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"There's Gold in Them There Hills!," or Mining for Drum Patterns: Computational Analysis of Balinese Kendang Arja Improvisation

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Balinese *arja* drummers are among the most respected musicians on the island. Unlike drummers of other genres, whose paired patterns are carefully composed to interlock, two *arja* drummers create fast, intricately interlocking patterns through simultaneous improvisation. Analysis of their playing suggests unspoken rules and possible model patterns guiding improvisation. Yet, when the collection of improvised patterns under analysis becomes too large, interpreting one's findings in a statistically accurate way can be an onerous task. Here, computational analysis presents an exciting arena for ethnomusicological inquiry. In this presentation, I explore the ways in which an ethnomusicologist without extensive computer science training can use the programming language *python* to develop a more accurate picture of conscious and subconscious decisions made by Balinese *arja* drummers in the course of performance. Analysing a small collection of patterns taught to me by three master drummers as a test case for a much larger future study of over 40,000 improvised drum strokes, I search for statistically relevant patterns: an exploration inexorably framed in the context of the oral, informal music theory on arja that I have collected in my fieldwork. I thus present an interdisciplinary analytical study that blends the computational and statistical with the ethnographic.