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**PROF.DR.HUI YU**

**Tuning the World: The Pythagorean Comma in Confucian Harmony and Weberian Rationalization**

**Abstract**

This talk explores the epistemological and cultural significance of a subtle musical tuning paradox—the Pythagorean comma—as it emerges in two fundamentally distinct intellectual traditions: ancient Chinese Confucianism and Max Weber’s modern theory of rationalization. Through a comparative analysis of classical Confucian texts and Weber’s sociological writings, this study examines how each tradition conceptualized and responded to the acoustic dilemma posed by the incongruence between twelve just fifths and seven octaves.

In Confucian thought, music was not merely a sonic or mathematical phenomenon but a cosmological force intimately tied to moral order and the harmony of the universe. As articulated in the Yue Ji (乐记), “music is the harmony of Heaven and Earth.” Within this framework, Confucius drew a crucial distinction between he (和, harmonious difference) and tong (同, uniformity), embracing the subtle irregularity represented by the Pythagorean comma as a reflection of the world’s inherent dynamism within an ordered cosmos. Rather than eliminate the discrepancy in music practice, Confucian thinkers integrated it into a larger vision of ritual and natural balance. At the same time, the practical tension between theoretical order and musical execution led Chinese theorists to confront this tuning paradox culminating in the earliest documented formulation of twelve-tone equal temperament in global history. This innovation resolved the comma by eliminating its metaphysical significance in order so to balance nature and make the universe in order.

In contrast, Max Weber’s theory of rationalization—shaped by the Western pursuit of scientific consistency and bureaucratic order—treats the Pythagorean comma as a disruption to be eliminated in music practice. As Weber observes, this infinitesimal interval “resisted complete rationalization oriented to tonal physics,”



thus prompting the development of tempered tuning systems as emblematic solutions in the march toward modern calculative rationality. For Weber, musical rationalization exemplifies the broader Western trajectory of imposing a coherent, technically efficient framework upon nature—what he famously called the "disenchantment of the world."

The juxtaposition of these responses reveals two distinct epistemologies: Confucian knowledge as attunement to a morally ordered and ritually sustained cosmos, versus Western knowledge as the quest for control, precision, and systemic closure. The Pythagorean comma, then, becomes more than a musical irregularity; it crystallizes the deeper civilizational divergence in conceptions of harmony, knowledge, nature, and rational order.

### **Long Biography:**

**Prof. Dr. Hui YU** is a Changjiang Scholar Distinguished Professor appointed by the Chinese Ministry of Education. He serves as Chair of the Steering Committee of the East Asian Association of the International Musicological Society (IMSEA), President of the Council for Asian Musicology, and a Member of the European Academy of Sciences and Arts. He is also a member of the Inaugural National Committee for Aesthetic Education in Higher Education of Chinese Ministry of Education, and a Distinguished Professor at Nanjing Normal University.

Professor Yu's research areas include ethnomusicology, traditional Chinese music history and practice, world music, and digital musicology, with a particular emphasis on *lǚxue* (traditional Chinese music theory) and its global relevance. His research centers on the intersection of traditional Chinese musical heritage and contemporary digital scholarship. He currently serves as co-editor-in-chief of the international English-language journal *Asian Musicology* and co-editor of *The Oxford Handbook of Music in China and the Chinese Diaspora* (Oxford University Press), as well as editor of the academic series *Music and Society in Asia* (Peter Lang). He is also a member of the Editorial Board of *Humanities and Social Sciences Communications* (a Nature journal) and a regional contributor to *The Grove Dictionary of Musical Instruments in Greater China*.

Professor Yu began his academic career at the Shanghai Conservatory of Music, where he both studied and later taught. He subsequently pursued his Ph.D. in ethnomusicology at Wesleyan University (Connecticut, USA) under the supervision of Mark Slobin, earning his doctoral degree in 2000. Over the course of his career, he has served as Dean of the School of Arts at Shenyang Normal University, Ningbo University, and Yunnan University.



In recent years, Professor Yu has published more than 80 scholarly articles in Chinese, English, and Russian, including a Computer Music Journal (MIT Press) cover article and numerous papers indexed in SSCI, A&HCI, CSSCI, and Chinese Core journals. He has authored or co-authored over twenty books in Chinese, English, and Russian, published by international academic presses such as Oxford University Press, Routledge, Palgrave Macmillan, Moscow State University Press, Peter Lang Publishing, and Zhejiang University Press.

Professor Yu has delivered keynote lectures at major international conferences in Malaysia, Ireland, Vietnam, Korea, and other countries and has served as a jury member for international music competitions in Italy, Russia, Poland and other countries as well.