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Composition as an Extension of Ethnomusicology:
The Channelling of Traditional Gestures and Embellishments of six Schools of Guzheng Playing in *Hook* for Solo Guzheng, and the Possible Role of Machine Learning as an Extension of "Transcription" in Compositional Practice

Abstract. This article introduces the author's work for solo guzheng, *Hook* (2022), detailing its aesthetic and conceptual foundation, including the poetic imagery that shaped the music, and its technical and material construction. The paper discusses the author's compositional "genetic make-up," highlighting European and Anglican influences, alongside the integration of traditional Chinese and Taiwanese elements such as melodic embellishment, harmonic structure, and cultural aesthetics. The initial creative impulse for *Hook* is described anecdotally, followed by an exploration of the rationalisation, research, and contemplation processes that informed its expressive purpose. Central to the composition is the Chinese aesthetic concept of "yìjìng" (意境), with the author defining its relevance to *Hook* and providing an analysis of Li Yu's poem "Xiangjian Huan". The poem's translation, structure, imagery, and symbolism are discussed, along with the use of a "voiceless setting" and a structural cantilena that serves as a quasi-Urlinie or cantus firmus. The relationship between the cantilena and the tones of the Mandarin text, as well as its interaction with the musical foreground, is examined. The sectional layout of *Hook* is explained, incorporating various styles of guzheng playing from six traditional "schools" (*zhēngpaì*) used as transcriptional "lenses" to modify thematic material. Characteristics of each *zhēngpaì* in traditional works and their transformation in *Hook* are compared. The aesthetics of transcription and its significance in Western Art Music are discussed, referencing Ferruccio Busoni's concepts of Bearbeitung and Übertragung, and Michael Finnissy's extension of these ideas. The article concludes with an introduction to ongoing research into using machine learning for transcription, outlining the current scope, limitations, possibilities, and strategies for generating training data for the algorithm.

Keywords: contemporary art music, Chinese music, guzheng, transcription, ethnomusicology, machine learning, "yijìng" (意境), *zhēngpaì* (箏派).

1. Introduction

Hook (in Mandarin Chinese, 鉤) is an original composition for solo guzheng of approximately ten minutes in duration, composed in 2022 by the present author. This article focuses primarily upon the creative process behind *Hook*, its visionary conception, and certain aesthetic considerations revealed in the course of its composition. The discussion includes descriptions of the work's principal poetic inspiration, the re-contextualisation and transformation of certain playing techniques and musical tropes drawn from six traditional schools of guzheng playing, the relationship between ethnomusicology and musical composition, and the author's ongoing collaborative research into potential applications of machine learning as a tool of "transcription" in musical composition.

My compositional "genetic make-up" can be characterised as being rooted in the modernist tradition of Western art music, with specific affinities to the traditions of New Complexity and British experimentalism, while drawing upon the Anglican choral tradition and, since circa 2007/8, also progressively absorbing influences from the traditional music of China and Taiwan. The present author has composed sixteen works that feature Chinese instruments, listed in Figure 1 according to type.

The present author has also composed works setting Chinese texts. Among the works listed above, *Bring the Wine!*, *Brief Journey* and *South of the Great Wall* all set texts by Li Po (李白), while *Cao Chong Weighs the Elephant* is an opera for children's choir to a libretto by Wei Ping (魏萍) with additions by Li Meng-Neng (李萌能). In addition to these works, *Red Cliff* (2019) for treble voices and piano sets Su Shi (蘇軾)'s famous poem, "Reflections on Ancient Times at the Red Cliff" (赤壁懷古), while *Songs of the Raccoon Dogs* (*Hoklo folk transcriptions*) (2023) for flute, soprano and piano, is a song cycle based on folk songs in the Hokkien dialect. There is also a small-scale arrangement of a Buddhist song, *Song of Praise to the Buddha*, for soprano, tenor and piano, setting text by Li Shu-Tong (李叔同). It is worth noting here that the focus of this paper, *Hook*, has itself an intimate relationship with Chinese literature, by virtue of its being a "text-less" setting of a poem of the late Southern Tang Dynasty.

In the context of these progressive explorations spanning seventeen years, the solo work *Hook*, along with the two vocal chamber works composed in the subsequent eighteen months, *Songs of the Raccoon Dogs* and *South of the Great Wall*, can all be seen as summations of different aspects of my current state of assimilation of Chinese/Taiwanese influences. In *Songs of the Raccoon Dogs*, I explored my own ways of harmonising pentatonic

English title	Instrumentation	Date	Duration
• Solo Chinese instrument			
Hook	Guzheng	2022	10'
Sculpture in melody	Traditional sheng	2015–6, revised in 2017 and 2021	7'
• Ensemble consisting entirely of Chinese instruments			
Walking by Willow Creek	Sheng, pipa and guzheng	2022	9'
• Ensembles combining Western and Chinese instruments			
Liuli	Viola and erhu	2007	3'
Brief Journey	Two sopranos, erhu and piano	2007	4'30"
Cao Chong Weighs the Elephant	Opera for dizi, guzheng, children's choir and piano	2017	30'
Two Songs for the Buddha's Birthday	Song arrangements for Western orchestra, Chinese orchestra and choir	2021	14'
Moon	Alto sax, zhonghu, marimba doubling vibraphone and guzheng	2021	9'30"
Flourishing	Duodectet of mixed Chinese and Western instruments	2022	unspecified
South of the Great Wall	Sheng, pipa, guitar, soprano and cello (also a version for sheng, pipa and cello)	2023–4	15'
• Works for *Yayue* ensemble (an ensemble of replicas of instruments formerly employed in the Tōgaku music of the eighth-century imperial Tang court)			
Yayue Dance	*Yayue* ensemble	2021	2'30"
Capping of the Black Silk "Zi" cloth (a Yayue)	*Yayue* ensemble	2021	5'
Three Yayue for the Confucian "Capping Ceremony"	*Yayue* ensemble	2021	3'
Three (More) Yayue for the Confucian "Capping Ceremony"	*Yayue* ensemble	2022	3'

Figure 1. Compositions by George Holloway using Chinese instruments

melodies and notating complex vocal embellishments in traditional Taiwanese music, and the projection of typically Chinese philosophical concepts and poetic sentiments through a non-traditional gestural vocabulary and structural thinking. In *South of the Great Wall* the present author even absorbed otherwise ideologically uncomfortable materials in the form of gestural tropes from Chinese military marches. *Hook*, meanwhile, involves a specific engagement with the historical and geographical stylistic taxonomy of the guzheng.

Hook was selected by the ISCM Taiwan Chapter's call for works for inclusion in the 2023 Taipei International New Music Festival and was premiered by Kuo Jing Mu (郭靖沐) in the National Recital Hall in Taipei on the 28th of October 2023. The piece has also been recorded by Chen Yu Han (陳宇涵) as part of an ongoing collaborative project with scientist Lex O'Brien, which explores the use of machine learning as a tool for *quasi*-transcription in the compositional process. This project shall be discussed in more detail in section 6. The piece is dedicated to my first composition teacher, David Selwyn, in commemoration of the tenth anniversary of his passing away.

2. Initial Creative Conception ("Yijing" 意境)

The initial spark of inspiration for *Hook* goes back to 2013, when the present author first heard the Taiwanese guzheng player Huang Wei-Jie (黃偉傑) practising the classical Chinese piece *High Mountain Flowing Water* (高山流水) in a version for solo guzheng. The piece struck me as possessing a poise, spaciousness, delicateness and fine nuance quite distinct from the more demonstrative, extroverted and even bombastic (albeit equally beautiful and profound) guzheng music I had hitherto encountered. The present author discovered that this was the music of the Zhejiang school of guzheng playing: this was the first time that I became aware of the existence of different traditional schools of guzheng playing, known as *zhēngpaì* (箏派).

This led to an almost immediate creative impulse, the idea of a piece for solo guzheng that evokes or even quasi-catalogues the principal *zhēngpaì*. This was an audacious (one might say, narcissistic) idea, given that at the time of this idea's inception, the present author barely understood the taxonomy of *zhēngpaì*, and even less understood the stylistic differences between them. Indeed, it is important to note that even now the present author does not claim to speak with authority on the musicological details of this topic: *Hook* is, after all, a work of art, and not in any way a scholarly catalogue of guzheng styles. Many years after that initial encounter,

however, the present author did receive considerable guidance from the Taiwanese guzheng player Ihua Yang (楊宜樺), who analysed representative scores with me, demonstrating the differences in playing style between the different schools. It was clear from the initial conception that the purpose would be to generate an allusiveness of gesture, rhythmic profile, texture, and perhaps even pitch material that would tap into a collective cultural memory regarding the guzheng tradition. The piece would not be *about* the allusiveness per se, and yet it would be an important aspect of the piece's meaning. The work that I composed nine years after that initial encounter with *High Mountain Flowing Water* and the ensuing creative impulse, remained considerably faithful to that visionary conception.

In composing a piece for one the most emblematic instruments originating from the Chinese civilisation, it was important that this piece possess a creative conception distinct from the "cataloguing" idea itself. The present author framed this problem in terms of the Chinese aesthetic concept of *yìjìng* (意境), which, according to Qi Li and John Ryan (2017, 347), was traditionally applied to works of painting, calligraphy and poetry, its application only later being expanded by scholar and poet Wang Guowei (王國維) (1877–1927) to other liberal arts genres. *Yijìng* can be translated as "realm of meaning", although it has also been rendered variously as "artistic conception" (Jing 2023) and "ideorealm" (Yu 2023). Qi and Ryan state that *yìjìng* "has played a crucial role in traditional Chinese philosophy, literature and art since the eighth century CE", and that it "couples the artist's emotional realm to objects or scenes in the external world" (2017, 344). Indeed, early Chinese commentators also explained the experience of *yìjìng* as a kind of an "inner aesthetic" (內審美) (ibid.), an "organic unity" (有機統一) that links a scene depicted in an artwork (景) to an emotional response (情) on the part of the observer (Wang 2006, 4). In music, the present author takes *yìjìng* to connote a certain psychic state or atmosphere permeating the music that is pregnant with culturally allusive meaning. It adumbrates the presence of extra-musical imagery that was constantly active in the mind of the composer during the compositional process, that should guide the performer's interpretation, and that ideally (or perhaps one should say, idealistically) informs the audience's response.

The *yìjìng* for *Hook* is explicitly Chinese: a Tang dynasty poem by Li Yu (李煜, 937–978), known, as is the convention for classical Chinese poetry, by the name of the tune to which it would have been sung, "Joy of Meeting" (*Xiangjian Huan*, 相見歡). Li Yu was the last monarch of the Southern Tang Dynasty, whose territory extended across the provinces of Jiangsu, Anhui, Jiangxi and Hunan in Southern China (Seasonsinthesun, 2017, drawing on Kurz (2016)). Li Yu was a painter, calligrapher and poet who wrote in the *ci* form, and was reportedly more interested in literature and art than in national affairs (Chang 2012, 118). Taizu (宋太祖), the founder of the Song Dynasty, invaded Li Yu's kingdom in 974, and in 975 put Li Yu under house arrest; Taizu's brother and successor Taizong (宋太宗) had Li Yu poisoned in 978 (Encyclopedia Britannica 2023). The poem in question evidently was written during Li Yu's house arrest sometime between those latter two dates.

This is the present author's English translation of the poem:

> Lyrics to the tune "Joy of Meeting" (*Xiang Jian Huan*)
>
> Mute and alone I ascend the west tower.
> The moon is like a hook.
> The lonely parasol tree in the deep courtyard encapsulates the clear Autumn.
>
> Cut it and it will not break, tidy it and chaos remains:
> That's the pain of separation.
> It's no ordinary taste in the heart.

(無言獨上西樓。月如鉤。寂寞梧桐深院鎖清秋。
剪不斷，理還亂，是離愁。別是一般滋味在心頭。)

Two images in the poem proved especially influential in the formulation of the *yìjìng* of *Hook*. Firstly, the simile describing the moon as a "hook" struck the present author as a potent, even violent indicator of the imprisoned king-poet's state of despair, perhaps even a premonition of his execution. Second, mention of the parasol tree in the deep courtyard, to the composer's mind, prompted the metaphor that follows: "Cut it and it will not break, tidy it and chaos remains; that's the pain of separation." In researching the poem, the present

author was struck by a fact regarding the Chinese parasol tree (*firmiana simplex*, also called a wutong tree): it is known to grow quickly and aggressively, and needs constant pruning to maintain its shape (NC State University n.d.). The present author has not found any commentary on the poem that suggests that the poet intends to refer to the tree in the fourth and fifth lines, and yet it seems eminently plausible and even apt: the poet's emotions, like the lonely (and ill-kept) tree in the courtyard, tend towards chaos; blessed ataraxia is merely a fleeting state. Referring to the conception of *yìjìng* as laid out above, the "organic unity" of both scene and emotional state are clear in Li Yu's poem, and this powerfully affected me when I first encountered the work. In general terms, *Hook* can be taken as an evocation of the atmosphere of the deep courtyard, and of the poet's mental state—in essence, the composer's subjective musicalisation of the *yìjìng* as generated by Li Yu in his poem.

In choosing such an explicitly Chinese inspiration for the piece, I was not in any way asserting a particular national allegiance or crafting a particular cultural identity for myself; I was mainly reflecting a personal enthusiasm for this period of poetry and for this astounding poem specifically. The use of a literary *yìjìng* provided a thread of imagistic and psychological material running through the work that could be projected through the transforming lenses of the different styles of *zhēngpaì*.

3. Composition of the Cantilena and its Relationship to the Tones of Mandarin Chinese

The present author conceived a *modus operandi* for the composition of *Hook* that involved first composing a "voiceless setting" of the poem, notated rather in the fashion of an unmeasured prelude of Rameau. The pitch material of *Hook*, just like any other work for guzheng, is naturally limited by the need to select a scordatura for the instrument's twenty-one strings. Although it is possible to adjust the positions of the moveable bridges mid-piece, the procedure is of a similar degree of awkwardness as that of retuning a guitar or a violin mid-piece. The present composer opted to settle for one scordatura for the whole piece (Figure 2).

Figure 2. Guzheng scordatura employed in *Hook*

Symmetries are observable within the scordatura, with the intervals between the eleventh to seventeenth strings being an inversion of those of the fourth to the tenth strings. The present author initially contemplated employing an entirely inversionally-related scordatura throughout the entire gamut of the strings, but ultimately modal/harmonic considerations took precedence over geometric ones.

The structure of the poem guided the wider division of the music into discreet sections. The poem uses thirty-six Chinese characters, arranged in two stanzas that could in turn be divided, according to the semantic structure, into three phrases of six, three and nine characters respectively. This yields six lines of poetry, which correspond to musical periods in the cantilena. Given the constraint of the twenty-one pitches available, variation in the pitch material of the cantilena is achieved by the partition of the instrumental gamut into four tessituras of roughly one octave in size each, with the six phrases of the cantilena (each corresponding to one of the six lines of the poem), deriving their pitch material from different combinations of two of the four registers. The combinations of registers were selected according to a notional (and inevitably subjective) assessment of their relative tensions, in relation to the emotional intensity of the corresponding line of poetry. Each of the six musical periods (corresponding to the six lines of poetry) consequently has its own utilisation of different sets of strings, and these function structurally rather like "vertical sets" (pitch class sets in which each member is fixed in a given register) in defining the harmonic "space" of each line. This is somewhat akin to the use of vertical sets in, to name two *locus classici*, the first movement of the Symphony Op. 21 (1927–8) of Anton Webern (1883–1945) and the String Quartet No. 3 (1973) of Elliott Carter (1908–2012), except that unlike those pieces, *Hook* is not serial, and pitch-class repetitions occur within the vertical sets (Figure 3). The column marked "harmonic/registral tension" indicates the composer's own quantitative assessment of the tension owing to pitch content and register (including registral separation between segments); the exact details of how this assessment was made are outside of the scope of this paper.

Phrase	Vertical set	Harmonic/ registral tension	Corresponding line of poetry
1	*(musical notation, i+ii)*	Medium	Mute and alone I ascend the west tower.
2	*(musical notation, i+iii)*	Medium-high	The moon is like a hook.
3	*(musical notation, ii+iv)*	Lowest	The lonely parasol tree in the deep courtyard encapsulates the clear Autumn.
4	*(musical notation, ii+iii)*	Medium-low	Cut it and it will not break, tidy it and chaos remains:
5	*(musical notation, i+iv)*	Highest	That's the pain of separation.
6	*(musical notation, iii+iv)*	Low	It's no ordinary taste in the heart.

Figure 3. Vertical sets formed from combinations of pairs of tessituras,
relative tension and the corresponding line of poetry

It is worth noting that in the selection of specific melodic contours, the present author was at pains to adhere broadly to the tones of the text. A comparison of the tones of the Chinese text and the melodic shape of the cantilena should reveal this relationship (Figure 4).

Figure 4. Extract from the cantilena (first phrase only) and the "voiceless" text:
melodic contour and tones

This claim should come with caveats, however. Although there is ample precedent in traditional Chinese music, especially in folk songs and various forms of traditional opera, for a degree of melodicisation of linguistic tone (Schellenberg 2012), this is not so straightforward as simply preserving rising and falling intervals or even pitch contours (Wee 2007). Furthermore, the present author was using the tones as they are in the modern Mandarin pronunciation, which differs somewhat from the language contemporary to Li Po himself. For these reasons, one should not make too much of the significance of this relationship, neither in its determinative role in the compositional process, nor in its expressive significance in the artwork. There are instances of works by other contemporary composers in which both the determinative and expressive relationships are much stronger, for instance in the second movement, *Reciting*, from the *Fiddle Suite* for huqin solo and string quartet or orchestra by Chen Yi (陳怡, b. 1953) (Chen 1997/2000). Caveats notwithstanding, the tones of the Chinese characters were certainly an important guide for the present author in shaping the melodic contour of the cantilena.

The setting of the poem in *Hook* is not only voiceless in the trivial sense that the text is not explicitly sounded (it is, after all, a solo instrumental piece), but also in the sense that this cantilena is itself never explicitly stated in *Hook*. The cantilena instead threads its way through the work like an *Urlinie*, or perhaps more properly a *cantus firmus* (because the cantilena only weakly implies the generation and resolution of background structural tensions), hidden within the deeper structural levels of the music. The actual surface textures of the music are built around this cantilena, which serves as the framework for the elaboration of textures evocative of the different *zhēngpài*.

The relationship between the actual music of *Hook* and the quasi-*cantus firmus* of the cantilena can be seen by a comparison of the actual beginning of each of the three rotations with the original first line of the cantilena (Figure 5).

(i) Cantilena (first two characters)

(ii) First rotation (mm. 1–4.4)
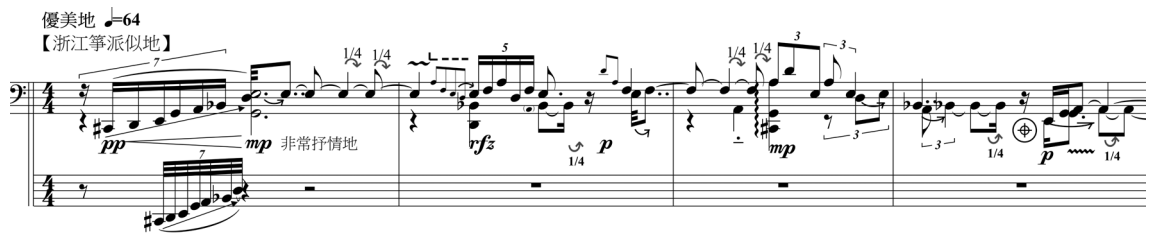
(iii) Second rotation (mm. 149–151.4)

(iv) Third rotation (mm. 198–201.2)

Figure 5. Transformation of cantilena in the three structural rotations

The first two characters of the poem (無言: "mute", "without words") potentially subconsciously suggested this concept of the "voiceless" setting of the poem; it was certainly not a conscious influence.

4. Musical Structure and Projection of Material through Stylistic and Gestural Lenses: The Schools of Guzheng Playing (*Zhēngpài*)

To borrow terminology from Sonata Theory (Hepokoski 2011, 12, 16 et passim), *Hook* is structurally "triple-rotational", in that it consists of three complete statements of this cantilena (although the piece is not in sonata form, the present author nonetheless conceived of each statement of the cantilena as a complete rotation of thematic material). Each of the three rotations is in turn divided into two musical paragraphs that

reflect the two stanzas of the poem, in each of which the cantilena is modified (transcribed) by the application of the playing styles from six schools of guzheng playing. They are, in order, the Zhejiang, Chaozhou, Henan, Shaanxi, Shandong and Hakka schools (Figure 6). The transcriptional process whereby the musical characteristics of these six schools are assimilated into the language of *Hook* is discussed in the following section.

Rotation	Paragraph	Bars	*Zhēngpaì* (location in China)	Duration	Tempo	Expression mark
I.	1	1–33	Zhejiang (East)	122"	♩ = 64	Graceful, Elegant
	2	34–147	Chaozhou (South)	66"	♩ = 54 (♪ = 108) ♩ = 128 ♩ = 180	Fresh, Lucid
II.	3	149–171	Henan (Central)	122"	♩ = 48	Melancholy
	4	172–196	Shaanxi (North-West)	66"	♩ = 90	Plaintively
III.	5	198–277	Shandong (East)	122"	♩ = 84 ♩ = 100	Breezy (literally: "Like the wind blowing through bamboo") Unrestrained
	6	278–304	Hakka (South)	66"	♩ = 48	Refined

Figure 6. Sectional structure of *Hook*

In the first rotation, a relatively slow-paced but intense *zhēngpaì* (Zhejiang), is followed by a faster, more agitated one (Chaozhou). In the second rotation, the sequence is reversed, with the denser Henan *zhēngpaì* preceding the slightly broader (and increasingly sparse) Shaanxi style. The third rotation repeats this sequence, with the intense Shandong *zhēngpaì* being followed by the lyrical and gentler Hakka. This yields a series of paragraphs that could be characterised, in the broadest sense, in terms of the following sequence of contrasting pairs of musical characters: subdued-agitated/dense-sparse/intense-gentle. Given that each "focalising" process results in substantially different music, there is essentially no precise repetition of musical material anywhere in *Hook*, and this is one reason why the *Urlinie* (the cantilena) serves such an important unifying function in the work.

In each case the present author consulted the editorial/pedagogical commentary for guidance regarding what are considered the traditional characteristics of a given *zhēngpaì* (Yuan, Xu and Li 2007). Listed below are the representative works which served as models for each musical paragraph, and the musical characteristics that the present author took as being stereotypical of that school. Naturally this contains a large subjective component and is not based upon a comprehensive study of all the repertoire of each school. The transcriptions of the traditional pieces given below are by the present author from the *jianpu* 簡譜 (Chinese traditional number-notation) of the above-mentioned edition; it is beyond the scope of the present article to list the specific editorial decisions made in this particular instance of (ethnomusicological) transcription, although the present author returns to the concept of transcription and its aesthetic significance in *Hook* in section 5.

For the Zhejiang school (the opening paragraph), the model was *The Lofty Moon* (月兒高). The present author consulted Bai Yang 白洋's interpretation (Bai 2021). The key characteristics of this school which feature in *Hook* are large sweeping glissandi using both hands (Figure 7), and the interval of a second played either as a dyad or as part of a trichord, with an upwards bend to a unison (Figure 8). Figure 5(ii) above shows how these characteristics appear in *Hook*.
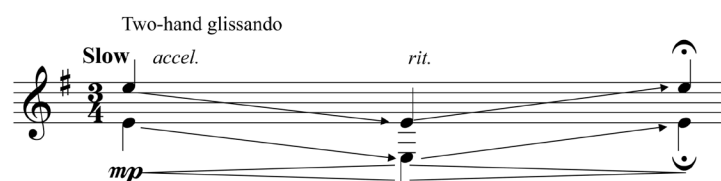

Figure 7. Selected characteristics of the Zhejiang school (the author's own transcription from the *jianpu* notation)

Dyads and trichords with upwards bends to unisons; microtonal inflections.

Figure 8. Selected characteristics of the Zhejiang school (the author's own transcription from the *jianpu* notation)

For the Chaozhou school (paragraph two), the model was *Jackdaws Playing in the Water* (寒鴉戲水). The present author consulted Lin Ling 林玲's interpretation (Lin 2020a). The key characteristics of this school which feature in *Hook* are: simple monody punctuated by quick downward glissandi, vibrato quartertones on non-pentatonic notes (4&7) (Figure 9); fast tempo (♩=128), 1/4 time with a characteristic emphasis on each crotchet beat, many syncopated dyads known as "whipped beats" 拷牌 (Figure 10) and an even faster, climactic "third tactus" 三板 (♩=180) (Figure 11). Figures 12(i), (ii) and (iii) show how these characteristics appear in *Hook*.

Slowly
Simple monody punctuated by quick downward glissandi; vibrato quartertones on non-pentatonic notes (4&7)

(9)

Fast tempo (♩=128), 1/4 time, many syncopated dyads ("whipped beats")
Slow _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ **Fast**

(10)

Faster "third tactus" (♩=180)

(11)

Figures 9–11. Selected characteristics of the Chaozhou school (the author's own transcription from the *jianpu* notation)

Figure 12(i) – (iii). Transcription of the same characteristics in *Hook* (mm. 34–36, 44–51, 91–99)

For the Henan school (paragraph three), the model was *Chen Xingyuan Falls into the Courtyard* (陳杏元落院), once again with reference to Lin Ling's interpretation (2020b). The key characteristics of this school which feature in *Hook* are pre-pressed, struck and released notes, intense vibrato; pre-bent, released and re-bent 5-#4-5 & 1-7-1 lower mordents (often sounded against the lower octave), and a very slow tempo with an intense atmosphere (Figure 13). Figure 5(iii) above shows how these characteristics appear in *Hook*.

Figure 13. Selected characteristics of the Henan school (the author's own transcription from the *jianpu* notation)

For the Shaanxi school (paragraph four), the model was *Tune of the Qin Mulberry* (秦桑曲) composed in the 1970s by Qiang Zeng-Hang 強增抗 (dates unknown) and Zhou Yan-Jia 周延甲 (1934–2019). The present author again consulted Lin Ling's interpretation (2020c). The key characteristics of this school which feature in *Hook* are: wide ascending glissandi leading to tremolo (Figure 14); unison string bends, ¼-sharp 4 & 7 with vibrato known as "bitter" or "crying" notes; notes pre-bent and released (without re-attacking) to generate passing notes (Figure 15). Figure 16 shows how these characteristics appear in *Hook*.

(14)

Freely

Wide ascending glissandi leading to tremolo

(gliss.)

(15)

Slow (contemplative)

Unison string bends, "bitter"/"crying" notes; ¼-sharp 4&7 with vibrato;
notes pre-bent and released (without re-attacking) to generate passing notes

Figures 14–15. Selected characteristics of the Shaanxi school (the author's own transcription from the *jianpu* notation)

如泣如訴地 ♩=90
【陝西箏派似地】

Figure 16. Transcription of the same characteristics in *Hook* (mm. 172–4)

For the Shandong school (paragraph five) the model was *Four Brocade Strips* (四段錦), with reference to Su Chang's interpretation (2021). The key characteristics of this school which feature in *Hook* are note repetitions on adjacent strings with vibrato/lower mordents and descending scalar figures executed with the thumb only (Figure 17). Figure 5(iv) above shows how these characteristics appear in *Hook*.

Note repetitions on adjacent strings with vibrato/lower mordents; descending scalar figures with thumb only

♩ = 84

Thumb

Figure 17. Selected characteristics of the Shandong school (the author's own transcription from the *jianpu* notation)

The four "strips" of the title refer to the four brief motivically-related movements of which this piece is constructed. The second of these "strips" suddenly increases in tempo, while continuing to employ the same descending thumb glissandi as before, with the durations halved (Figure 18).
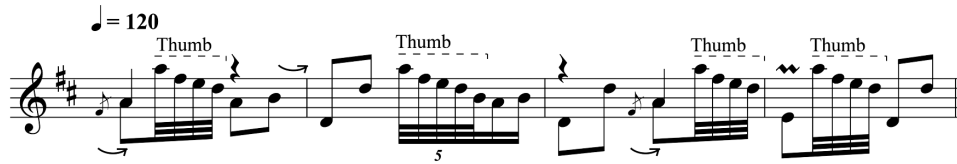
Figure 18. The second of the four "brocade strips" (the author's own transcription from the *jianpu* notation)

In *Hook* this is transformed into the densest passage of the whole work (Figure 19).

Figure 19. Transcription of the same characteristics in *Hook* (mm. 217–220)

For the Hakka school (paragraph six) the model was *Night Rain on the Banana-Wood Window* (蕉窗夜雨), with reference to Bing Xia's interpretation (Xia 2023). The key characteristics of this school which feature in *Hook* are a slow tempo, sparse texture, octaves on strong beats; prominent slow upward bends, short anacrustic descending glissandi with thumb marking beginnings of phrases, and what the present author can only describe as an ineffable sense of refinement (Figure 20). Figure 21 shows how these characteristics appear in *Hook*.
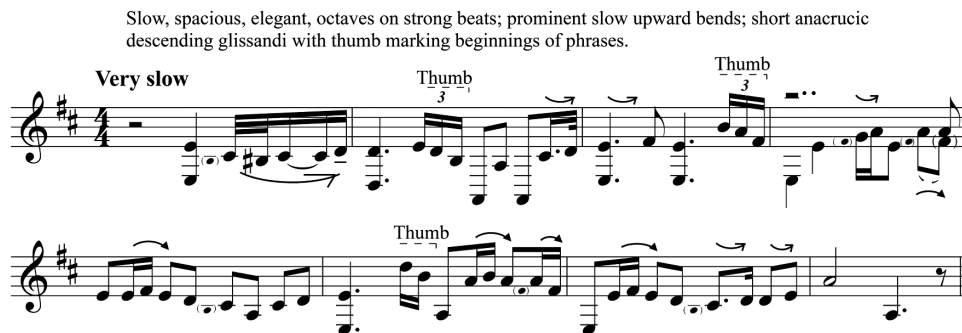

Figure 20. Selected characteristics of the Hakka school (the author's own transcription from the *jianpu* notation)
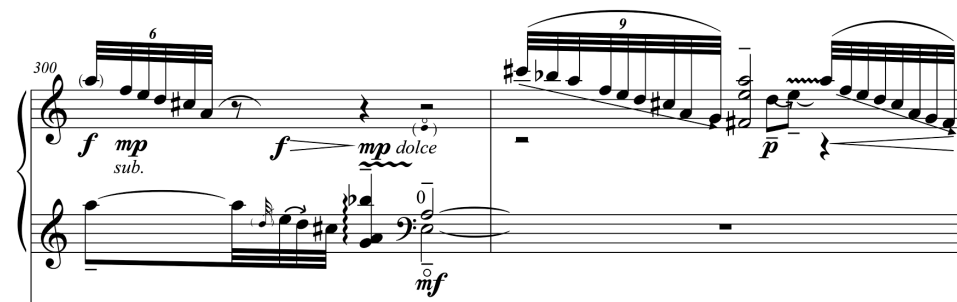
Figure 21. Transcription of the same characteristics in *Hook* (mm. 300–301)

These stylistic lenses transform the material of the cantilena by treating it with embellishments and musical gestures and textures characteristic of the six schools. The music alludes to these embellishments, gestures and textures without attempting actual stylistic pastiche. The goal is not to "be" Chinese in any way, nor is it to compose "Chinese music," rather it is to create a "transcription" of different types of Chinese music.

One final piece of material remains to be explained. At the end of the three thematic rotations, a type of material which the present author conceived of as "alienated" briefly follows. It does not belong to a traditional

zhēngpài, but rather utilises (and attempts to rehabilitate) a cliché from contemporary guzheng music. The technique of playing to the left of the moveable bridges is used by almost every contemporary composer, and it has become both emblematic of "contemporary music" on the guzheng, but also something of a cliché, or perhaps, owing to its microtonal and aleatoric pitch content, a simple "noise-producing" or "tension-intensifying" device. Owing to its emblematically "contemporary" quality, the present author finds it hard to hear it as expressive of anything other than the technique (or function) itself. The use of this technique in *Hook* is my attempt at a non-clichéd and expressively justified way of employing this performance technique. Referring back to the concept of *yìjìng*, one might term it an "organically unified" use of the technique, in as much as its deployment relates to the content of the poem. The last line of the poem refers to the "no ordinary taste in the heart". I reserve this playing technique specially for the end of each rotation of the cantilena, as a way of representing this strange, disquieted and alienated feeling described by the poet. In this way, I attempt to integrate this slightly "showy" technique into the *yìjìng* of the piece (Figure 22).

Figure 22. The "alientated" material (played to the left of the moveable bridges) (mm. 306)

5. The Aesthetic Function of Transcription in *Hook*

The present author at the time of writing works in the Ethnomusicology department at Nanhua University. I feel I should emphasise that I am not an ethnomusicologist. I am, rather, a composer who uses the insights one can gain from ethnomusicological fieldwork and other analytical study as a source of stimulation for creative expression. The compositions that result from such a creative impulse are therefore a composer's response to those materials, and could therefore be loosely termed "composition as ethnomusicology".

Both composition and ethnomusicology involve types of transcription, but they are quite different in method and objective. Transcription in the ethnomusicological sense involves the rendering in notation of musical sounds heard or recorded in the course of fieldwork, and it may also be the re-transcriptions of one form of notation in another form. The collation of material that took place in the pre-compositional stage of *Hook*'s creation involved some amount of this sort of re-transcription, specifically from *jianpu* (the number-based, staffless notation of traditional Chinese music) into Western staff-based notation; in section 4, the present author has briefly acknowledged the editorial decisions made during this process of ethnomusicological transcription. Even this kind of transcription, that would strive for objectivity, involves problematic decisions about the conceptual structure of the music as implied or manifested by the notation. Ferruccio Busoni (1866–1924), an early theoriser on the topic of transcription, expressed an extreme view on this topic, when he wrote that "[notation] is itself the transcription of an abstract idea. The moment the pen takes possession of it, the idea loses its original form" (Busoni 1957, 29). It seems to the present author that this could apply as much to ethnomusicological transcription as it does to the "transcription of ideas" that takes place during the compositional process, and indeed the degree of alteration that occurs can in both cases be considerable, even if the ontology of the "object" being transcribed is different.

Although Busoni in the quotation above reductively refers to the notation of *any* musical idea as transcription, the term tends to refer in contemporary Western Art Music more specifically to the freer re-presenting and/or reacting to a piece, musical corpus or even musical style via the medium of one's own compositional expression. This narrower understanding of compositional transcription is reflected by Busoni himself in his distinction between *Bearbeitung* and *Übertragung* (Kindermann 1980). The former is a more straightforward "processing" or "treatment" of the work that usually employs instruments possessing a close affinity to those used in the original, and thus does not require much adaptation to maintain the initial sonic effect of the music. In other words, *Bearbeitung* is closer to a musical arrangement. *Übertragung*, literally "carrying over", involves the transmission of the essential material into a different sonic medium, requiring adaptation to preserve (by different sonic means) the "Geist" (or gist!) of the original. Many composers before and since Busoni have employed various transcriptional approaches in their music; perhaps the most thorough-going

exploration of the aesthetic possibilities of transcription belongs to the English composer and pianist Michael Finnissy (b. 1946), who over four decades has built upon Busonian transcription to forge a quite distinctive kind of "*Übertragung*-plus" (the term is the present author's own, not Finnissy's), in which the objective is not necessarily (and often not at all) to preserve the original spirit of the found object.

It is evident, therefore, that there is a difference between what an ethnomusicologist's transcription is attempting to do (a faithful documentation of a tradition) and what the "*Übertragung*-plus" of a composer is attempting to do with its found material—namely to evoke, allude to, react to, comment on, critique, satirise, polemicise, question, transform and recontextualise. In Finnissy's music this often generates an elevated, erudite discourse upon the found material, with a certain amount of objective distance between the same and the musical text. Objectivity, a sufficient degree of "digestion" and reconstitution of the material can usually be achieved by projecting the found material through different lenses or filters, but often the lens is itself the found material—as is the case with *Hook*, which uses the found materials (the *zhēngpài*) as the very lenses through which the cantilena is projected. The aesthetic purpose is nonetheless the same, with the primary effects being evocation, allusion, transformation and recontextualisation.

It may well be questioned whether the listener needs to be able to perceive the presence of intertexts to achieve a meaningful appreciation of the work. The short answer is, they do not. The present author, just like many other artists, tries to create works that communicate on multiple levels—to create deep structures in the realm of pitch, tempo or motivic relations in the music that would be perceptible to a superb (or super-human?) ear, and thereby opening an extra dimension of meaning that is available for appreciation or interpretation by the listener that perceives it. The present author (like countless other composers) likewise attempts to make the music of *Hook* rich in intertextuality that may be consciously appreciated, or at least instinctively felt by a listener who has cultural frames of reference that overlap with the composer's own. Transcription (which is ultimately musical intertextuality) therefore has this peculiar potential to contribute to a multiplicity of layers of meaning in the music.

It remains to discuss the broader purpose of the approaches the present author has taken in *Hook*. It is worth explaining why the present author should be interested in undertaking this sort of transcription. The simple explanation is that from the moment I heard Huang Wei-Jie playing *High Mountain Flowing Water*, I was simply attracted to the music of this rich and varied tradition. It excited my curiosity and captured my imagination. At the same time, I felt the need to prove to myself and others that I could assimilate at least to some degree the nuance and distinctiveness of Chinese traditional music and turn it to my own ends in my music. This is already a sufficient answer itself to the question "why". A parallel and more complex answer relates to the present author's reaction to the politics of the "Chinese School" which has been proposed by certain Chinese musicologists and composers in the last ten years, although this is a complicated topic and beyond the scope of this article.

6. Machine Learning as Transcriptional Tool

The present author is at present undertaking a research collaboration with the Glasgow-based scientist Lex O'Brien, the title of which is "Artificial intelligence as a tool and inspiration for the composer: exploring the potential applications of machine learning and human-AI co-creation in musical composition, with specific application to machine learning trained using original Guzheng music." We are using multiple hours of recordings of *Hook* collected during rehearsals and performances, alongside improvisations based on material from *Hook*, as training material for a machine learning algorithm, with a view to training the algorithm to imitate the present author's style of composition in *Hook*, and, more than this, to train it to imitate the seven materials (six *zhēngpài* plus the "alienated" seventh material) as they appear in the piece.

We are attempting to answer the following research questions:

1. What are the form-generating elements of the music of *Hook* which can be captured most successfully by the algorithm, such that the sense of middle- and background-structure in the music is preserved in the output—if such a preservation is at all possible?
2. What role can live performers play in live performances of works that involve some degree of neural network participation?
3. The role of machine learning as an extension of transcriptional practice, both in its "transcription" of different guzheng materials, but also in its imitation of those materials as treated in the present author's compositional voice.

One hour of audio data is needed in order to yield meaningful results from the training process. Given that *Hook* as a composition is approximately just ten minutes long, it was necessary to devise strategies for generating sufficient supplementary material to "feed" the algorithm. The following strategies were employed:

1. Multiple different recordings of *Hook* in different interpretations: the interpretations of the two performers who have already learnt and played *Hook* had a very different "feel", and so this made for a felicitous variety in their recordings.
2. Harvesting rehearsal recordings for snippets of the different materials, including repetitious practice of particularly difficult moments, moments in which the players demonstrated certain sonorities, and tried out different interpretations of the same material for me to choose.

This was not enough to achieve the one hour of music needed, and so two other strategies had to be devised:

- The use of improvisation on each of the seven materials of *Hook*. The performer Chen Yu-Han worked with the present author to create free interpretations of each of the materials; it was even an interactive process, with the present author almost "conducting" her as she improvised, suggesting elements to expand upon and offering encouragement when she hit upon fruitful avenues of development.
- Player *Hook* using two additional scordaturas, such that the fingering for the player remained unchanged, but the pitch structures were quite different. It remains to be seen what effect this difference in the data will have on the algorithm, and whether it radically changes the pitch content generated as output.

Owing to the current limitations of memory, it is not possible to "sample" segments of longer than just a few seconds, and so the formal syntactic element of the music is still currently beyond the reach of the AI. This may change in the future, but for the time being it is only possible to generate very short snippets of music, and the responsibility for shaping middle- and larger-scale forms lies with the present author as "curator-composer".

In exploring this sort of human-AI co-creation (which some people have termed "Centaur", extending the original application of this term by chess player Gary Kasparov to refer to a human-AI chess-playing team), the longer-term objective is to explore the potential for machine learning to facilitate a transcription-like (*Übertragung*-plus) engagement with cultural historical materials in an objective and, more importantly, unexpected fashion. The project is in its infancy, and is yet to generate results worthy of being reported.

7. Conclusion

In this paper, the present author has established the personal context in which the solo guzheng work *Hook* was composed and its relationship to other Sinocentric works in the composer's oeuvre, described its initial inspiration and its *yìjìng* (creative conception/realm of meaning), elaborated the layers of precompositional and compositional processes that constituted the musical material and structure of the work, and related *Hook* to concepts of ethnomusicology and transcription. The present author has also adumbrated possible future avenues of creative speculation that employ machine learning as a transcriptional tool, and detailed a current ongoing research collaboration in this area. This may be a fruitful future direction of research for composers attempting to understand the potential for AI to contribute to human creativity outside of the commercial realm.

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Kompozicija kaip etnomuzikologijos plėtotė:
šešioms gužengo mokykloms būdingų tradicinių gestų ir pagražinimų perkėlimas į *Hook* solo gužengui ir galimas mašininio mokymosi kaip transkripcijos tęsinio vaidmuo

Santrauka

Straipsnyje pristatomas autoriaus George'o Holloway'aus kūrinys gužengui solo *Hook* (2022), jo estetinis ir konceptualus pagrindas. Aptariami poetiniai vaizdiniai, kūrinio konstrukcija ir medžiaga, techniniai procesai ir estetinė tradicinės medžiagos transkripcijos reikšmė. Be to, samprotaujama apie mašininio mokymosi, kaip priemonės, skirtos transkripcijos procesui išplėsti, panaudojimo galimybes.

Straipsnis pradedamas autoriaus – kaip kompozitoriaus – *genetinės sandaros* apibūdinimu, jo ankstesnių europietiškų ir britiškų (konkrečiai anglikoniškų) įtakų pristatymu. Taip pat aptariamas laipsniškas tradicinių kinų ir Taivano įtakų įsisavinimas, apdorojimas ir apmąstymas dabartinėje Holloway'aus muzikoje. Tai apima tokius aspektus, kaip melodijos puošybos būdai, melodinės konstrukcijos ir harmoninių implikacijų detalės, garsiniai aspektai, susiję su grojimo tradiciniais instrumentais technikomis, taip pat platesni kultūriniai aspektai (estetinės ir kitos filosofinės koncepcijos).

Straipsnyje aprašomas pirminis kūrybinis impulsas, paskatinęs autorių sukurti *Hook*, taip pat vėlesni racionalizavimo, tyrinėjimo ir ekspresijos siekių apmąstymo procesai. Paaiškinama kinų estetikos sąvoka *yìjìng* (意境) ir apibrėžiama jos reikšmė *Hook* atžvilgiu. Pateikiama paties Holloway'aus versta Li Yu poema *Xiangjian Huan*, be to, analizuojama jos struktūra, aptariami vaizdiniai ir simbolinis turinys. Paaiškinamas eilėraščio *nebylios aplinkos* naudojimas ir struktūrinės kantilenos, veikiančios kaip *quasi-Urlinie* arba *cantus firmus*, komponavimas. Atskleidžiamas kantilenos santykis su mandarinų kalbos tonais ir muzikiniu reljefu.

Holloway paaiškina *Hook* sekcijų išdėstymą, taip pat šešioms tradicinėms mokykloms (*zhēngpài*) būdingų skirtingų grojimo gužengu stilių taikymo principus, pasitelkdamas transkripcijos *lęšių*, skirtų teminei medžiagai modifikuoti, analogiją. Pristatomos svarbiausios kiekvienos *zhēngpài* ypatybės, kurias kompozitorius panaudojo kūrinyje *Hook*. Autorius lygina, kaip jos pasireiškia tradiciniuose kūriniuose ir kompozicijoje *Hook*.

Straipsnyje aptariama ir pačios transkripcijos estetika, jos reikšmė Vakarų muzikoje, etnomuzikologinės ir kompozicinės transkripcijos skirtumai ir bendrumai. Atkreipiamas dėmesys į svarbias Ferruccio Busoni koncepcijas (*Bearbeitung* ir *Übertragung*), taip pat į Michaelio Finnissy'io nuodugnų šių koncepcijų taikymą ir estetinę plėtotę.

Galiausiai Holloway supažindina su vykdomais mašininio mokymosi kaip transkripcijos įrankio tyrimais ir nurodo dabartinę tyrimų apimtį, technologijos ribas ir galimybes bei dabartines algoritmo duomenų generavimo strategijas.