quickly, meaning they have not been effective supports for the language they were intended to write. The present paper is part of an ongoing programme of research to address this issue by considering the factors that contribute to the vitality of a writing system, thereby making it a more effective support for the language it serves. To an extent, this means it is important to consider writing beyond the narrower study of mapping linguistic units to graphic units, since contextual factors will play a significant role in such outcomes, and, overall, an integrated approach is necessary.

The concept of linguistic fit can itself refer to several aspects of language, not only phonological representation (i.e., whether all of the language's phonemes are represented). The issue of structural suitability, for example, is also crucial to the choice of writing system type, and as Baroni emphasised some time ago, an alphabetic-phonological principle is not necessarily the best fit for many languages (Baroni 2011). Features related to the phonological repertoire, syllabification patterns, and morphological structure of a language, as well as others such as tonality and word length, require a system whose structure can accommodate them efficiently (see also, briefly, Meletis 2020, 234), whether by total graphic representation or through orthographic strategies. For instance, the *Japanese* syllabic kana systems (hiragana and katakana, with V and CV signs) could be said to be well suited to the language's syllable or mora structure and especially the frequency of open syllables (Joyce and Meletis 2021, 267), although it is important also to consider the reality of overall orthographic complexity when combined use of all the different systems for Japanese is considered (Joyce and Masuda 2019). These are language-specific concerns related to structure; I will deliberately leave aside the question of whether particular kinds of structural encoding may or may not have universal cognitive benefits, where important research is ongoing (see for example a recent study on the syllable as a unit of learning in Arabic: Abu Ahmad and Share 2024) but not yet sufficiently established across writing system and language types to be applied universally.

Some of the properties that determine writing system efficiency are not intrinsic to the language and its typology but rather to contextual factors, as already noted (see also Cahill 2014). Because contextual factors are not, or not overtly, linguistic, they pose a greater challenge for a grapholinguistic framework that draws its structure from general linguistics or semiotics. Meletis has proposed a category of "sociocultural fit," starting out with the observation that writing systems can have indexicality since 'they can signal, for example, parts of their users' identities by being connoted with a specific group of people' (Meletis 2020, 339), and admitting that there is such a wide range of possible features that to some extent they have to be 'bundled' together (ibid., 340); he then groups his examples and discussion into the three categories of

Graphetics, Graphematics and Orthography, of which the first is the most overtly concerned with visual matters. The broadness of the socio-cultural categorisation is appropriate, since writing is affected by many factors arising from social and cultural context, but it could be argued that it is too unwieldy to apply usefully to individual cases with anything other than a broad brush. Particularly in order to strategise for the future, it is necessary to break down areas of sociocultural relevance and tackle them individually. That is in part the rationale for considering whether “*visual-cultural fit*” could be a helpful way of thinking about the visual aspects of writing and their relationship with issues of linguistic and cultural minoritisation and endangerment (see also recently Simpson 2024)—so the intention here is to make a small contribution to a much larger topic. A further motivating factor is the marginalisation within grapholinguistic research of some writing systems whose features are relatively difficult to describe within a linguistic framework, and may be better served by a framework that includes visual features. The latter is a long-term aim to which I hope this paper may make a contribution.

Theoretically, writing can be a powerful support to a marginalised and/or threatened language because it can make long-distance and digitised communication possible, enable documentation and the creation of new language materials, lead to an online presence, influence other areas of culture such as art and design—on top of the fundamental function of providing speakers with a visible manifestation of their language, which for some may equate to a validation of its very existence and value (see e.g., Cahill 2004). But the successful take-up of a writing system cannot be predicted simply from its linguistic fit. One choice, for example, is between an orthography of an existing majority system on the one hand and a distinct minority system, perhaps unique to the language, on the other (whether a heritage system or a newly created one). This choice, which is in large part visual (though it may also relate to other choices, such as structural ones), plays a significant role in a writing system’s vitality—and so should be at the forefront when deciding how to write down a minoritised, indigenous, or endangered language. The choice should also be contextualised, rather than relying on assumed universals as mentioned above (such as the syllable as an effective learning unit or the phonemic principle as supposedly democratising). Unseth, speaking about emergent scripts in Africa, offers three criteria necessary for the successful adoption and continued use of a writing system: community endorsement, a corpus of literature, and a schooling programme (Unseth 2011, 31), factors that we will return to in the final section.

The idea that a writing system can have its own vitality can be situated within a much broader framework of cultural endangerment since writing systems are different kinds of entities from language and rely on social praxis and materiality (see Steele 2023, 79–88). I am going to

use some examples from the ancient world to introduce this concept, since historical systems can more easily be assessed from a teleological perspective—that is to say, we know the answer as to whether the system survived long-term or not, and, depending on the quality of the evidence, we may be able to make a more detailed assessment of its vitality in different areas and periods of use. Being able to study long-term trajectories in historical writing systems is an advantage not shared by most minority writing systems today, since many are poorly documented and/or recent creations or codifications. Linguistic fit is not necessarily highly correlated with writing system vitality or positive outcomes, as far as historical examples show. The extent to which visual-cultural fit correlates with vitality is a central testing ground for this paper.

In order to evaluate vitality from a teleological perspective, I am going to use a very basic set of three indicators for historical writing systems:

- Longevity: How long was the writing system in use?
- Literacy: How many people could use the system, and over what range of social spectra?
- Domains of writing: What was the range of uses of the system?

A wider range of factors is typically considered when assessing the vitality of living languages according to scales such as that published by UNESCO in 2003 (<https://unesdoc.unesco.org/ark:/48223/pf0000183699>), GIDS (Fishman 1991), or LEI (Lee and Van Way 2016, 2018). However, many of the indicators used in such scales (e.g., numbers of users, age of users) cannot be assessed with regard to historical writing systems, and arguably writing systems may require a different set of indicators reflecting their practical, material, visual, and embodied properties (see Steele 2023, 81–88). The UNESCO, GIDS, and LEI scales are also specifically geared towards assessing the health or vitality of a language from a synchronic perspective, or in other words, its present likelihood of surviving in the future. For historical systems, the teleological perspective is perhaps more helpful, since one of the major pieces of information we have is whether the system survived, and for how long—hence the emphasis on diachronicity here. Nevertheless, there is a relationship between these two, as diachronic, long-term usage should theoretically entail synchronic vitality for at least some periods of use.

2. Historical Examples: Linear B and the Cypriot Syllabary

The writing systems of the Bronze Age Aegean are a family of scripts applied to several different languages or language varieties. Both Linear B and the Cypriot Syllabary have been deciphered and were used to write varieties of Greek (Mycenaean and Cypriot Greek, respectively);

the Cypriot Syllabary was also used for at least one, probably indigenous language of Cyprus, traditionally labelled Eteocypriot. Cretan Hieroglyphic and Linear A were used in Crete (Linear A also a little more widely) to write at least one language usually referred to as Minoan, now poorly understood to the extent that these writing systems are usually labelled as undeciphered. The situation is more complex than that, as there are good reasons for assuming that the sign values identified for Linear B can largely be read backwards onto Linear A (and probably also Cretan Hieroglyphic) as at least an approximation, bearing in mind the likelihood of a different phonological inventory in Minoan language(s) (Steele and Meißner 2017). Cypro-Minoan, the final member of the family, also remains undeciphered and was used for at least one poorly understood language of Late Bronze Age Cyprus. We will concentrate here on Linear B and the Cypriot Syllabary, whose sign values and orthographic rules are well understood. Both could be argued to constitute examples of poor linguistic fit.

Linear B was used to write the earliest attested variety of Greek, between the 15th and 13th centuries BCE. Before its decipherment, many of the features of an earlier stage of Greek could be reconstructed, such as labiovelar consonants that later merged with other sounds; the decipherment confirmed these reconstructions, and quickly progressed to an advanced understanding of its linguistic features and the way they were encoded in the Linear B syllabic script (for the most recent full account, see Thompson 2024 and Thompson and Meißner 2024). Although Linear B could be classed as logosyllabic, in practice the syllabic and logographic inventories are kept separate, even where the same signs are used (i.e., polyvalency): unlike in contemporary, nearby logosyllabic systems like Anatolian Hieroglyphs and Mesopotamian Cuneiform, logograms could not be used syntactically (i.e., to stand for a word, or spell one in conjunction with syllabograms, within a sentence) (Steele 2023, 39-54). Instead, logographic signs were relegated to specific slots in the layout of administrative documents, and are also identifiable by their co-occurrence with numerals and measurement signs. The linguistic fit of Linear B to Mycenaean Greek will therefore be assessed primarily on the basis of its syllabographic repertoire, although the logograms could be argued to aid reading and thus improve processing fit to a limited degree.

When studying the way in which Greek was written in Linear B, a number of deficiencies are quickly apparent:

1. Linear B encodes only open syllables: V, CV, and occasionally CCV. Problem: Greek has very frequent consonant clusters in all word positions and often has final consonants.
2. The Linear B consonant series does not distinguish voicing (except in one case, the d-series) or aspiration. Problem: In Greek of this period, voicing and aspiration are phonemic contrasts (e.g., /k/, /k^h/, /g/).

3. Linear B does not distinguish between /r/ and /l/. Problem: In Greek, these are phonemically distinct.
4. Linear B does not distinguish short and long vowels. Problem: In Greek of this period, vowel length is phonemic.

Problems 2–4 are essentially failures of phonological representation, and have been suggested to originate from the phonological features of an earlier language for which the “ancestor” writing system Linear A (and/or Cretan Hieroglyphic) was designed. Linear B would then be the result of writing Greek in Linear A without doing very much to redesign the system. A few of these issues could be written off as ones that do not impede the use of the system very much. For example, although vowel length is phonemic in Greek, the occurrence of minimal pairs (i.e., pairs of words identical in all other respects than the feature in question) is perhaps not frequent enough to cause regular confusion. Even in nominal morphology, there are a few categories where vowel length is the only distinguishing feature. On the restrictions of the consonant series it has been argued that, since /b/ is notoriously underrepresented across Indo-European languages (i.e., it is difficult to reconstruct an original /b/ in the proto-language), it could actually have been *more* efficient not to represent it with a separate series of signs (Palaima and Sikkenga 1999, 602). However, this argument does propose any motivation for the total lack of distinction of aspirated consonants, nor that of the more frequent voiced sounds /g/ and especially /g^w/ (which is often the source of later Greek /b/). Arguably, grouping phonemes together could have a beneficial effect on the size of the syllabary, since for every consonantal phoneme differentiated, a series of five signs (e.g., *ga*, *ge*, *gi*, *go*, *gu*) would have to be added to the repertoire (Meißner 2007, 97). However, if this is an economical principle, it is at the expense of the ability to differentiate between phonemes, with a possible result of ambiguity in some spellings.

Problem 1, on the other hand, is deeply embedded in structure. Linear B signs (V, CV, CCV) must always write sequences that end in a vowel, and so would suit a language with predominantly open syllables—but the Greek language has many closed syllables in all positions, including at the end of words. So, in order to write Greek in Linear B, orthographic strategies are needed for consonant clusters and word-final consonants (see Consani 2003). Linear B employs a complex but highly standardised solution to this problem:

- Word-final consonants are always omitted (the only exceptions being where one member of a final consonant cluster is written, as in *wa-na-ka* for /wanaks/).
- Some consonant clusters are written with partial spelling (i.e., omit one of the consonants, as in *pe-ma* for /sperma/).

- Some consonant clusters are written with plene spelling (i.e., write both consonants but use a “dummy vowel” for the one that has no following vowel, as in *ko-no-so* for the place name Knossos).
- The second element of a diphthong is usually not written, although there are some exceptions (including the use of special signs *ai* and *rai*).

The rules for partial and plene spelling of consonant clusters are complex but fairly consistent overall, and depend on the position of the cluster and its composition in types of sound (see Thompson and Meißner 2024, 119–123). In word initial position, for example, full plene spelling is used if the first sound is a stop, but partial spelling is used in clusters with /s/ followed by a stop (where /s/ is omitted in writing). The choice of dummy vowel in cases of partial spelling is not entirely consistent but usually relies on syllabification (i.e., it is borrowed from the syllable to which the written consonant belongs).

The reason this complex set of solutions is so highly standardised is presumably that writing was a trained activity that was important for administrative professionals working in the Mycenaean centres, which is where almost all our evidence for Linear B writing survives in the form of bureaucratic clay documents. It could be argued that the necessity of complex orthographic rules would have increased the cognitive learning burden for the system, which can be an inhibiting factor for literacy, and so could be cited in support of restricted use of the system—essentially that it was used only in administrative settings. On the other hand, the set of orthographic choices was evidently designed with a practical principle in mind, since it ‘privileges the lexical access and the semantic identification of the lexemes, with simultaneous indifference for the rendition of the morpho-syntactic aspects of the utterances’ (Consani 2016, 96). Whether that is an advantage is more ambiguous. For example, the lack of differentiation of nominal endings, and so the underrepresentation of syntactic relationships, could perhaps be seen as a weakness for an administrative tradition that records a great deal of information about givers and receivers of various goods and materials. Judson (2022) has further demonstrated, based on variations in orthography at Pylos, that the writers were trained in a standard orthography for phonological sequences but did not have single “correct” spellings for words (even common ones) or even for morphological sequences, such that they would make decisions on how to spell a word based fundamentally on the phonological rules. That suggests in turn that the usability of the system hinged on standardisation at the level of phonological orthography, which may also help us to understand how it was first developed to write Greek, since the orthographic rules broadly hold true from the earliest to the latest attestations.

It remains to ask what effect the purported deficiencies of Linear B may have had on its vitality and its long-term use. While the dominant

Mycenaean administrative centre of Crete, Knossos, underwent destruction more than a century earlier, the last attested traces of Linear B come from mainland Greek sites such as Pylos and Thebes and date to the transition to the last phase of the Late Bronze Age (Late Helladic III B-C): around 1200 BCE. The clay documents written in Linear B only survive because they were baked in fires that destroyed the administrative complexes within which they had been agents of bureaucracy. It is impossible to say why or how those buildings were destroyed, but the old narratives of conflict (an invasion by outside groups) have given way to more nuanced attempts at explaining what was clearly a time of significant economic upheaval and social change. We can see from the archaeological record that some sites were abandoned, people were uprooted and probably moved to live in other areas, and the telltale signs of Mycenaean centralised administrations disappeared. The usual explanation is that there was no need for Linear B any more once the administrations no longer existed, and pre-existing social order had been overturned (perhaps resulting in the promotion of Mycenaean *qa-si-re-we*, some sort of minor official, to something more akin to the Homeric and later sense of βασιλεῖς: Morpurgo Davies 1979). This presupposes that Linear B was not used outside of the centralised administrations; however, we have insufficient evidence to decide this question. Might there have been people who used Linear B in other domains of writing (as believed by many Mycenologists) and carried on writing it in other contexts even after the fall of the administrations? In a climate where the archaeological survival of other potential writing materials like wood, papyrus, and parchment is unlikely, there is no secure basis for arguing one way or the other—this is an issue I have written about at length elsewhere and I will not rehearse the whole discussion here (Steele 2023, 110–125).

For Consani, the Linear B writing system was good *enough* for its administrative purposes, particularly bearing in mind the concomitant use of sematography for additional information—as long as we assume that the system was only used within the restricted contexts of literacy that are reflected in the surviving archaeological record (Consani 2016). If writing did occur in other domains, such as private or political letters or trading contexts, on the other hand, might writers have been hampered by the features of the script or even devised different orthographic rules? Perhaps it is worth asking the question, but there is a total dearth of evidence to answer it. However, a comparison with ancient Cyprus will be instructive: while its syllabic writing system is structurally very similar to Linear B, the evidence for literacy points in a very different direction.

Just like in Crete, in Cyprus, we have a situation where an undeciphered writing tradition is succeeded by one we can read, which was largely in Greek. Writing is first attested in Cyprus in the early part of the Late Bronze Age in a system labelled Cypro-Minoan by Arthur Evans because of its obvious link with the Cretan scripts. The small num-

ber of Bronze Age inscriptions are very diverse and mostly very short, and whatever language(s) they were written in remain unknown. Then, around the turn of the first millennium BCE, the first inscription written in Greek (a name written with an inflection characteristic of the Cypriot Greek dialect) is attested, and from there the number of Greek inscriptions increases over time to a boom (in the archaeological record at least) in the 5th and 4th centuries BCE. Although the Greek alphabet had developed and come to be used for Greek elsewhere in the Mediterranean by the 8th-7th centuries BCE, in Cyprus it did not really take hold until the 4th century and beyond, while the Cypriot Syllabary was still being used for Greek in the 3rd or 2nd centuries BCE.

The Cypriot Syllabary is structurally nearly identical to Linear B, and so has very similar deficiencies when writing Greek:

1. It encodes only open syllables: C, CV, and in just two cases, CCV.
2. Its consonant series do not distinguish voicing or aspiration in any cases. The only possible exception is the sign sometimes transcribed as *ga*, although as Egetmeyer has demonstrated at length, there are more complex phonetic issues at play in this case (Egetmeyer 1993; 2010, 188).
3. It does, however, distinguish between /r/ and /l/.
4. It does not distinguish between short and long vowels.

The differences in phonological representation are minimal—the system lacks a separate series for /d/ as found in Linear B, but it does have separate series for /r/ and /l/, unlike Linear B (two issues which may be linked: Steele 2014). The structural mismatch, however, is the same: the signs of the script represent only open syllables while the Cypriot variety of Greek, like all others, has frequent closed syllables in all positions. What is different from Linear B is that Cypriot Syllabic writing involved very different orthographic choices (see Egetmeyer 2010, 220-235):

- Word-final consonants are always written, using a following dummy vowel (in Greek, almost always -se or -ne).
- Consonant clusters are written with plene spelling (i.e., write both consonants but use a “dummy vowel” for the one that has no following vowel).
- Diphthongs are also written with plene spelling (i.e., write one vowel after the other, using the vowel-only sign for the second part).

There is significant standardisation in these spelling strategies, despite a far more varied distribution than we see in Linear B. Within the Mycenaean administrative centres, in documents pertaining to administration, a high level of standardisation is more easily explained by presumed training. But in Cyprus writing was used for a much wider range of purposes: royal inscriptions, administrative documents, religious and funerary monuments, graffiti, and other inscription types, with evidence

for literacy across different social strata and even a small amount of evidence for gender diversity in writing (Steele 2023, 125-137). However, the orthography of Cypriot Syllabic writing presents the writer with fewer choices, since there is a basic underlying rule that every sound is written even if it necessitates the use of a dummy vowel: where Linear B is characterised by both underdifferentiation and underrepresentation of phonemes (Meißner 2007, 97), the Cypriot Syllabary is characterised only by underdifferentiation. At the end of a word, the dummy vowel is always -e, while elsewhere the choice depends on syllabification (typically choosing the vowel of the syllable to which the consonant belongs). This can result in some variation in the spelling of individual words, especially where the syllabification could be interpreted in more than one way: for example, since Greek permits certain consonant clusters at syllable onset, it is sometimes the case that a consonant could be interpreted as belonging to the end of one syllable or the beginning of another, as in the variant spellings *e-se-ta-se* and *e-sa-ta-se* for /estāse/ where the /s/ could close the first syllable or open the second (example from Egetmeyer 2010, 222).

Consani (2016, 101) sees the orthographic rules of the Cypriot Syllabary, which favour the maximum representation of individual phonemes, as a significant factor in the writing system's longevity. Although dummy vowels would have been very frequently encountered, theoretically, it may have taken less cognitive effort to match written sequences with phonological ones, thus aiding word identification and making the writing tradition more accessible to a wider range of people for a wider range of uses. However, it remains that while every sound might be written, not every phoneme was being distinguished. So, for instance, when a Cypriot reader encountered a sequence like *ta-ra-ka-ma-ta*, in order to reach the encoded word /drak^hmata/ they would need to interpret the two instances of *ta* differently (/d/ in one case and /t/ in the other) and the vowel of *ka* as a dummy not to be pronounced. Perhaps in a longer word like this, the overall word shape is helpful in distinguishing between possible words and so making the correct choices for the potentially ambiguous graphemes, while a shorter word could have more potential for confusion. Again it may be worth considering whether there is an economical principle at play, in that differentiating between the full range of phonemes in Cypriot Greek would involve adding multiple extra series of five signs per phoneme to the overall repertoire.

Greek was not the only language written in the Cypriot Syllabary: a number of inscriptions are evidently not written in Greek and can be attributed to at least one other language. The term Eteocypriot has usually been applied to these non-Greek inscriptions, although only a small number exhibit consistent features that appear to belong to the same language (Steele 2013, 99-160). It is possible, perhaps likely, that we are dealing with at least one language that has survived from the Bronze

Age and may once have been written in Cypro-Minoan, although the only feature that clearly seems to link the two is a preponderance of endings in *-ti* in Cypro-Minoan and a common noun ending in *-o-ti* in Eteocypriot. Just as in the case of Linear B we are faced with a question as to how much the structure of the script owes to the language(s) underlying Linear A, for the Cypriot Syllabary we may ask how the structure relates to other languages written in it (or in the earlier Cypro-Minoan). Because a number of Greek names have been borrowed in Eteocypriot, we can see that the orthographic rules seem to have been at least partly shared. However, the spelling of some Greek elements looks unusual, such as examples of both *a-ra-to-* and *a-sa-to-* apparently representing the element *Aristo-* (one of which is in a bilingual inscription where the identification is beyond doubt): are these variant partial spellings of the whole sequence (so potentially evidence of a different orthography), or do they reflect a different phonetic reality that may have resulted from a simplification of a consonant cluster (see Steele 2013, 152)? It is also difficult to discern the features and syllabification patterns of the Eteocypriot language because of its very small corpus (fewer than 30 inscriptions), and so it is difficult to compare its linguistic fit with the Syllabary with that of Cypriot Greek.

The diachronic status of the Cypriot Syllabary looks rather different from that of Linear B. Linear B seems to have changed quite minimally in the couple of centuries of its attested existence, and when it disappeared from the archaeological record it did so suddenly, leaving no traces in the subsequent centuries. It also gives the appearance of disappearing in a linguistic and graphic vacuum, in connection with the changing social and economic landscape, but not obviously in close competition with any other language varieties or writing systems. The Cypriot Syllabary, on the other hand, grew out of Late Bronze Age writing, and was used throughout most of the first millennium BCE, thus with considerably more longevity than Linear B, and in association with a far wider attested range of uses. Literacy in the Cypriot Syllabary, based on surviving evidence, was considerably more widespread than in Linear B. Cypriot Greek speakers seem, at least in some periods, to have thought of themselves as having some affinity with other Greek speakers to the west, perhaps most obvious in historical evidence for the Persian Wars and especially the Ionian Revolt. And yet, Cypriot Greeks did not seem tempted to adopt the Greek alphabet that was so widely used elsewhere, and it was not until certain rulers more consciously began to assert relationships with Athens in the later 5th and 4th centuries BCE that the Greek alphabet came to appear on Cypriot coin legends and occasionally digraphic monuments. By the 4th century, the competing variety of Greek was the pan-Mediterranean Koine, which spread particularly during and after the reign of Alexander the Great and became the official administrative language of Cyprus once the island came under

the jurisdiction of Ptolemy I, after the conflict of the Diadochoi. This top-down change does seem to have impacted wider literate society, but more slowly (see Fig. 1 for a late Cypriot Syllabic religious inscription): the mixed corpus of the religious inscriptions from the 3rd/2nd century BCE Nymphaeum of Kafizin, with both Cypriot Syllabic and alphabetic Koine texts, indicates high levels of contact between the two language varieties and writing traditions; beyond this there is very little trace of the continued existence of the Cypriot Greek dialect or the Cypriot Syllabic writing system (for a fuller account of the loss of this system and introduction of Greek alphabetic writing, see Steele 2018, 219–241).



FIG. 1. Limestone votive relief with a Cypriot Syllabic inscription, 3rd century BCE, from Golgoi. Metropolitan Museum New York. The Cesnola Collection, Purchased by subscription, 1874–76, inv. 74.51.2372

It has often been assumed that the Cypriot Syllabic writing system had some special symbolism or relevance for Cypriot people. For Mitford, it was in the transition to Ptolemaic rule and the disappearance of the local dialect and writing system that ‘Cyprus seemed to lose her soul’ (Mitford 1953, 90). Sherratt has suggested that it was especially the Phoenician expansion and the foundation of the Phoenician colony of Kition on the island in the 9th century BCE that first gave the impetus for Cypriots to embrace the distinctive syllabic writing system as symbolic of their identity (Sherratt 2003; see also Iacovou 2013). But even earlier, in the Late Bronze Age, the visual distinctiveness of Cypro-Minoan went

hand-in-hand with the creative selection of writing practices and supports, which may have looked to both east and west for inspiration (clay document types, seals, etc) but was always idiosyncratically Cypriot (see Steele 2018, 35-44; Steele and Boyes 2023). Whatever the genesis of the link between Cypriot Syllabic writing and Cypriot identity, it seems to have been deeply rooted—and for the larger part of the first millennium BCE it would have been regularly reinforced for Cypriot individuals, from the coins in their pocket to public and private monuments in their visible landscapes, and a whole range of quotidian uses in between.

The visual distinctiveness of the Cypriot Syllabic system is what gives it the potential for a close relationship with linguistic and cultural identity (see also Steele 2018, 149). This writing system was exclusively associated with the island of Cyprus, and left a unique visual footprint wherever Cypriots used it, both in the everyday visible landscapes of Cypriot cities and sanctuaries, and even abroad—for instance at Panhellenic religious sites like Delphi, or among the international graffiti left on ancient monuments in Egypt (on the latter see Pestarino 2025). Theoretically, a Cypriot Greek speaker could have written down their dialect in the Greek alphabet, but this apparently never happened: the occasional Greek alphabetic inscriptions appearing before the end of the 4th century BCE (i.e., before the alphabet came to be used as a central administration's official script) never contain Cypriot dialectal features (most are in the Koine, with some abbreviated forms also). Likewise, we know of no Eteocypriot inscriptions in anything other than the Cypriot Syllabary. We know that Cypriots had wide-ranging contact outside the island throughout the periods when Cypriot Syllabic writing was in use, and so their choice to use their distinctively Cypriot writing system, both at home and abroad, looks like a positive and deliberate one. The link with Cypriot identity created ongoing motivation to maintain the Syllabary, and with it the local language varieties with which it was associated.

We may also ask whether the visual uniqueness of the Cypriot Syllabary was associated with conscious distancing. Were Cypriots specifically concerned with avoiding a linguistic appearance that was not sufficiently visually differentiated from the consonantal alphabets used in the contemporary nearby Levantine coast or the Greek and other alphabets of the wider Mediterranean, or did it only matter to them that the Cypriot language was visually unique? When Cypriot writing was first developed from Linear A in the Bronze Age, it is possible and indeed likely that local and geopolitical identities were of a different nature from those of the later Iron Age: was the choice of the Aegean linear scripts as a model connected with any particular desire to have contemporary Cypriot languages look similar in writing to those of Crete and the Aegean islands, or did it only matter to them that they avoided the appearance of cuneiform associated with the broader Bronze Age Near East?

Finally, it is worth pointing out that there need not be—and in the Cypriot case there was not—a one-for-one match between language variety and writing system. Not only was Cypriot Greek written in the Cypriot Syllabary, but at least one indigenous language was also written in it; the island was also home to a significant Phoenician population using the Phoenician consonantal alphabet. The island's material culture, meanwhile, was quite homogeneous and did not reflect divisions by language (Iacovou 2013, 133). In the age of the independent city kingdoms, individuals who recorded themselves in Cypriot Syllabic writing did not call themselves Cypriots, they referred to themselves as citizens of individual places like Paphos, Marion, or Salamis. On the other hand, names with Kupro- or -kupros elements seem to have been popular for a time in Greek onomastics (e.g., Philokupros). In other words, expressions of group identity were complex and multifaceted, and cannot be reduced to any single association or set of associations. The Cypriot Syllabary could be associated with assertions of linguistic or cultural identity, but should be regarded as just one method of expressing a distinctive identity, available to Cypriot individuals and groups alongside many other visually distinctive aspects of Cypriot culture. Any given individual will have held and presented different aspects of their identity, or different identities, in different ways in different settings.

This section has aimed to use historical examples to demonstrate that a writing system can show traits of vitality (through longevity, usership, domains of use) even when it has a number of apparent deficiencies with regard to its linguistic fit—particularly notable in the case of the Cypriot Syllabary. As we have seen, Cypriots were well aware of an available alternative: the Greek alphabet, which offered much better representation of the phonological inventory of any Greek dialect, a structure that permitted simple notation of consonant clusters without redundancy and an economic principle such that it had considerably fewer graphemes to be memorised—and was used by speakers of other Greek dialects with whom Cypriots acknowledged cultural and political connections (especially obvious in the 5th and 4th centuries BCE). Cypriots did not apparently maintain their syllabic writing system because they could not have improved on it linguistically—they maintained it because it was something undeniably, traditionally, and visibly Cypriot.

3. Visual Distinctiveness in Writing and Its Cultural Context

Unseth argued some time ago that the visual aspect of a writing system is always of high importance to its users, particularly at the point of adoption or creation (Unseth 2005, 2008). He suggested this is especially noticeable from a relational perspective, as users may wish either to assimilate with or distance from other language/writing communi-

ties and to use a visual strategy to do so: in other words, to have their written language explicitly look similar to, or look different from, another written language. This potentially powerful visual principle needs to be contextualised by several sociolinguistic factors, including geopolitics, colonising activity and its legacy, regional and social identities, perceived ethnicities, and so on. It makes a difference who is looking and what the writing landscape looks like in a given place or at a given time—likeness and distinctiveness are relational categories after all. Distinctiveness is also, broadly speaking, a principle that could be applied in several different visual dimensions such as the shapes of graphemes, principles of text arrangement, orthographic strategies and, for want of a better word, “fonts” (i.e., styles of text).

There are thus multiple ways in which a writing system can be visually distinctive, and different possible degrees of visual distinctiveness. For our present purposes I am not concerned with trying to measure visual distinctiveness in any quantitative way, although computational tools could certainly be developed, based on existing models, to do so. Rather, I want to establish the cultural importance of visual distinctiveness in writing, and hence make a case for a visual-cultural category of fit. The groundwork laid in this section will illustrate the complexity of relationships between the parameters identified above (grapheme shapes, text arrangements, orthography, and text styles), now using examples that are in use today rather than historical systems, many of them used to write minority languages.

From the outset, it should be pointed out that not every speaker community will desire to write their language down in a visually distinctive system. For some communities, writing a minority language down in a script used by majority languages could be desirable because it implies equal status or gives a kind of validation of the minority language’s existence. Using a majority script may also bring some advantages for digital literacy. In some areas of the world there is very low diversity of scripts: for instance in Europe there are very few languages written in anything other than the *Latin* or *Cyrillic* alphabets, the most obvious counter example being the longstanding written tradition in Greek—although in some historical periods it would have been less singularly distinctive, particularly in the first half of the first millennium BCE, since the alphabets used for Italic languages, including *Latin*, were much closer in appearance to *Greek alphabets*; they have grown more visually distinctive over time. Today a minority language community like that of *Arvanitika* in Greece can both tell a story about once having had their own distinct alphabet (see <https://hopscotchtranslation.com/2023/02/06/hatzipemou-constantine-arvanitika/>) and at the same time write exclusively in the Greek alphabet of the local majority—and predominantly in Greek language too, as Arvanitika has suffered serious marginalisa-

tion, in part owing to “othering” political narratives about its linguistic relationship with Albanian.

Visual distinctiveness may therefore be highly *un*motivated for some language communities. However, even if the script is the same, the orthography is quite likely to be noticeably different as the script is used to represent the sounds and structural features of a different language. It is highly unlikely that any two language varieties will look identical when written down—except perhaps in the case of “interscripts,” by which I mean systems that can theoretically use the same orthography for different languages, for example if phonological information is omitted (*Wenyan Classical Chinese* is a good example, or written Putonghua to some extent).

Orthographies of what may be thought of as the same script can be highly visually distinctive. European languages written in the Latin alphabet, for instance, can be recognised quite easily through the distinctive sets of diacritics they use to suit their phonological and orthographic systems. Many orthographies for minority languages employ diacritics in order to mark sounds that do not exist in the writing system used as a base (which is often the Latin alphabet as used for a majority language such as English or Spanish), some requiring a considerable range because of their phonological inventories, including sometimes extra marking for tones. Some also use special characters alongside the borrowed script inventory, like the historical thorn <þ> for /θ/, originally from the Runic alphabet, and edh <ð> for its voiced counterpart /ð/, a historical modification of Latin <d>, still used in the Latin orthography of *Icelandic*.

Because of associations between the Latin alphabet and colonial powers, language communities affected by colonial legacies may seek to disassociate their written language from colonial structures of power or oppression by changing or distancing a Latin orthography. Theoretically, there could be a further advantage that this may also improve the linguistic fit of their writing system, given that many invented Latin orthographies have notoriously underrepresented the phonological inventories of indigenous languages. Spanish orthographies in central America, for instance, are easily recognisable from their distinctive <c> vs <qu> for velar stops footprint, while newer indigenous orthographies tend to undo the orthographic rules surrounding <c> and <q> and make more use of <k>, as seen in spelling reforms such as the *Mayan* language name Cakchiquel > *Kaqchikel*. Investment in distinguishing graphically and visually between Mayan and Spanish languages has even been observed in children (Pellicer 2004). The principle of distancing visually from a colonial language can indeed be so strong that, rather than resulting in better linguistic fit (although this is often outwardly cited as a motivation), such changes can instead make the orthography ‘less phonologically transparent... and less effective in terms of learnability’

(Hull 2017, 142, on *Ch'orti'* Mayan, where for example the connective pronounced [i] is written <yi> purely to distance it from Spanish <y>).

The linguistic fit of an orthography is not necessarily a simple matter of phoneme to grapheme mapping (and hence the expanded categorisations created in Meletis 2020, as we saw above). As the previous example makes clear, the wishes of the speaker community will not be motivated by the same concerns that might occupy linguists designing an orthography. Another often overlooked factor is the compatibility with existing educational practices. For example, Souag has demonstrated that the orthographic strategies of *Ajami Arabic* systems for West African languages, while employing various ways of denoting sounds that do not exist in Arabic, are best understood with regard to their pragmatic roots within Qur'ānic education: in this context it makes sense and is more economical to mark some sounds with a universal “non-Arab sound” diacritic (as opposed to individual phonemic differentiation) (Souag 2010). Although Ajami orthographies are not widely standardised, they are locally well established, and their principles rely on cultural hierarchies of thought, often incorporating locally significant cultural details, that cannot be understood through a European model of how to read a text simply by identifying syntactic linguistic elements (Ngom 2018).

While an orthography can be visually distinctive wherever it is written and in whatever typeface or style, it can potentially also be made even more distinctive through the use of a special font associated strongly with the given language. For instance, *cló Gaelach* (Gaelic type) was used historically for Early Modern *Irish* and continues to be used for Irish and other Celtic languages in the present day—including in socially highly visible contexts such as signage. A similar origin in Early Modern typography can be traced for *Fraktur*, characteristically associated with *German* although now far less frequently used, while the Harri font associated with *Basque*, which has gained in popularity, has its origins in a revival of ancient letter forms. In the *Otomaung* script of Bougainville, one of the three styles of writing employs more ornamental sign shapes that are explicitly said to recall sacred designs of traditional body marking by ceremonial scarification (Kelly 2021, 840-844; Simpson 2024, 68-69).

On the one hand, distinctive styles of writing could be ‘symbolically relevant, acting as distinctive markers of the linguistic landscape... [or as] markers of folklorization or archaization’, triggering mixed reactions among the speaker community (Shah and Brenzinger 2012, 231). While one-on-one visual relationships between language and script style may be desirable to some language communities, for others, they might be seen as restrictive. The domination of a visual style based on early *Cherokee* typography, for example, has more recently been viewed as relatively limiting (in comparison with the vast range of typeface support enjoyed by most majority scripts: see Schillo and Turin 2020 on typeface support for North American minority languages). A recent cam-

paign to change this situation through a crowdfunding initiative (by Typotheque in collaboration with Cherokee type designer Chris Skillern: <https://www.typotheque.com/blog/cherokee-project-update>), is aimed explicitly at ‘preserving Cherokee script diversity and vitality’ (see Fig. 2). It is clear that inequalities in visual representation differ and are felt differently across the spectrum of marginalised—and often digitally disadvantaged—languages.



FIG. 2. ChokeCherry Cherokee Character Set by Chris Skillern. Image courtesy of Chris Skillern

Different parts of the world have very different histories of writing, and attitudes towards particular scripts will at any place, and at any time, depend on a complex nexus of language varieties, writing traditions, group identities, political entities, and many other facets of sociocultural practice and ideology all butting up against each other. For example the wider Balkan area has suffered a notorious history of script appropriation and “othering” against a shifting background of political and cultural upheaval, especially between *Latin* and *Cyrillic* orthographies, with further developments such as the revival of *Glagolitic*: the visuality and visual differentiation of these scripts makes them inevitable targets for political and identitarian symbolism (see Selvelli 2021). Depending on the situation and what is available, choices or adoptions of scripts can be

more or less politicised, or ideologised as Selvelli puts it. They are arguably only contentious where there are other reasons for contention.

The appearance of writing can itself become an instrument of resistance, as Kelly has shown to be the case in the highland areas of South East Asia, where newly developed scripts reclaiming indigenous literacy were made deliberately illegible to outside agents, and used in restricted domains of literacy in contrast to lowland usage (Kelly 2018a). The combination of the unusual appearance and usage of such systems can be compared with other resistance strategies and shows complex engagement with, and appropriation of, literacy. In such cases the visual distinctiveness of a system is crucial to its role in resistance.

At an extreme of visual distinctiveness, some recently created minority writing systems have been built from scratch on a visual principle that is completely unrelated to any previously used. One example is the *Mandombe* script created by Wabeladio Payi following his revelatory dream and observation of patterns in mortar on a wall. The result looks very different from other existing scripts, and the whole system has been designed to have close connections with Kongolese philosophical and artistic traditions along with a holistic system of training (Sarró 2018, 2023). A small number of geometric shapes with rotational and reflectional symmetry make up the base consonant signs, and to these are added extra strokes in the upper and lower portions of each character, denoting vowels and tones. With a cornerstone of usage in the Kimbanguist church, the Mandombe script has seen some significant take-up with 5,000-6,000 users (plus a few hundred in diaspora) and 500 trained teachers, as reported in a 2016 Unicode proposal (Rovenchak et al. 2016). A perhaps now more famous example of a completely ex novo creation is the *ADLaM* script devised by Abdoulaye and Ibrahima Barry as teenagers to represent and to safeguard the Fulani language in Guinea (ADLaM stands for the first four letters of the alphabet but also encodes the phrase “ߊ߬ߊ߫ߊ߫ߊ߫ ߊ߬ߊ߫ߊ߫ ߊ߬ߊ߫ߊ߫ߊ߫ ߊ߬ߊ߫ߊ߫” / “Alkule Dandayde Leñol Mulugol”: “The alphabet that protects the people from vanishing”). This has been seen as a significant step in language maintenance in Guinea (Diallo 2021). The inventors have described their creative process at length, which involved drawing shapes, often with the eyes closed, and matching them to sounds, thus creating a visually idiosyncratic system. ADLaM is written from right to left, like the Arabic ajami orthography most widely used to write Fulani. Gaining Unicode support in 2016 and further work on digitisation has led to functionality across multiple computer and smartphone operating systems, and has given the script significant advantages in comparison with many other emergent systems. Kelly concludes from a survey of three other recently invented scripts in west Africa (Vai, Bamum, and Masaba) that ‘the appeal... was thus tied more to their relative indexical power than their apparent technological or cognitive advantages’ (Kelly 2018b, 189), un-

derscoring the relative importance of visual distinctiveness in writing and its links with expressing identity.

It has been noted that a considerable number of recent emergent scripts developed for African languages have followed similar strategies in terms of visual distinctiveness, creating a rich and varied tapestry of writing traditions at different stages of take-up among communities (most recently Brookes 2024, 14-45; Mafundikwa 2004, Tuchscherer 2007, Rovenchak and Glavy 2011 and Unseth 2011 are also helpful and illustrative, although they are quickly becoming outdated in the rapidly shifting landscape of writing throughout the continent). Some of these systems take pre-existing communicative systems as a basis, ones that have typically been excluded from the definition of writing. At this point, it is important to emphasise that there are many marginalised systems around the world that communicate meaning in ways that are not usually recognised (or have not been up to now) in even the most expansive grapholinguistic analyses, from *Nsibidi* and *Adinkra* to *Dongba* and *khipus*. As Martínez-Ruiz has eloquently pointed out, we need to change our viewpoint to understand a system (speaking about what he called graphic writing of the Bakongo in this case) that does not seem to work like writing systems as encountered in the usual taxonomies: “Theories based on linguistic paradigms rooted in Western traditions will not lead to an understanding of Kongo graphic writing systems” (Martínez-Ruiz 2013, 4). Similarly, many systems of the Americas have been overlooked in linguistic taxonomies, despite growing scholarship seeking to address this oversight (e.g., Boone and Mignolo 1994, Salomon and Hyland 2010, Mikulska 2022). It is not that such systems do not encode language (they typically do, including phonography, morphography, and logography to different degrees), but they often do so in ways that are intertwined with other forms of expression and with whole ontologies, philosophies, and worldviews.

An important point arising from the above observation is that, although it is tempting to see it that way, not all systems are necessarily in some kind of (symbiotic or antagonistic) relationship with others nearby, and seeking either to assimilate to or distance from them. A new system created with a more holistic philosophical principle in mind could have cultural benefits because it matches knowledge structures better: after all, a language is itself a system of knowledge. Such knowledge structures may already have forms of visual representation, and developing new writing systems to build on such pre-existing systems of visual representation will have obvious advantages (see Simpson 2024). Resulting emergent systems may indeed seek to “codify” symbol systems to develop something with greater phonographic representation in order to develop wider usability across different media, which may also make them easier to categorise within existing grapholinguistic terms—although in doing so, something may perhaps be lost “in transla-

tion". I will use the example of isiBheqe soHlamvu to illustrate some of the principles that are at stake here.



FIG. 3. Graffiti in isiBheqe soHlamvu. Photograph Courtesy of Sandile Radebe

isiBheqe soHlamvu, also known as Ditema tsa Dinoko, has been developed out of longstanding systems of visual communication to write Ntu languages of southern Africa (see further Auda forthcoming). The prevalence of learning through colonial languages, and corresponding marginalisation of indigenous languages and knowledge systems, has overshadowed education (Mkhize and Ndimande-Hlongwa 2014), and speakers of indigenous languages are impeded in writing their languages down by inconsistent Latin orthographies that vary in grapheme mapping and do not adequately represent their consonants, vowels, or tones. Thus, linguistic fit is a foundational principle for *isiBheqe soHlamvu*: structurally, it could be called a featural syllabary or abugida, built on triangular base signs with different orientations representing the vowels, to which are added marks (lines, dots, circles, loops, etc) representing consonantal features. The triangle represents the shape of the mouth, meaning that the whole system is built on a visual representation of the points of articulation, with further ways of marking the manner of articulation (e.g., breathy voicing and prenasalisation). Methods of marking tones have also been developed, and the set of *ChiMbire* morphograms created by Shannon Rutendo Goneso (<https://chimbire.africa/>) can be incorporated into writing and read with different phonological realities in different languages. Although L>R linear writing is common, writing

and reading direction are free in isiBheqe, which allows complex layouts (“tessellation” based on the triangular shapes) that are particularly desirable for deliberate aesthetic effects (for instance, in art, crafts, or graffiti; see Fig. 3).

The visual design of isiBheqe is not itself a new creation: it is derived from *izimpawu zesintu* such as the long-established regional symbologies of *litema tsa basotho*, which communicate knowledge structured through indigenous systems such as the *Nabanotsebo* described by Zulumanthabo Zulu and the concepts and traditions communicated to Western audiences by Credo Mutwa (e.g., Zulu 2014, Mutwa 1965). *Litema tsa basotho* are traditional Sesotho designs used especially in murals on the external walls of houses in Lesotho and South Africa, which communicate information about people’s lives and kinship relations, and consist of geometric patterns in which the triangle is an important element. The ChiMbire morphograms add another dimension to representation since they encode prefixes that are deeply rooted in the epistemological structure of Ntu languages (see Creider 1975, Denny and Creider 1986, Selvik 2001), and so operate on another level of cultural meaning as well as mediating across languages.

Thus, isiBheqe soHlamvu is a script that can potentially encode much more than phonography, depending on the knowledge of the people using it. For those who understand the traditional associations of the designs, it is possible to communicate information related to gender and family associations, for example, with further meaningful use of colour. It is perhaps better to think of the system as encompassing multiple layers, such that it is possible for “lay” writers to simply use the phonographic principles to write (potentially in any language—I have seen transcriptions in Arabic that extend the consonant repertoire to include non-Ntu sounds), and to use colours and arrangements for purely aesthetic effects; while someone who has greater knowledge of the epistemological background of the script, and the visual culture to which it relates, might also communicate more nuanced messages and meanings.

Motivations to create a new writing system vary from one situation to another but there are numerous common threads that have become apparent in communication with minority script users and communities, such as:

- a desire to make a minoritised or indigenous language visible in a landscape visually dominated by majority languages;
- the need to disentangle written language from colonial structures of power;
- principles of visual economy in comparison with existing alphabetic orthographies (the positive assertion that a word can be written with far fewer signs in a new syllabic or semi-syllabic script is surprisingly common);

- the practical aspect of building a writing system from scratch so that it is founded on a principle of accurately representing the features of the target language (and thus a desire for good linguistic fit) and its cultural context.

The last of these points demonstrates how important it is to treat writing system development as a complex concept and process, where visual-cultural (and other aspects of sociocultural) fit and linguistic fit have roles to play to different degrees in different cases. It remains to add that if visual factors can be shown to be of importance, then so too is *visibility*. The case of the Cypriot Syllabary already introduced the idea that high social visibility could correlate with relatively widespread literacy and a wide range of writing domains as markers of high vitality for the writing tradition. How writing looks, and so what language looks like, may be particularly high on the agenda where people are invested in linguistic and cultural identity, for whatever reason.

4. Conclusions

The previous section demonstrated that visual distinctiveness is an important property of writing systems and worth taking into account when we try to explain how a writing system is used and its sociocultural context (or its ‘situational adequacy’: Meletis 2020, 347). Aspects of visual distinctiveness can be described, and there may be some scope in the future to develop ways of measuring it. But can it be diagnostic of the vitality of a writing system? To answer this question we need to consider the possible relationships between visual properties of writing and positive or negative outcomes. The cited historical examples, especially the Cypriot Syllabary, strongly suggest that there is a relationship between visual distinctiveness and indicators of vitality, namely longevity, wide usership and varied domains of usage.

Simpson concludes his survey of visual-cultural features of ten minority scripts by saying that ‘a script’s acceptance ultimately relies on community acceptance. Therefore, language communities contemplating script development could consider implementing visual cultural elements relevant to their unique identities’ (Simpson 2024, 76). Furthermore the incorporation of such elements in the writing system can itself help to preserve traditional culture, making a two-way support relationship between the two. We have seen that writing systems can have strong associations with linguistic identity, because they give a language a unique visual footprint. On the one hand, the design of the writing system may be drawn from existing visual culture. On the other, the visual aspect of the writing may become in some way culturally symbolic: consider the many calligraphic traditions around the world, for example,

where writing is itself art. If “visual-cultural fit” is a useful concept, as I tentatively suggest in this paper, both of these kinds of relationships should be considered as its positive indicators of visual-cultural significance.

Where a writing system has both a good linguistic fit and a good visual-cultural fit, it might be thought to have significant strengths. However, it is important to note that there are other factors involved in vitality, and so there are further matters to address—though these are beyond the scope of the present article. We have already seen that isiBheqe soHlamvu, for example, has crucial advantages both in terms of linguistic and visual-cultural fit. So why is this not a dominant writing system in southern Africa at the time of writing? There are the old problems of finding meaningful state support and putting educational programmes in place to proliferate the system. But digital disadvantage is perhaps the greatest problem in the modern writing landscape: isiBheqe soHlamvu is not yet represented in the Unicode standard at the time of writing, so while there are ways of developing some digital literacy, it remains impossible to make this a reality in the daily lives of most users, where they would want to type it easily on smartphones and computers. A Unicode proposal requires a usage case, and as with many minority scripts, the usage case is hampered by the limitations on digital literacy, creating a vicious circle (see Hossain 2026). Even the existing digital resources for isiBheqe are affected by the legacy of Latin orthographies that have been applied to Ntu languages: for instance, one community-made app (<https://riker.itch.io/isibheqe-translator>) for writing the script only works for isiZulu because it has Latin text input and so requires the orthographic rules that only apply to isiZulu (which has five vowels)—meaning that if you wanted to write in *Sesotho* (which has seven vowels represented by only five graphemes in its Latin orthography) you would often generate the wrong isiBheqe vowel sign and so be unable to write what you intended. The user community will struggle with such issues until better digital support becomes available, just as many other minority writing communities do.

Digital disadvantage is a very significant problem for today’s minoritised, indigenous and endangered languages and their writing systems (Rebin 2024). This does not only apply to newly created and emergent scripts, but also to languages written in orthographies of majority languages—frequent need for complex sets of diacritical marks and sometimes unusual special characters, as designed for fuller phonological representation, means that often they are not sufficiently supported by existing keyboards and typefaces. Indeed, you could say that attempting to achieve full phonological representation, and so a particular type of linguistic fit, has made digital literacy more difficult to accomplish in some cases. The “digital age” offers unprecedented ways of supporting endangered languages, facilitating communication and preserving cul-

tural heritage and knowledge, but the fundamental inequalities in digital access that affect minority communities around the world need to be addressed more effectively to make this a reality (Ajani et al 2024).

Another potential problem for a newly introduced writing system is the possible effect on language learning and literacy, which should also be considered in cases where a visually more distinctive system might be newly introduced. For anyone already literate in another system, there will be a certain learning burden to acquire or switch to the new system; that may be exacerbated when changing from one system to another for the same language. Whether learning a second script that has a very different visual appearance from a learner's first script has a noticeable effect, positive or negative, on acquisition of the new script is a question that requires further research. Gnanadesikan has argued that, for any already literate individual, learning a second script (an S2, like an L2 in multilingual situations) is affected by a sort of cognitive preeminence of their first script: 'learners find them hard to process, use them with an accent, and experience transfer from their S1' (Gnanadesikan 2021, 119). In popular imagination script signs and language sounds tend to be conceptually conflated (as I am often reminded when observing my son's alphabet cartoons), and changing script or orthography entails a significant change to the mental mapping of the language units and so the whole surrounding system of thought.

However, a new system devised with linguistic fit in mind could have particular advantages for child learners, especially if introduced at a time when they are consolidating their acquisition of the language written in it. The same could be said for previously illiterate adult individuals. It must be acknowledged that the situation with regard to language and writing use and literacy will be different in any community, and choices and preferences have to be tailored to individual situations. The relative advantages and disadvantages of a new system could be distributed unevenly across the population. For example, disadvantages related to adult learning could be offset by advantages in child learning, and the latter could be bolstered by beneficial effects of impetus from youth movements and enthusiasm among younger generations. For minoritised languages this is crucial, because low intergenerational transmission—i.e., the failure to pass on the language to the young—is a primary indicator of language endangerment in every scale developed to measure the concept. Any factors that might support a language and its writing system in gaining and maintaining young learners will also bolster their vitality. No system is objectively too new or too complex or too different, it is only within its specific sociocultural setting that its advantages and disadvantages can be weighed against each other.

The three factors cited by Unseth as needed by a writing system to survive (community endorsement, a corpus of literature and a schooling programme: Unseth 2011, 31) are indeed important if not vital to success-

ful take-up, proliferation and maintenance. But how to achieve them is another matter. Community interest and investment are absolutely critical because writing systems need groups of people to put time and effort into teaching, learning and using them. That requires resources (increasingly digital ones alongside more traditional print publications, as well as venues and funding), but it also requires motivation. Motivation is not an abstract concept: it consists of social and personal responses and opinions. Linking a writing system with existing ideas about culture and identity, whatever those may be for a given group of people at a given time, gives it relevance. That is precisely why the visual aspects of a writing tradition matter: social visibility and cultural relevance can impart crucial advantages in the struggle to develop or maintain lasting literacy.

I hope to have achieved three goals through this paper. The first was to show that the category of sociolinguistic fit as offered by Meletis can be productively broken down into further areas of enquiry, rather than bundling together different types of social phenomena as situational context. This allows better comparison and integration with linguistic and other categories of fit, including the visual-cultural category proposed here. The second was to show that visual aspects of writing constitute an important area of study in their own right, in this case by interrogating the principle of visual distinctiveness as a property of writing. The third goal was to show that drilling down on visual properties and visual contexts of writing has real world applicability for minority writing systems, where several recurring factors have been observed in the complex relationships between visual aspects of writing systems and their vitality. Cultivating links with cultural traditions and identities, through visual means, can be key to the motivation needed to maintain a heritage system or propagate an emergent one.

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