

An Introduction to Chou Wen-chung's Concept of "Water-Image" Symmetry

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Chou Wen-chung, in the classic tradition of Chinese Wenren,¹ has worked throughout his career to preserve and advance civilization. In his case, however, the task is more challenging, since he strives to distill in his music the essence of both Chinese and Western cultures. In Chou's estimation, this is feasible largely because "the tradition of Eastern and Western music once shared the same sources, and ... after a thousand years of divergence, they are now merging to form the mainstream of a new musical tradition."² Chou refers to this phenomenon as "re-merger." His synthesis of Eastern and Western musical concepts and practices exhibits certain parallels to Béla Bartók's efforts to bring central European and eastern Mediterranean musical cultures to the West. In both the Chinese and Western traditions, symmetry, in its various manifestations, has played an important role in shaping musical compositions. The process of re-merging can be seen clearly in Chou's application of the philosophical concept of symmetry according to the ancient Chinese oracle of the *I-Ching* (Book of Changes) along with certain devices commonly encountered in contemporary Western music.³ Since 1959, Chou has developed his variable modes based on the principles of the *I-Ching*. According to traditional Chinese philosophy, the *yin-yang* polarity forms the indispensable unit from which different structures of symmetries derived. The concept of change and transformation is best understood by its representation in the different structures of the hexagrams of the *I-Ching*.⁴

Chou's synthesis of Eastern and Western musical concepts and practices is closer to Bartók's effort in bringing the non-Western cultures to the West. His re-merging of the philosophical concept of symmetry in the ancient Chinese oracle of *I-Ching* and certain Western contemporary music is a device to establish a possible confluence in shaping the "mainstream of a new musical tradition." Chou's concept of symmetry is based on "water-image" where the objects remain unchanged; however, images reflected in water are distorted as a result of the refraction of light. Chou's understanding of symmetry accords with the balanced dynamic forces apparent in many Chinese art forms, including calligraphy, landscape painting, music for the

qin, and poetry. It is precisely this characteristically flexible approach to symmetry (i.e., “water-image” symmetry as opposed to “mirror-image” symmetry, also called reflective, geometric, or mathematical symmetry⁵) that reveals the divergence and re-merging of traditional Eastern music and contemporary Western music.

In music mirror-image symmetry behaves very much like a mirror that duplicates an object precisely but backwards. This kind of symmetry has found extensive application in serial music organized according to the principles established in 1923 by Arnold Schönberg in his method of composition with twelve tones. The transformations of the Prime form (P) of the tone row into Retrograde, Inversion, and Retrograde Inversion (R, I, RI) result from an exact sequential reordering of the intervals of the original form, P. The internal logic of Chou’s music, however, which is deeply rooted in the *I-Ching*, is based upon a fundamental premise of continuous, subtle changes and movements of recurrent and non-recurrent polarities of the *yin-yang*. The process of changes in accordance with the *yin-yang* polarities is apparent both at the micro- and macro-levels of organization in Chou’s music.

As an example of mirror-image symmetry, the pitch structure of Webern’s *Symphonie*, op. 21, can be contrasted to the water-image symmetry of Chou’s *String Quartet No. 2, Streams* (2003), to illustrate the differences in their melodic structures (*Figure 1*).

P9: 9 6 7 8 4 5 11 10 2 1 0 3 (mm. 1–9)
 I9: 9 0 11 10 2 1 7 8 4 5 6 3 (mm. 3–12)

Figure 1: Anton Webern, Symphonie, op. 21 (1927–28). First P/I related pitch class set.

The P/I related pitch-class set of the opening movement of Webern’s op. 21 explores the following transpositions by nine semitones of the P and I forms of the twelve-tone row. The inversely proportional correspondence of the elements in the P/I related sets is characteristic of mirror-image symmetry. Note that the intervallic structure between P and I set elements remains fixed; however, the sequential melodic directions of the P and I sets proceed in opposite directions. On the other hand, the pitch structure of water-image symmetry may result in the alteration of intervallic structure by *pien* tone technique. The initial Modal Complex (mt’) and its three transformations of the first movement of Chou’s *Streams* provide a good example of water-image symmetry (*Example 1*).

Examining the original form (P) and its three transformations (R, I, and RI), we find that the intervallic content and direction between successive modes may alter. The *pien* tone (consisting of the interval of a minor second) and direction-sensitive properties in Chou’s modes are unlike the fixed intervallic relationship of the palindromic design of Webern’s sets.

As eight Trigrams form the eight basic units in the *I-Ching*, there are eight

Example 1: Chou Wen-chung, *Streams* (2003). Initial subject and its transformations.

variable modes to form the basic modes in Chou’s modal system. These are: “heaven” (h) [— — —], “lake” (l) [— — — —], “sun” (s) [— — — —], “thunder” (t) [— — — —], “wind” (w) [— — — —], “rain” (r) [— — — —], “mountain” (m) [— — — —], and “earth” (e) [— — — —]. A modal complex, which forms the basic unit of modal structure in Chou’s music, is formed by combining any two of these modes (including the same mode in opposite direction).

In *Example 2* the four subjects of the first exposition in the first movement also exhibit such alterations in intervallic content and direction. Here Chou uses five modes, “mountain” (m), “thunder” (t), “sun” (s), “lake” (l), and “water” (w), which are paired to form four modal complexes, mt’–ss’–tm’–lw’, in which the mode marked with an apostrophe designates the descending form of that mode.

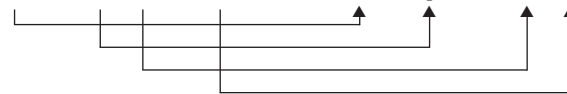
The melodic flux that distinguishes the individual statements of the principal subjects arises from Chou’s application of water-image symmetry. In typical water-image symmetry, the *yin-yang* polarities, the dualities of changed/unchanged, fixed/unfixed, mobility/quiescence, simplicity/complexity, and temporal/spatial all take place concurrently. In this composi-

Example 2: Chou Wen-chung, *Streams* (2003). Subjects in the first exposition.

tion, Chou uses a nine-note skeleton set ($C, D, E^b, E, F^\sharp, G, G^\sharp, B, B^b/C^\sharp, A^\sharp, B, A, G, F^\sharp, F, D, E^b$) and further arranges the skeleton set into the fugue subject ($C, A^b, B, B^b, E, D, D^\sharp, F^\sharp, G/C^\sharp, F, E^b, D, A, A^\sharp, B, G, F^\sharp$).

The inherent structure of direction-sensitive and order-specific elements of the modal complex is a result of the interplay between the non-change/change duality. The construction of the initial subject naturally reflects this inherent structure as well, as shown in *Figure 2*. The changes of melodic intervals are realized by applying the *pien* tone or by inverting the melodic direction to its corresponding variable mode within the modal complex.

Subject 1 (m'): $-6 \uparrow -3 \uparrow -2 \uparrow +4 \uparrow +2 \uparrow -2 \uparrow -3 \uparrow -2 \uparrow / -6 \downarrow +2 \downarrow -2 \downarrow p4 \downarrow -2 \downarrow -2 \downarrow +3 \downarrow -2 \downarrow$



	pien tone		
	ic1		
	-3 ↑	→	+2 ↓
	+4 ↑	→	p4 ↓
	+2 ↓	→	-2 ↑
	-3 ↑	→	+3 ↓
nine-notes set 1			nine-notes set 2

Figure 2: Chou Wen-chung, *Streams* (2003). Inherent structure of the initial subject.

Looking once again at the initial subject ($C, A\flat, \mathbf{B}, \mathbf{B}\flat, E, \mathbf{D}, \mathbf{D}\sharp, \mathbf{F}\sharp, G/C\sharp, F, E\flat, \mathbf{D}, A, \mathbf{A}\sharp, \mathbf{B}, \mathbf{G}, \mathbf{F}\sharp$), it will be noted that the three dyads of the Mountain mode in bold ($B-B\flat, D-D\sharp, F\sharp-G$) are in reverse order of the three bold dyads ($E\flat-D, A\sharp-B, G-F\sharp$) of its corresponding Thunder mode, as shown in *Figure 3*. The remaining pitches $C, C\sharp, E, F, G\sharp$, and A are partitioned into two augmented triads ($C-E-G\sharp$ and $C\sharp-A-F$). Triad $C-E-G\sharp$ of the Mountain mode and $C\sharp-F-A$ of the Thunder mode are both in the order positions of first, second and fifth of the subject. The dyadic pairs are placed in order positions of third–fourth, sixth–seventh, and eighth–ninth. It is this order-specific factor upon which exchangeability and interplay of the dyads and augmented triads take place that contributes to the melodic directional sensitivity of the subject. Hence, it creates the water image symmetry of the subject where the process of change is reflected in the exchangeability and interplay of the three pair dyads and augmented triads.

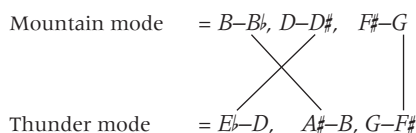


Figure 3: Chou Wen-chung, *Streams* (2003). Order-specific dyads of the initial subject.

The application of water-image symmetry in actual music refers to changing musical parameters in temporal and/or spatial relations in both micro- and macro-levels in order to create a sense of instability within symmetry. Similarly, this change will affect the state of equilibrium and will result in movement between polarities of instability and stability, flux and stasis, asymmetry and symmetry.

This is only one example of Chou's to show how the aesthetic principle of water-image symmetry in the *I-Ching* is transformed into musical parameter of pitch through the constant interplay of the *yin* and the *yang*, which serves as the internal logic motivating transformation and change. The *yin-yang* polarities also gave rise to Chou's system of variable modes with six-tone scales, however, and this is expandable to include nine-tone, twelve-tone and even fifteen-tone scales. Unlike Schönberg's serial approach of fixed sequential intervallic relationships of the tone row, Chou's modal system aims at providing both pitch continuity and melodic flux on a local level. Using traditional principles of the *I-Ching*, "water-image" symmetry, and a logical exploration of the expressive potential of the hexatonic scale, Chou's effort as a "re-merger" has elevated the contemporary music up to a new level by successfully injecting Eastern elements into it. This is truly the author's view of his contribution to the world music.

¹ Wenren is a classic Chinese term used by Chou to describe “the person with ultimate knowledge of the arts. [...] An artist is often called a ‘creator.’ [...] Artists and scholars in the East were generally regarded as the conscience of society, and conveyers of its legacy.” Chou Wen-chung, “Wenren and Culture,” in *Locating East Asia in Western Art Music*, ed. Yayoi Uno Everett and Frederick Lau (Middletown: Wesleyan University Press, 2004), pp. 213–14.

² See Chou Wen-chung, “East and West, Old and New,” *Asian Music*, 1 (1968), no. 1: 19–22.

³ The oracle book, *I-Ching*, is believed to have evolved through a long period of time in ancient China as a principle thought of Confucianism and Taoism in its concept about humanity’s relationship and its place within the Universe. The Universe is realized as the interplay between two polarities of the *yin* and the *yang*.

⁴ The basic unit of the *I-Ching* is the Trigram which is made up of three yao signs – three lines either representing the *yin* (--) or the *yang* (—), broken or unbroken.

A superimposition of two Trigrams one on top of the other to form a Hexagram is the basic structure in the *I-Ching*. Different ways of combining these eight Trigrams thus form the sixty-four Hexagrams available in the *I-Ching*.

⁵ Discussion of the mirror or mathematical symmetry can be found in Simon L. Altmann, *Icons and Symmetries* (Oxford: Oxford University Press, 1992).