

Complexity of Script – Evidence from Chinese

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In this paper I will examine two methods of measuring the graphical complexity of script from the perspective of Chinese characters. The first of the discussed methods was proposed by Altmann (2004) as a universal procedure to parameterize and quantify the graphical complexity of script of any type. He proposed two sets of criteria – one pertaining to the type of elements constituting the written signs (points, straight lines and arches), another to the type of connections between the elements (continuous contact, crisp contact, crossing). The different types of elements and connections are assigned numerical values, the complexity of a given sign is the sum of all values. The method is universal, but its applicability to the Chinese script involves the interpretation of stroke shapes and the number of connections. For example the possible interpretations of the rise type stroke (提 *tí*) run the gamut from a point to a composition of as many as three elements of different type, depending on the typeface or handwriting style:



. I will address the interpretation of ambiguous strokes, which also include the ‘dot’ 丶 (點 *diǎn*), the vertical-hook 丨 (豎鉤 *shùgōu*) and most other compound strokes by proposing the interpretations based on intuition and practicality. I will also present the problem with counting the connections in some characters and suggest the solution.

The second method was proposed by Peust (2006) as a simpler and less arbitrary counterproposal to the Altmann’s procedure. Peust method is based on a single criterion of the maximal number of crossing points achieved by a single straight line, for example the complexity of the letter ‘O’ equals 2: Ø. To handle the cases like the Korean 음 임 that differ only in the arrangement of elements, Peust proposed the extension of the intersectional treatment, stating that in case of signs with disconnected components every component should be treated separately and the total complexity is a sum of the complexities of the components. However, a closer examination from the perspective of Chinese characters shows that the procedure work only for relatively small number of simple characters and for the complex characters that are formed by those simple ones. It does not work as intended for complex characters with overlapping (not ‘disconnected’) elements of structure, for example: 龜, but even in the case of relatively simple characters it is often evident that a substantial part of the structure is not measured by a single line. I will propose a modification of the method that allows to capture the intuitions about the complexities of Chinese characters. I will also present the comparative analysis of both methods by comparing the results of measuring a sample set of Chinese characters using both methods. Based on the comparison of sample results with the already established in Chinese characterology method of stroke and basic stroke count, I will argue that both Altmann’s compositional method and modified Peust’s intersectional methods are valid tools for measuring the graphical complexity of Chinese characters.

References

Altmann, G. 2004. Script complexity. *Glottometrics* 8: 68-74.

Peust, C. 2006. Script complexity revisited. *Glottometrics* 12: 11-15.