Universal Multiple-Octet Coded Character Set International Organization for Standardization Organisation Internationale de Normalisation Международная организация по стандартизации

Doc Type: Ideographic Rapporteur Group Document

Request to discuss how to handle seven unencoded Gongche

characters for Kunqu Opera

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Status: Individual Contribution to IRG #50
Action: For consideration by IRG and UTC

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This document provides the explanations and evidences of seven unencoded Gongche characters. The reason why this issue needs to be discussed in IRG meeting is that the differences between these seven characters and the common ideographs, and there are so many Gongche characters which has been included in Unicode as CJK Unified Ideographs.

I request IRG members and experts for discussing how to handle these seven characters shown as below.

If IRG treats them as ideographs, I will request UTC to submit them as UTC-Source characters in future.

If IRG doesn't treat them as ideographs, I will request UTC to create a new block to include them. The possible new block will be called as **Gongche**.

#### 1. Introduction

Gongche notation (工尺谱/工尺譜) is a traditional musical notation method, once popular in ancient China, and now it's also used in Chinese local operas, especially Kunqu Opera (昆曲/崑曲), Peking Opera (京剧/京劇), Yueju Opera (粤剧/粤劇) and so on. It uses the characters like Chinese ideographs to represent musical notes. It was named after two of the Chinese ideographs that were used to represent musical notes, namely "工" gōng and "尺" chě.

Many characters for Gongche Notation have the same appearances with Chinese ideographs exactly, so the vast majority of them could be used isomorphic ideographs to indicate. Hong Kong SARG once submitted two ideographs which are just used in the lyrics of Yueju Opera as UNCs in <a href="IRGN1405R">IRGN1405R</a>. Please see Fig. 1. And UTC has submitted two ideographs which are used in the lyrics of Kunqu Opera and traditional Gongche Notation to WS2017. Please see Fig. 2.

Fig. 1 H-87D2 & H-87D6 in IRGN1405R

2	沢	II-87D2	0365.211	7	4	[]] 彳尺	Chinese character used in the lyrics of Cantonese opera (書 曲 曲 語子符). Sample is shown in Annex III.  Cantonese opera is regarded as a cultural heritage of the People's Republic of China (seehttp://www.gov.cn/zwgk/2
							006-06/02/content_297946.ht m).
3	纽	H-87D6	0365.211	1	4	[][   彳五	- Ditto -

Fig. 2 UTC-02976(01240) & UTC-02977(01242) in WS2017

	60.	0 イ f上			往
	3	6			UTC-02976
1	60.	0 彳			初
I	□:	<b></b>			1/4
Ī	3	6			UTC-02977

However, some characters' appearances do not conform to the general principles of writing Chinese ideographs. The end strokes of "含", "四", " $\rightarrow$ ", "上", "尺", "工", "凡" are extended by a tiny slash downward.

According to Fig. 3, when these 7 characters and UTC-02976, UTC-02977 would be included in Unicode, we can get the table for Gongche Notation like this:

Table 1 Characters for Gongche Notation

N/A	N/A	N/A	N/A	合	吗	<b>つ</b>
1.	?	3:	4:	5:	6	?
上	尺	エ	凡	合	四	
1	2	3	4	5	6	7
上	尺	エ	凡	六	五	乙
1	2	3	4	5	6	7
仩	伬	仜	夗	厼	伍	亿
i	Ż	3	4	5	Ġ	7
往	沢	红	汎	衍	伍	亿
i	ż	ż	4	5	6	Ż

We have two ways to encode them, which one is to submit them as all the CJKUIs to the IRG working set in future, the other is to encode them in a new block named Gongche. I request IRG members and experts for discussing which way is better.

If the better way is to treat them as the non-CJKUIs, please see or review Sections 2 and 3. If the better way is to treat them as the common or special CJKUIs, please see or review Sections 4 and 5.

#### 2. Proposed Characters as Non-Ideographs

The ordering of these seven Gongche characters is based on the original natural ordering of the musical scale.

There is a character like kana  $\mathcal{O}(U+306E)$  and a character like kana  $\mathcal{O}(U+306E)$  by a tiny slash downward in the evidences, but, in fact, they are same with  $\square$  (U+56DB) and  $\square$  (U+56DB) by a tiny slash downward. Kana  $\mathcal{O}$  (U+306E) looks like cursive form of  $\square$  (U+56DB). Notice that the kana  $\mathcal{O}$  is from  $\mathcal{T}_1$  (U+4E43) not  $\square$  (U+56DB), and the corresponding hentaigana letter is  $\mathcal{D}$  (U+1B099).

We can know the variant form for  $\mathbb{N}(U+51E1)$  is  $\mathbb{N}(U+51E2)$  by Unihan Database, and some evidences show the glyph is  $\mathbb{N}(U+51E2)$  by a tiny slash downward. According to Fig. 3,  $\mathbb{N}(U+51E2)$  by a tiny slash downward and  $\mathbb{N}(U+51E1)$  by a tiny slash downward are the same character.

These two characters should be normalized to be " $\mathfrak{P}$ " and " $\mathfrak{K}$ ". Please see Table 4 as well.  $\rightarrow$  can't be unified with  $\rightarrow$  (U+31D6) or  $\rightarrow$  (U+4E5B).

On the other hand, there are also seven characters which are " $\triangleq$ ", " $\square$ ", "-", " $\perp$ ", " $\mathbb{R}$ 

Table 2 Proposed Gongche Characters

UCS	Representative Glyphs	Proposed Character Name	Evidence
U+19BF0	合	GONGCHE CHARACTER HE BY A TINY SLASH DOWNWARD	Fig. 3, 4, 28
U+19BF1	四	GONGCHE CHARACTER SI BY A TINY SLASH DOWNWARD	Figs. 3, 4, 15, 22, 23
U+19BF2	->	GONGCHE CHARACTER YI BY A TINY SLASH DOWNWARD	Figs. 3, 4, 17, 21
U+19BF3	上	GONGCHE CHARACTER SHANG BY A TINY SLASH DOWNWARD	Figs. 3, 4, 5, 7, 9, 11, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 27, 29
U+19BF4	尺	GONGCHE CHARACTER CHE BY A TINY SLASH DOWNWARD	Figs. 3, 4, 5, 7, 8, 9, 11, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 27, 28, 29
U+19BF5	工,	GONGCHE CHARACTER GONG BY A TINY SLASH DOWNWARD	Figs. 3 through 29
U+19BF6	A,	GONGCHE CHARACTER FAN BY A TINY SLASH DOWNWARD	Figs. 3, 4, 7, 8, 11, 12, 13, 17, 21, 24, 28, 29

## 3. Unicode Properties as Non-Ideographs

19BF0; GONGCHE CHARACTER HE BY A TINY SLASH DOWNWARD; Lo; 0; L;;;;;;;;;

19BF1; GONGCHE CHARACTER SI BY A TINY SLASH DOWNWARD; Lo; 0; L;;;;;;;;;

19BF2; GONGCHE CHARACTER YI BY A TINY SLASH DOWNWARD; Lo; 0; L;;;;;;;;;

19BF3; GONGCHE CHARACTER SHANG BY A TINY SLASH DOWNWARD; Lo; 0; L;;;;; N;;;;

19BF4; GONGCHE CHARACTER CHE BY A TINY SLASH DOWNWARD; Lo; 0; L;;;;; N;;;;

19BF5; GONGCHE CHARACTER GONG BY A TINY SLASH DOWNWARD; Lo; 0; L;;;;;;;;;

19BF6; GONGCHE CHARACTER FAN BY A TINY SLASH DOWNWARD; Lo; 0; L;;;;; N;;;;

Script=Common

### 4. Proposed Characters as Ideographs

The following is the information for these seven characters in UAX #45.

UTC-03160;X;U+5408;30.3;0174.241;合②;UTCDoc L2/17-087

UTC-03161;X;U+56DB;31.2;0216.221;四氢;UTCDoc L2/17-087

UTC-03162;X;U+4E00;1.0;0075.011;—[\(\overline{\pi}\)];UTCDoc L2/17-087

UTC-03163;X;U+4E0A;1.2;0076.071;上寰;UTCDoc L2/17-087

UTC-03164;X;U+5C3A;44.1;0299.321;尺쯽;UTCDoc L2/17-087

UTC-03165;X;U+5DE5;48.0;0325.011; **\(\begin{array}{c} \begin{array}{c} \begin{array}{c} \text{Z} \\ \end{array} \text{UTCDoc L2/17-087} \end{array} \]** 

UTC-03166;X;U+51E1;16.1;0134.021;凡誤;UTCDoc L2/17-087

And the following table shows their references, glyphs, IDSes and so on.

Table 3 Attributes for UTC-03160 through UTC-03166

U Ref.	Glyph	IDS	RS	FS	T/S	Var.	Evidence
UTC-03160	飰	合図	30.3	3	0	N/A	Fig. 3, 4, 28
UTC-03161	四	四[譯]	31.2	3	0	N/A	Figs. 3, 4, 15, 22, 23
UTC-03162		<u> </u>	1.0	1	0	N/A	Figs. 3, 4, 17, 21
UTC-03163	上,	上[劉	1.2	2	0	N/A	Figs. 3, 4, 5, 7, 9, 11, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 27, 29
UTC-03164	尺	尺図	44.1	4	0	N/A	Figs. 3, 4, 5, 7, 8, 9, 11, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 27, 28, 29
UTC-03165	Ι,	工[漢]	48.0	1	0	N/A	Figs. 3 through 29
UTC-03166	凡	凡[2]	16.1	4	0	N/A	Figs. 3, 4, 7, 8, 11, 12, 13, 17, 21, 24, 28, 29

# 5. Unicode Properties as Ideographs

The properties for these seven characters are showed as below if they been treated as CJKUIs. "3xxxx" means the code point(s) in the future extension.

```
3xxxx;CJK UNIFIED IDEOGRAPH-3xxxx;Lo;0;L;;;;;N;;;;;
Script=Han
```

## 6. Gongche Characters Mapping

Table 4 Unified Gongche Characters Mapping

UCS	Glyph 1	Glyph 2	Zhao	Chen	WLi	WLiu	Yu	Gu	Zheng	ВК
19BF0	合	含	合	亇	absent	absent	absent	absent	今	absent
19BF1	四	四	四	町	absent	3	absent	5	absent	absent
19BF2	7		<b>—</b> 7	١	absent	7	+	absent	absent	absent
19BF3	上	上,	上,	上	上	马	4	上	absent	上
19BF4	尺	尺	尺	少	R	乃	3	多	尺	尺
19BF5	工	工,	I,	工	ュ	1	4	30	H	ょ
19BF6	凡	凡	凡,	Ý	1	3	14	K,	凡	凡

Zhao is for 赵晓楠, Chen is for 陈根方, WLi is for 王锡纯 & 李秀云, WLiu is for 王季烈 & 刘富梁, Yu is for 俞振飞, Gu is for 顾铁华, Zheng is for 郑剑西, BK is for 《中国百科大词典》. Please see the full name of these books in Section 8.

#### 7. Evidences

Fig. 3

赵晓楠: 《工尺谱常识与视唱》, 北京:人民音乐出版社 (Beijing: People's Music Publishing House), 2014, ISBN 978-7-103-04558-9, P. 3

工尺谱字	上,	尺,	I,	凡,	合	四	-7
简谱音高	1	2:	3	4	5	6	7
工尺谱字	上,	尺,	Ι,	凡,	合	29	-
简谱音高	1	2	ġ	4	5	ė	?
工尺谱字	Ŀ	尺	T	凡	六	五	Z
简谱音高	1	2	3	4	5	6	7
工尺谱字	仩	伬	仜	仍	伏	伍	亿
简谱音高	i	ż	ż	4	5	Ġ	Ż
工尺谱字	往	很	红	1凡	衍	征	亿
简谱音高	i	ż	3	å	5	6	ż

Fig. 4

陈根方: 《中国工尺谱的数字实现研究》 (Research on Digitization of Chinese Gongche Notation), 上海大学博士学位论文 (Shanghai University Doctoral Dissertation), 2011, P. 6

降低八度的方法就是在每个基本谱字的最后一个笔划上加向左下方向的尾巴笔画,降低一个八度加一个尾巴笔画,降低两个八度加两个尾巴笔画,尾巴笔画都和谱字的最后一个笔画相连。如表 1.3 所示。

表 1.3 基本谱字和降低一个和二个八度后的谱字

基本谱字	合	四	_	上	尺	I	凡
降低一个八度谱字	身	四	7	上	尽	ユ	凡
降低二个八度谱字	分	四	~	上	尽	Ţ	凡

王锡纯, 李秀云: 《遏云阁曲谱·牡丹亭》, 遏云阁, 1870, Folio 1

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	26.				

Fig. 7

王锡纯, 李秀云: 《遏云阁曲谱·长生殿》, 遏云阁, 1870, Folio 9

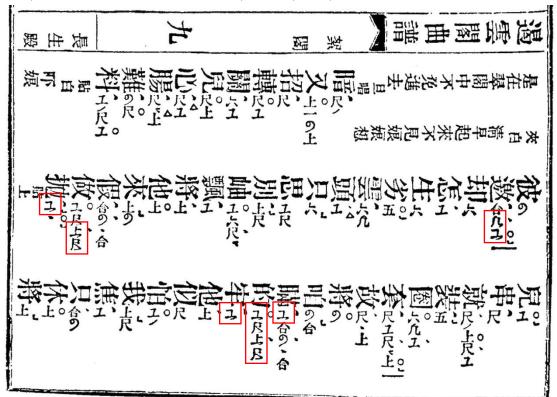


 Fig. 8

 王锡纯, 李秀云: 《遏云阁曲谱·长生殿》, 遏云阁, 1870, Folio 10

 $\it Fig. 9$  王锡纯, 李秀云: 《遏云阁曲谱·邯郸梦》,遏云阁, 1870, Folio 4

王锡纯, 李秀云: 《遏云阁曲谱·邯郸梦》, 遏云阁, 1870, Folio 5

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 Fig. 12

 王锡纯, 李秀云: 《遏云阁曲谱·南柯梦》, 遏云阁, 1870, Folio 3

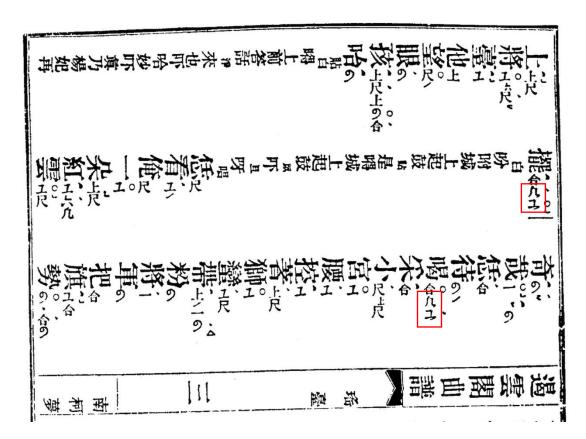


Fig. 13 王锡纯, 李秀云: 《遏云阁曲谱·南柯梦》, 遏云阁, 1870, Folio 4

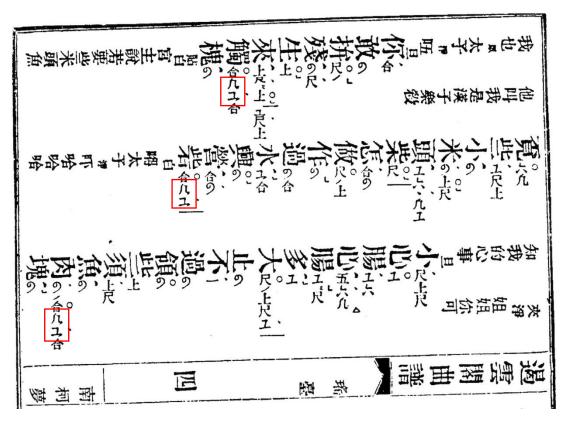
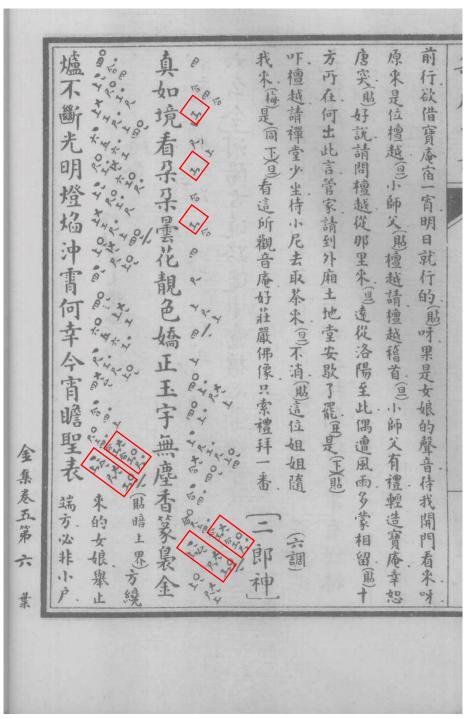
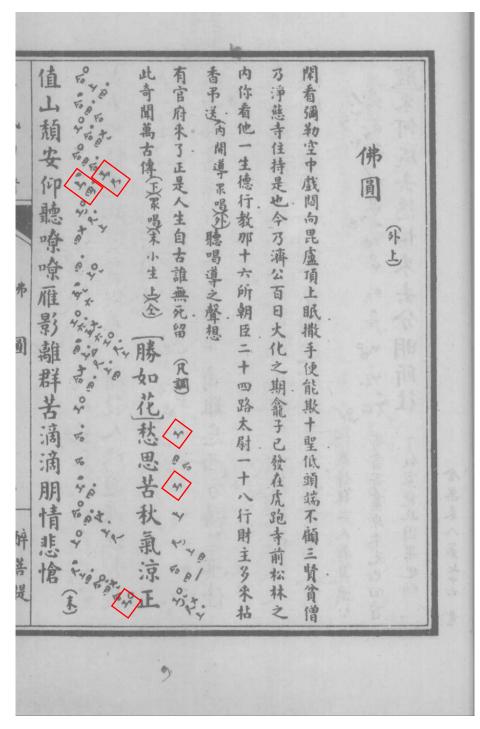


Fig. 14 王季烈, 刘富梁: 《集成曲谱金集卷五·金雀记》,上海: 商务印书馆, 1925, Folio 6



*Fig. 15* 王季烈, 刘富梁: 《集成曲谱金集卷八·醉菩提》, 上海: 商务印书馆, 1925, Folio 76



 $\it Fig.~16$  王季烈, 刘富梁: 《集成曲谱玉集卷六·烂柯山》, 上海: 商务印书馆, 1925, Folio 36

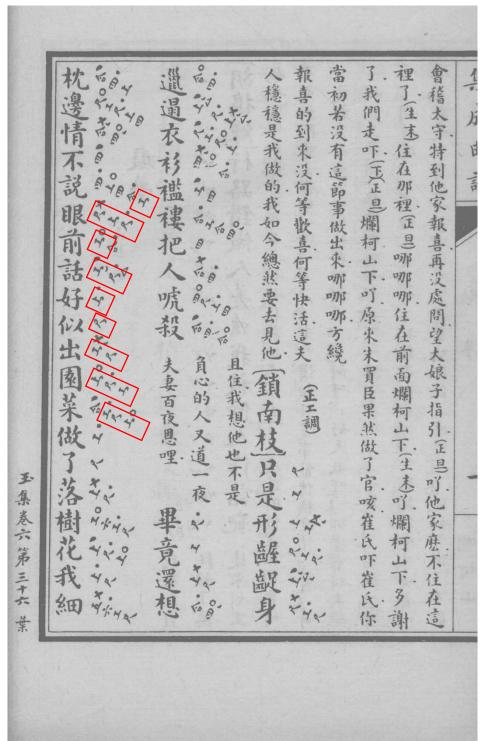


Fig. 17 王季烈, 刘富梁: 《集成曲谱玉集卷七·长生殿》, 上海: 商务印书馆, 1925, Folio 45

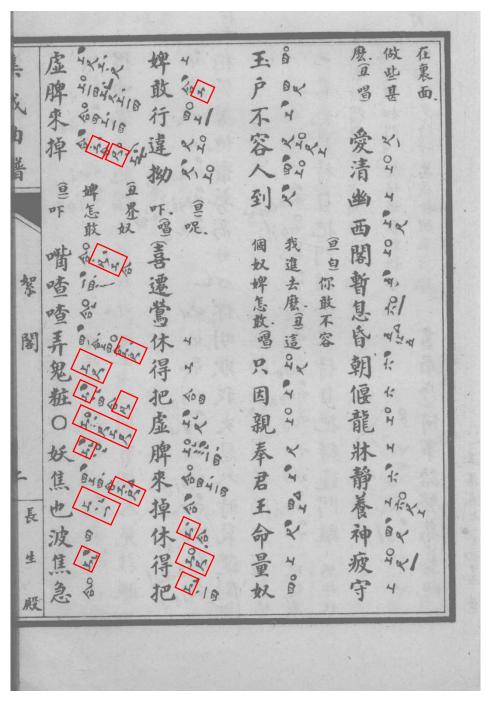


Fig.~18 王季烈, 刘富梁: 《集成曲谱玉集卷七·长生殿》, 上海: 商务印书馆, 1925, Folio 62

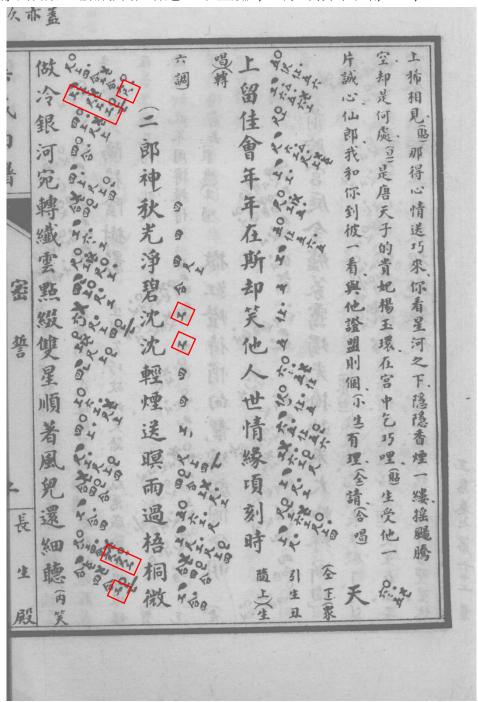


 Fig. 19

 俞振飞: 《粟庐曲谱·牡丹亭》, 上海: 上海辞书出版社, 1953, 2011 reprint, Folio 141

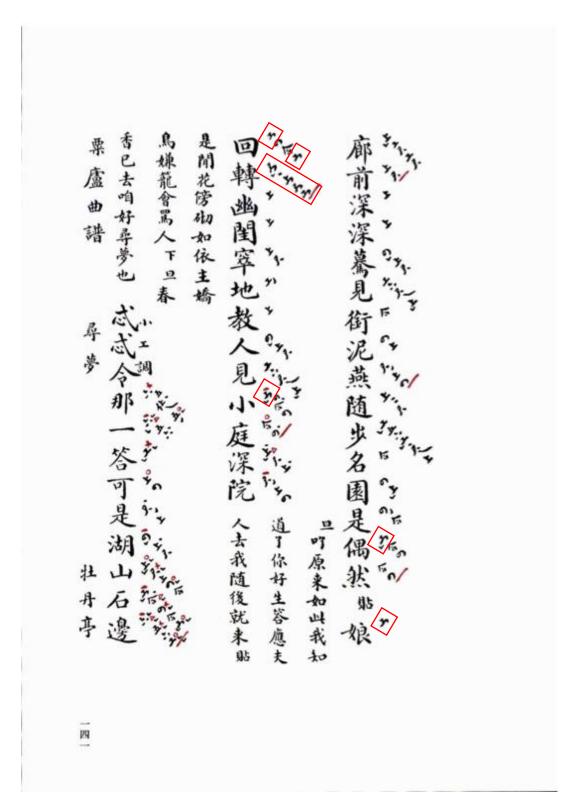
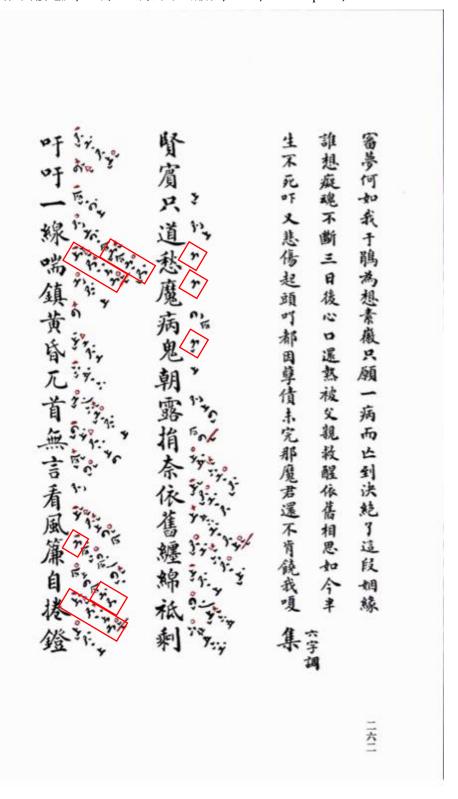


 Fig. 20

 俞振飞: 《粟庐曲谱·西楼记》, 上海: 上海辞书出版社, 1953, 2011 reprint, Folio 262



 $\it Fig.\,21$  俞振飞: 《粟庐曲谱·长生殿》,上海: 上海辞书出版社, 1953, 2011 reprint, Folio 285

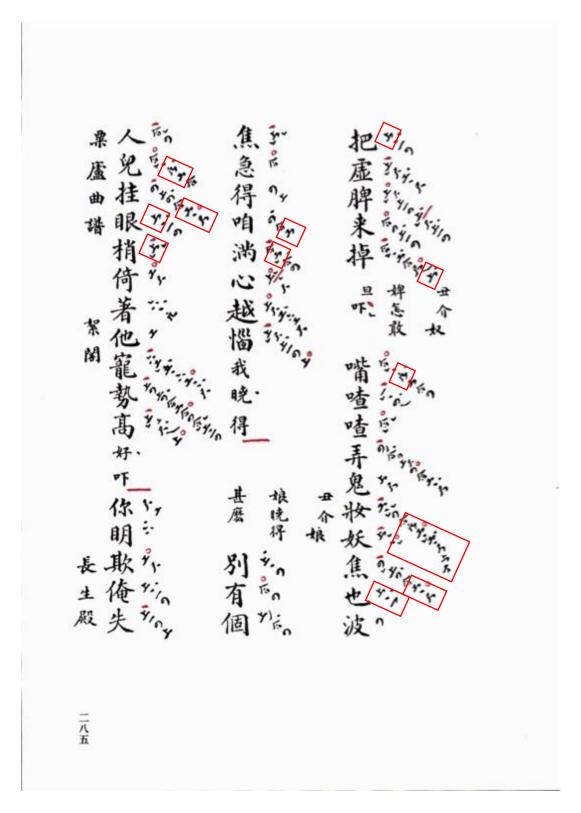


Fig. 22 顾铁华: 《粟庐曲谱外编·浣纱记》, Self Printed, 2002, Folio 156

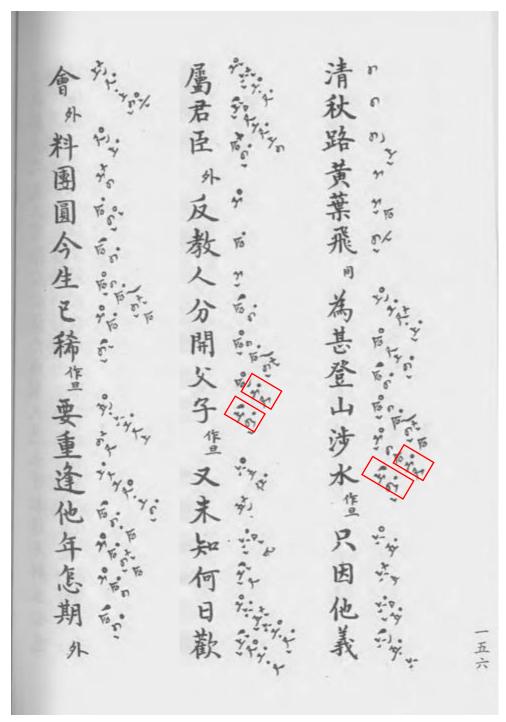


Fig. 23 顾铁华: 《粟庐曲谱外编·浣纱记》, Self Printed, 2002, Folio 157

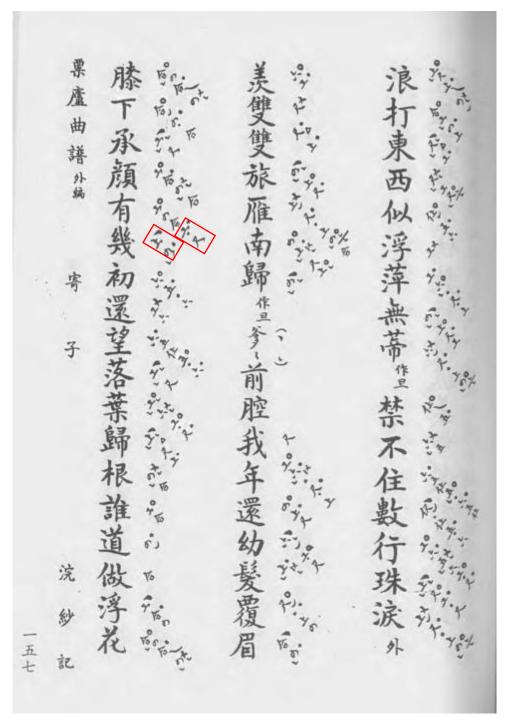


Fig. 24 顾铁华: 《粟庐曲谱外编·长生殿》, Self Printed, 2002, Folio 504

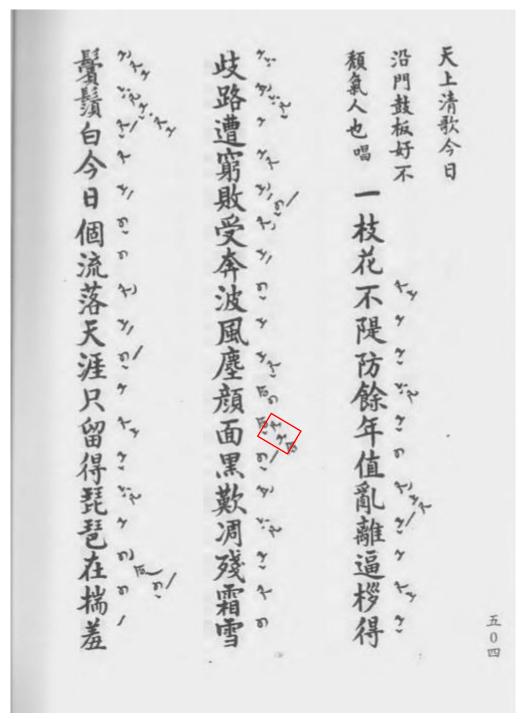


Fig. 25 顾铁华: 《粟庐曲谱外编·长生殿》, Self Printed, 2002, Folio 505

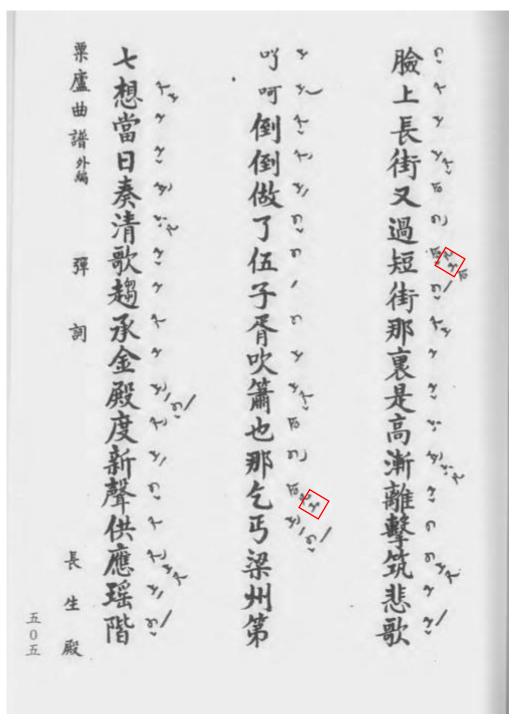


Fig. 26 顾铁华: 《粟庐曲谱外编·长生殿》, Self Printed, 2002, Folio 510

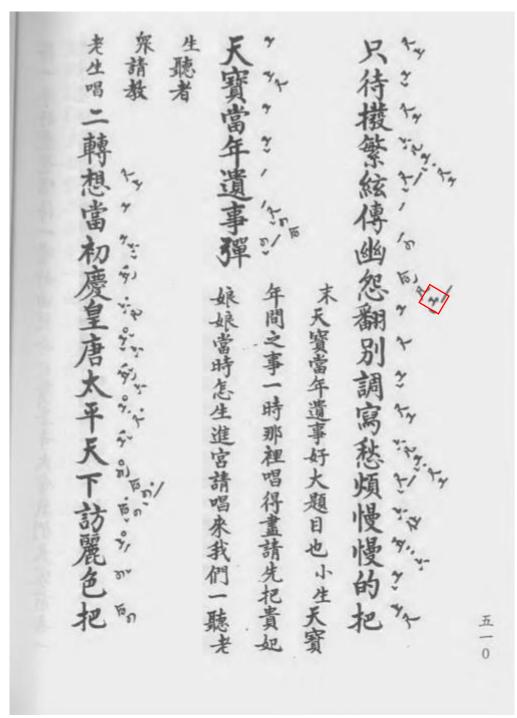


Fig. 27 顾铁华: 《粟庐曲谱外编·长生殿》, Self Printed, 2002, Folio 511

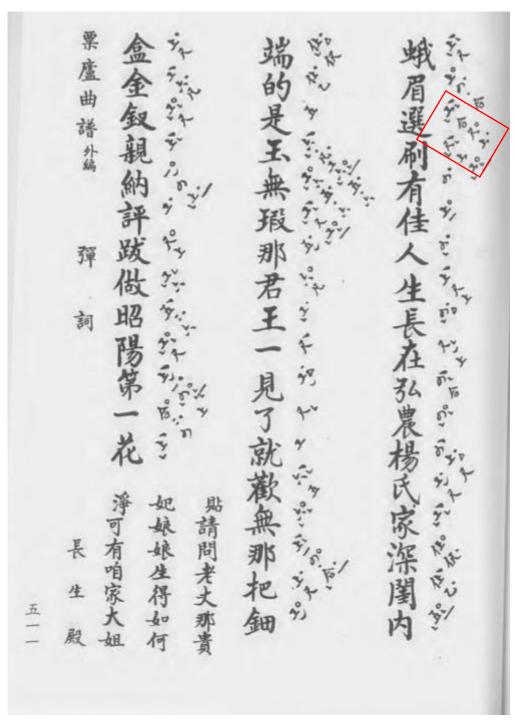
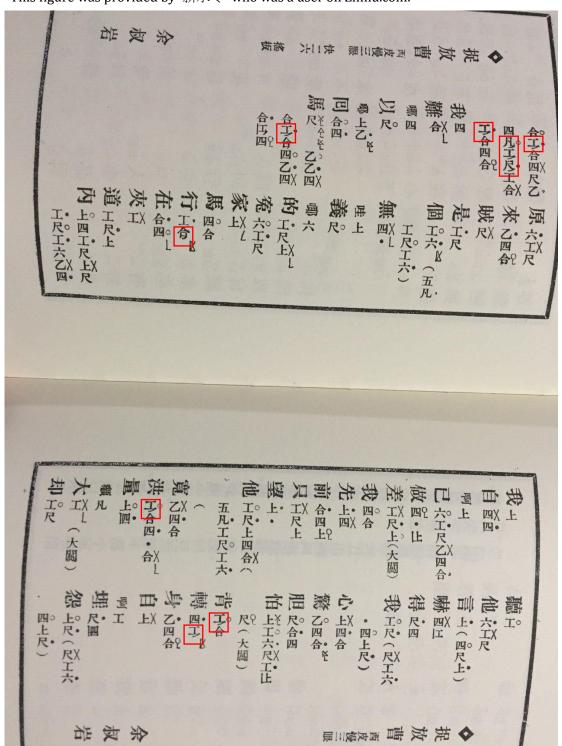


Fig. 28

郑剑西: 《二黄寻声谱》, 北京: 中国戏剧出版社, 2015, PP. 38-39

\*This figure was provided by 新水令 who was a user on Zhihu.com.



王伯恭: 《中国百科大辞典》, 北京: 中国大百科全书出版社, 1999, ISBN 7-5000-6212-5/Z·113, P. 1711

工尺谱 中国音乐传统记谱法的一种。广泛用于民间歌曲、器乐曲、说唱音乐和戏曲音乐的记谱方法。近代流行的工尺谱常用"合、四、一、上、尺、工、凡、六、五、乙"作为音名和唱名记录音高,它们相当于 sol、la、si、do、re、mi、fa、sol、la、si 或简谱的 5、6、7、1、2、3、4、5、6、7 等音。比"乙"高的加"亻"旁,如任(1)、尺(2)、工(3)、凡(4)。 板眼符号用"丶"或"×、一"、或"L、O、 $\Phi$ 、 $\Delta$ "等。明清以来通行的工尺谱是由唐代的"燕乐半字谱"及宋代的"俗字谱"等演变而来。

Notice that China once submitted  $\bot$ , &  $\not\sqcap$ , as G\_BK100001 and G\_BK100010 to CJK C1 and CJK D, but, as we know, they hadn't been included in the final version of CJK Ext. E.

Fig. 30 IRGN907 CJK C1 V 1.0, P. 1

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Fig. 31 IRGN907 CJK C1 V 1.0, P. 5

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China			BK100010	

Fig. 32 IRGN1272 CJK D V 1.0, P. 1

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Fig. 33 IRGN1272 CJK D V 1.0, P. 3

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1	2	3	0080.151		

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# (End of Document)