Writers Behind Words

Detecting Scribal Variation in Linear A Inscriptions

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Who were the people of Bronze Age Crete responsible for recording information essential to the running of palatial administrations? They mostly survive through the signs they left behind on inscribed clay tablets, used for the day-to-day bookkeeping of Minoan centers. Their writing system, called "Minoan" Linear A, is a logo-syllabic script attested in the time-span ca. 1800-1450 BCE on Crete and the Aegean islands, which remains undeciphered to this day.

Little is known about the number, role, social status and formal training of the individuals who inscribed those tablets. Traditional paleographical analysis has shed some light on the problem [5, 6, 10], without however a systematic approach to the whole corpus. In this work, we set out to explore the use of machine learning techniques applied to this ancient script in order to detect subtle paleographical variation and from there, put forward potential scribal identifications. In this endeavor, we rely on the dataset available in SigLA [9], a recent paleographical database of Linear A inscriptions, under ongoing development.

We propose two approaches to detect variation between attestations of the same sign. A first supervised approach uses neural networks to automatically detect a set of paleographical features considered of interest by paleographers. To complement this first approach, we are also working on a second approach, unsupervised, which aims at learning low-dimensional representations of the data that are relevant for detecting subtle paleographical variations. One of the challenges in this endeavor is the lack of standardisation of sign shapes, as Linear A shows remarkable graphic variation between attestations of the same sign, at times drawn differently even within the same inscription.

By blending the results obtained by these machine learning approaches with our paleographical expertise, our final goal is to propose clusters of inscriptions that share enough similarities to have been written by the same individual. These approaches are tested against the evidence we have for a related script, Linear B[5], for which scribal identifications have been put forward by way of traditional paleographical analysis[1, 7, 8, 2–4]. This research will eventually throw light on the overall spread of literacy on Bronze Age Minoan Crete.

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[5] Linear B is a logo-syllabic script developed out of Linear A in order to write Greek in the period ca. 1400-1190 BCE

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