

Source:	CheonHyeong Sim (沈天珩 / རྟེན་ཐེང་མཚན་མེད་ / རྟེན་ཐེང་མཚན་མེད་)
Title:	Issues on Zanabazar Cluster-final Characters
Date:	2023-10-12
Action:	To be considered by UTC and Script Ad Hoc

In the Zanabazar Square block, there are four cluster-final consonant characters, i.e. U+11A3B འ, U+11A3C ཡ, U+11A3D ར and U+11A3E ལ, which are used to represent the Tibetan subjoined letters འ, ཡ, ར and ལ respectively, or part of the Sanskrit vocalic consonants (འ, ཡ, ར, ལ), and could be considered as the fixed forms of འ, ཡ, ར and ལ respectively in order to distinguish them from the Sanskrit conjuncts.

Unlike in Tibetan, whose subjoined consonant could be stacked under both normal forms and fixed forms (although something like \*འ does not really occur, it is still a legal cluster as same as \*འ), Zanabazar Square does **NOT** due to the UCD values. The property of “Cluster-final Letter” prevents a subjoined consonant or another cluster-final letter being stacked under a cluster-final letter, i.e. something like \*འ would be considered as a legal cluster but \*འ would **NOT**. For these “illegal” cases, the shaping engines usually insert a dotted circle. But the main problem here is, Tibetan actually uses /grw-/ and /pʰjw-/, while they have to be represented as U+11A0D U+11A3C U+11A3E འ and U+11A1F U+11A3B U+11A3E འ respectively, which are now considered as illegal clusters.

Obviously, there **is** workaround for the font developers, although nearly none of the Zanabazar Square fonts really do – to ligate the dotted circle and the cluster-final letter in order to let the dotted circle being disappeared when the dotted circle and the cluster-final letter follows a cluster-final letter, regardless of whether the dotted circle is inserted by the shaping engine or input by the user. In this case, if you really want a dotted circle to be shown, just add a ZWNJ before the dotted circle would be OK. But, for this issue itself, whether it should be solve by the OpenType Layout, or adding a special case into the shaping engine, or revising the values in UCD, still needs further discussion.

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