

Andrew Killick’s “Global Notation” and the Paradox of Universal Specificity

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THE past century has seen incredible advances in the connectivity of the world’s musical cultures. From the dawn of mass-produced recordings to the internet age, the staggering diversity of musical practices is increasingly accessible to anyone with even a smartphone. Though not without halting moments, evolving discourses on diversity and belonging have correspondingly made the plenitude of the world’s musical practices more welcome in mainstream musical scholarship. As exciting as this multicultural progress is, along with it come the attendant hard problems of cosmopolitanism, notably among them issues of power and translation. Mutual understanding requires translation into common parlance, which, like heat escaping from an energy conversion, is inevitably accompanied by some degree of distortion, and left unexamined, such distortion favors the comfort of the powerful.

We can readily observe this dynamic in the case of musical notation. In cross-cultural analysis, Western staff notation has long been the default mode of representation in scholarly contexts, and despite the much more mainstream scholarly presence of non-Western musics in recent decades, its dominance has continued largely unabated. As Charles Seeger (1958) and many others have warned over the years, this practice leads to covert dangers. Some dangers are practical—Western staff notation, developed to match Western musical practices, could be sufficiently mismatched with other musical practices as to warp our hearing toward Western proclivities in the act of transcription. And some dangers are political—that Western notation, as default *lingua franca*, reifies its cultural supremacy by requiring other modes of musical expression to funnel through its filter.

In his recent publication, “Global Notation as a Tool for Cross-Cultural and Comparative Music Analysis,” Andrew Killick offers an imaginative redress to this state of affairs: an entirely new “universal” notation system from scratch. He calls his system “global notation,” and he aims to build it from the ground up with intent to balance the competing priorities of specificity and generality: “since both musical sound structures and analytical agendas vary so widely, the notation should be able to convey *any* information about sound that could conceivably be relevant to an analysis—which probably means any information about sound whatsoever. Since that could easily result in an unmanageable mass of detail, the notation should also be able to exclude any information that is *not* relevant to the analysis at hand” (Killick 2020b, 236). Thus, the new system might be able to be free from both the structural biases and political baggage of Western staff notation. Crucial to note here are the careful bounds Killick puts on his stated goal at this time: “providing the discipline of world music analysis with an equivalent of the International Phonetic Alphabet or the Sachs-Hornbostel instrument taxonomy: a purpose-made and comprehensive system that can

represent examples from any culture on an equal basis and with any desired degree of precision" (237). By focusing specifically on the world music analytical community, Killick's goal is both aspirational enough to suggest the possibility of meaningful change, while modest enough to be in the realm of feasibility.

Before investigating the specifics of Killick's design, which on the whole is impressively comprehensive and thoughtfully executed, I think it's worthwhile to ponder further the need and viability of the "global notation" project. Even with careful restrictions of scope in place, Killick has no illusions about the daunting prospects of making inroads against the dominant system: "staff notation has come to be so widely used around the world, and for such a wide range of purposes, that any call for a new alternative struggles even to be heard. Yet I, for one, think it is worth trying, because when it comes to visualizing musical sound organization across cultural boundaries, I am not satisfied that adapting staff notation is the best we can do" (236–37). Given the diversity of the world's musical practices, the point is more than reasonable. How could any notation system, designed specifically for one particular musical tradition, luck into being ideal for all possible notational contexts? But even if staff notation isn't "the best we can do" from first principles, the *degree* to which it falls short is the critical variable. For a new system to have a hope of catching on, the status quo has to be so inadequate as to make the gargantuan task of persuasion, dissemination, and implementation sufficiently attractive.

I think the question is interesting and instructive, with echoes of larger debates about how we organize our society. Politically, we might observe (as Killick gently does) that the omnipresence of staff notation in cross-cultural analytic contexts is an obvious vestige of various shades of the colonial prerogative: that Western music is the "pinnacle" of human musical advancement, and "exotic" musics become elevated when dressed up in its garb; or, perhaps less aggressively, even that Western staff notation is an "objective" lens through which the world's various traditions can be filtered. In the same way that British and eventually American imperialism endowed our modern world with English as the *de facto* global parlance in commerce, culture, and research, so too are we left with staff notation as the default. Collectively as a society, we have tended toward the beaten path of least resistance—even if principle might dictate the we tear down our ill-gotten highways, we will have little motivation if the new ones can't promise to be significantly more drivable. Assuming no active harm, the primary cost is the discomfort of guilt.

So, however laudable in moral rectitude, I believe the future of Killick's "global notation" system will be determined by how much of a practical improvement it can promise over Western staff notation. At its core, any notation system (at least currently imagined) has two primary variables to convey: "what" happens and "when." As rendered in two-dimensional space on paper or on screens, we thus require an axis for time and an axis for however we define and represent the "what," which for the vast majority of the world's musical traditions will largely consist of pitch information. A defender of Western staff

notation might suggest that Western music does this as well as anything else—after all, what are noteheads but pitch data points plotted along a visual graph?

Killick here offers several good points in response, and if his “global notation” project amounts to nothing more, the very fact of cogently destabilizing the inherited veneer of staff notation’s objectivity I think has been worth his trouble. For one thing, the *y* axis of staff notation is not purely proportional to logarithmic pitch space, but rather is tailored to Western diatonicism: the “mi-fa” and “si-do” half steps are visually identical to the whole steps between all other scale degrees.¹ For another, staff notation also heavily relies on a huge vocabulary of arcane symbols (clefs, accidentals, Italian abbreviations for dynamics, even the various flavors of noteheads), which in total requires considerable study to achieve fluency. For those not raised in Western musical contexts, such study raises the barrier of entry even higher, and quirky wrinkles like the smoothing of major and minor seconds mean that autodidactic mastery without tutelage is harder than in a more visually logical system. And then of course is the issue of the phenomenology of notes: as Killick points out, the notehead visually implies a certain discreteness of tone that may not be as strongly defined in non-Western contexts, both in terms of linearity and the fixity of pitch.

As real as these shortcomings are, I still think it’s a valid question whether or not they are felt in degree as much as they are in kind. In part I believe this is due to the substantive overlap between the world’s musical cultures: despite the many divergences in tonal systems and organization, enough cultures share basic elements like octave equivalence, consonant small-integer intervals like the perfect fifth, and some form of pentatonic/diatonic scale divisions that staff notation is not as mismatched to existing elements as Killick and some other scholars have argued.² And in part I believe this is due to the increased cosmopolitanism of global culture, in which American popular musics are so widely familiar and even influential to the world’s musical cultures, that the barriers to entry are not as high as they might have been a century or two ago.

To this end, Killick unwittingly makes the best argument against the necessity of his own project when he invokes the International Phonetic Alphabet as the equivalent goal to his “global notation” system. Of course, IPA is based on European alphanumeric characters, a seemingly obvious resonance with the current preponderance of Western staff notation. This connection is not lost on Killick, who explains it away in a footnote: “It is true that the International Phonetic Alphabet was developed from a European script, the Roman alphabet, but in being adapted and redefined as symbols for one sound only, the letters lost their ties to any particular (phon)emic system in a way that the notes of staff notation never did” (2020b, 236n1). I don’t find this hand-waving convincing. It wasn’t purely arbitrary that those

1. I would argue that the presupposition of diatonicism is mismatched even with elaborate tonal and post-tonal systems in Western music, let alone with the manifold pitch-organization systems of other musical cultures.

2. In my own experience working with practitioners in Karnatak music and several other non-Western contexts, at least, I found that Western notation was widely accepted and barely struggled at all to convey their own emic notational conventions.

particular symbols were used for IPA. Its creators were European, and while indeed there is a much more expansive symbology in IPA than in English or any other Latinate language alone, these symbols are clustered closely around their typical symbol-phoneme pairings in European languages (i.e., it's not pure coincidence that the symbols "b" and "p" represent the bilabial fricatives). To me, in its relationship to, say, the world's current *lingua franca* of English, IPA is quite close to the state of affairs at present with staff notation used in cross-cultural contexts: the various symbols default to Western norms, but through additional symbols, appendages, or commentary can be made to represent all manner of other sound (e.g., lines between noteheads to represent slides, custom key signatures, microtonal annotations to more accurately represent non-diatonic scales, and so on). True, such a system implicitly renders Western-adjacent musical contexts as "default" and more distant ones as "ancillary" or "other," but I don't see how that is different from how IPA renders, say, non-European clicks and plosives with punctuation marks and other "ancillary" symbols.

Now, in fairness to Killick's point with IPA, a crucial element lacking in cross-cultural musical analysis is uniformity—there are nearly as many homespun approaches to representing non-Western sound systems as there are analysts, even through the vehicle of staff notation. Should there be some sort of "global notation" system, whether derived from staff notation or developed from the ground up, a major appeal would be the promise of universality. As a proof of concept, Killick's system is admirable in the elegance of its construction, the depth to which he has thought through various contingencies. In both visual organization and in constructing its grammatical symbols, Killick's system draws on the one great universal of all musical cultures: vibrational amplitude. In lieu of noteheads, which Killick decries as overly visually "discrete," sound impulses of both definite and indefinite pitch are represented by wedge-shaped graphics modeled on waveforms (2020b, 242–43). Pitches of specified duration extend along the *x* axis of time via straight lines, which visually matches the experience of sound much more intuitively than the pointillistic texture that typifies staff notation. To Killick's further credit, he takes care to point out that defaulting to the left-right *x* axis for time and the *y* axis for pitch needn't be standard, and other cultures with vertical or right-left writing systems can easily transpose the notation accordingly. The extended line has the added benefit of visually communicating minute pitch movements throughout a single tone, whether the precise microtonal fluctuations of Karnatak *gamaka* (ornaments) or even the under-notated scoops and vibrato common in Western performance practices.

Along the *y* axis, Killick renders pitch space exactly proportionally to the logarithmic increase in vibration, rectifying the diatonic bias of the Western staff. In perhaps the most distinctive feature of his notation system, the subdivisions of pitch space can be completely tailored to the tonal system in question: scale degrees are each given individual staff lines, with spacing in accordance with whatever mode(s) of the music in question (243). Rather than assuming any particular division of the octave, the exact tuning of these scale degrees is specified with numbers indicating cents above the tonic; thus, a major pentatonic scale would

have a slightly thicker horizontal line for tonic, and then lines above reading “200, 400, 700, 900” before the next tonic line. There are, of course, subtle concessions to Western norms here: tonic tends to be labeled with the letter-name analogue (ex. A4), and even using cents, as dispassionate as they are, nonetheless takes the equal-tempered semitone as the basic default unit. But overall, Killick’s system feels like a cohesive, distinctive system, with departures from staff notation that seem substantive rather than simply superficial for the sake of novelty. And some touches are quite clever, like the use of “volume bars” to visually represent dynamics (Killick 2020a).

Attending these very real strengths are some further challenges: not so much design flaws, as much as practical reckonings with the realities of dismantling a system as embedded as Western music. Some of these challenges are pure matters of logistics; for example, the completely customizable nature of “global notation”—in particular the *ad hoc* pitch-division of the octave—makes it exceedingly cumbersome and time-consuming to produce in comparison to generating staff notation in the computer age. For “global notation” to catch up, it will need to develop robust, dedicated software that minimizes the path-dependent cost of entry. Other challenges are the losses felt as inevitable byproducts of change; for example, as much as the linear notation makes intuitive sense (and I believe is a substantive improvement) for monophonic contexts, especially those with indeterminate and/or micro-variant pitch, “global notation” correspondingly struggles with both clutter and lack of clarity in chordal and other multi-voiced contexts. Polyphony (Western or otherwise) is particularly hard to visually track, and here “global notation” might do well to think of solutions to compensate for the absence of stems, slurs, beaming, and other means Western music can use to create visually comprehensible groupings and individuations. In a few cases, there are small structural details that are puzzling; for example, I do not find it at all intuitive that the placement of pitch impulses *above* scale degree lines should signify unspecified pitch, rather than a pitch in between the demarcated scale degrees, since the overall *gestalt* of the visual organization is otherwise so carefully matched to graphical space.

Beyond these challenges, I think, the success of “global notation” will hinge on subjective factors: how does it “feel” to use? Or: does it look like the music “feels”? Where it shines, I think, is arguably where Western staff notation struggles the most: in highly micro-variant single-voice textures like Karnatak music, when it hews closely to a literal pitch-contour graph over time, or the micro-details of rhythmic execution for which Western noteheads and tuplets would be horribly complex. But on the flip side, it rankles the most whenever more than one element is happening at once: the lateral stream of wedges and duration-lines creates the visual impression of computer circuitry, the mechanical detachment of which seems at odds with the shape and breath of the textures represented. Put another way, it seems more aligned with semiotic cues that culturally are used to signify rigid, program-like systems.

Moreover, given Killick’s stated goal of creating a global notation system analogous to IPA, with the sole purpose of cross-cultural analysis, the assumed product will be a notation

system happily consigned to the realm of esoteric arcana. In its unflinching literalism, we risk flattening the structural layers that give clues to how music is constructed and understood by its practitioners, and closing the expressive gaps that emerge when a performance practice strains at the strictures of conceptual frames of praxis as embodied by notation. In some ways, this leads to exciting possibilities: the visual orientation of "global notation" gives it great potential explanatory power in mapping the exact pitch fluctuations in a Karnatak *gamaka*, the subtle manipulations of a tempo *rubato* in a Chopin prelude, the artful drag of a jazz solo behind the beat, or the deliciously wonky hi-hat subdivisions in contemporary R&B. But in other ways, it closes expressive potential: I am reminded of the graphic notation system Karaikudi S. Subramanian, my teacher in Karnatak music, developed as part of his dissertation work, in which he represents the *kampita* (oscillating *gamaka*) not *literally*, with a small sine wave, but *evocatively* with swirls (Figure 1). These of course (barring time travel) are

Raga: Bhairavi (S G2 R2 G2 M1 P D2 N2 S – S N2 D1 P M1 G2 R2 S)
Tala: Ata (5 + 5 + 2 + 2)

Figure 1. Karaikudi S. Subramanian's (1985) "swirly" graphic notation. Three notational systems are overlaid notating the same material, an excerpt from a transcription of his own solo *vina* performance of the *varnam* "Viribhoni": on top, two structural levels of *svrasthana* (i.e., solfège) notation; in the middle, graphic depiction of pitch contour, with paradoxical swirls; on the bottom, staff notation.

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impossible, and yet (like any number of expressive incongruities and flourishes in Western notation) communicate a great deal about how the music is *felt*. Granted, this particular example is tailored to Karnatak music, and a universal system would responsibly aim to stamp out such specific extravagances—but I can't help but wonder if “global notation,” even for the highly specified purposes intended by Killick, can compete with more ad hoc, tailored systems, in the absence of such delights.

A final observation that may be of interest. There are many favorable convergences between Killick's “global notation” system and another form of graphic representation that already has made considerable inroads among musicians in the digital age: the MIDI “piano roll” common to Digital Audio Workstations (DAWs) such as Logic, Ableton, Pro Tools, and the like (Figure 2). The “piano roll” is visually based on the hole-punch cutout patterns that dotted the rolls in early twentieth-century player pianos. Though still situated by default in a 12-tone equal-tempered tuning system, the piano roll shares both the proportional spacing of tones in vertical pitch space and the linear representation of durations in horizontal time. It also has some intuitive advantages: the flat depiction of tones somehow is less evocative of circuitry than the wedge-line look in “global notation,” and most DAWs deftly use color to navigate the thickets of polyphony and dynamics, a dimension Killick might do well to consider at least in the digital space. The “piano roll,” of course, isn't equipped to handle the extreme range and flexibility of expression required to represent the world's music, but its intuitiveness and ubiquitous use (even among musicians in Western contexts) lends promise to both the viability and impact of the “global notation” project—and, as a practical music-making tool, it suggests that Killick's modest aims at a purely analytical tool aren't necessarily an upper bound of ambition. Whatever comes of the “global notation” project, it's instructive even to ponder.

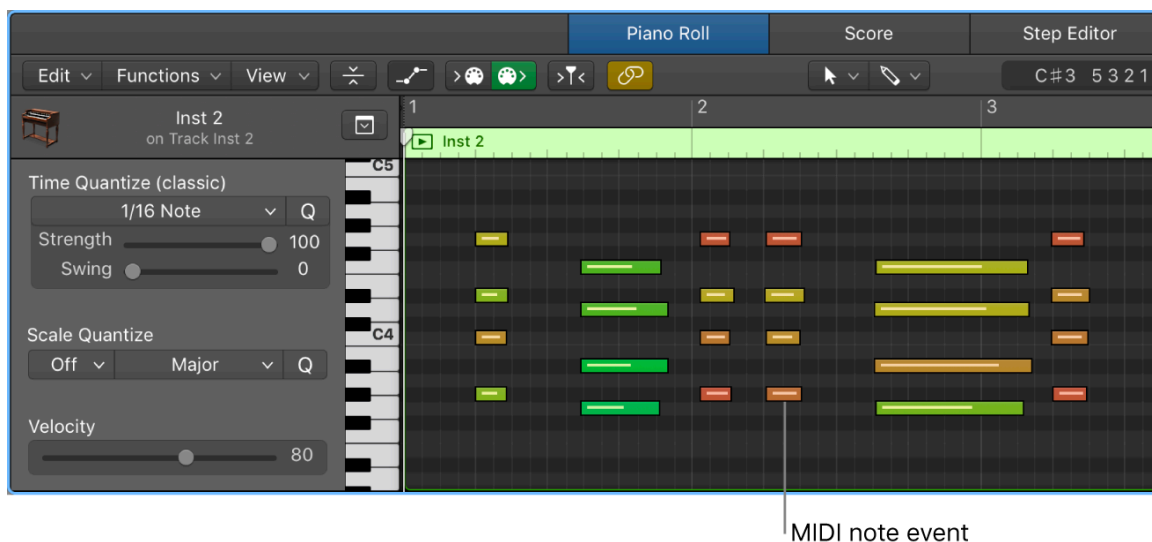


Figure 2. Screen shot of the “Piano Roll” function in Logic Pro X (Apple Inc. 2020). Musicians in many styles are quite fluent with this form of representation in both analytical and practical contexts.

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