

The Dream of a Universal Notation: An Appreciation

Alexander Rehding

BRUNO Nettle (2001, 463–64) once pointed out that ethnomusicologists are in the business of being skeptical of universals. It’s almost a knee-jerk response that’s hard to suppress. And, on the flipside, the track record for universal notation systems does not inspire great confidence. The last concerted effort to come up with a universal musical notation, at a New Music conference held in Ghent in 1974, was a proposed set of symbols that would cover all the potential performance instructions and extended techniques of modern music “which claims Webern as a founder” (Stone 1963, 9).¹ The goal was to rein in the proliferation of idiosyncratic symbols and to find a mode of communication that would make the study of New music scores more manageable. After days of debate, the final vote among the participants fell short of endorsing the proposal.² In refusing to sign up for a finite set of performance instructions, modern music effectively accepted the fate of a splintered existence. Or rather, as Giulia Accornero (2018) has argued, by accepting the reality that a unified notation was not possible, New Music ended in one fell swoop its pretensions to music history—or, at least, to a modernist music history that can be referred to in the singular. With the benefit of hindsight, the lofty ambitions of the Ghent conference always seemed like a pipe dream that was doomed to disappear in a puff of smoke. It seems that reality had finally caught up with the monolithic (some might call it imperialist) tradition of the international postwar avant garde.³

Musical world domination is emphatically not the ambition of Global Notation (GN), but rather a less biased means of engaging in comparative cross-cultural musical analysis. Perhaps, then, it is more useful to turn the clock back by a few centuries, specifically to the attempts in the seventeenth century to come up with a polygraphy, which was effectively the early-modern equivalent of Google translate or Douglas Adams’s Babel fish.⁴ During the early modern period, the West attempted to extend its global reach on a religious and economic plane—on the one hand, by establishing Christian missions in various parts of the world, and

1. It could be argued that the massive influence that software packages like Finale and Sibelius have had on notation constitutes another—more recent—kind of universalizing, but I’ll leave that question aside here.

2. Kurt Stone, the main organizer of the Ghent conference, did not make this qualification in his address at the conference, which just referred more vaguely to the newest music since the 1950s. But he was clearly addressing the same crowd as in his earlier article in which he laid out some of the fundamental issues as he sees them (Stone 1975). See also Morris (2017).

3. As Accornero (2018) details, the concerns behind it were partly pragmatic, partly carried by the aesthetics of the Darmstadt avant garde. On the one hand, Stone, as a music publisher, was acutely aware that making all performers worldwide read from the same script would drastically raise efficiency, and cut down on rehearsal time; on the other, the aesthetic ideal for many composers in the Darmstadt avant garde was to exert maximum control over musical production, to minimize the performer’s input.

4. The Babel fish is an invented species from Douglas Adams’s *The Hitchhiker’s Guide to the Galaxy* (1979) that acts as a universal translator. When inserted into a user’s ear canal, the fish automatically transduces the sounds of any language into brainwaves, excreting them into its user’s minds.

on the other, with the second phase of colonial expansion, as the French, British, and Dutch empires joined the Spanish and Portuguese in dividing up parts of the non-European world among themselves. In this age of incipient global communication, no matter how one-sided, the West clearly had an acute interest in universal languages on the basis of general principles. The English schoolmaster Cave Beck published his contribution to this discussion, *The Universal Character*, in 1657. Its remarkable frontispiece shows a European merchant sitting at a table with a mustachioed Eastern ruler decked out with a bejeweled turban, an African man wearing a dark toga, and a standing Native American ruler wearing a leaf skirt and a crown, his downward-pointing arrow and raised hand signaling peace. In his polygraphy, Beck dissected full sentences into their grammatical structure and their lexical content and generalized them. In this way, the English sentence “Honour thy Father and thy Mother,” one of Beck’s examples, was turned into “*leb 2314 p 2477 & pf 2477*.” The numbers would specify verbs and nouns, *p* indicates the second-person possessive pronoun. The words “mother” and “father” can use the same number (2477) because the addition of *-f* to the preceding pronoun marks the parent as female. The initial *leb* indicates the imperative mood of verb 2314 (“honour”). For members of the Indo-European language group this generalized grammar is relatively straightforward to understand. And, provided one has the mental capacity to memorize thousands of numbers, this language can even be spoken: Beck makes up simplified versions of the English numbers that form the nouns and verbs of his language. Thus the fifth commandment is pronounced “*leb totreónfo pee tofosénsen and pif tofosénsen*” (see Eco 1997, 201).

Beck’s *Universal Character* is, of course, only a partial, imperfect analogy. A better counterpart for musical notation, it seems, would not be language but writing.⁵ The international phonetic alphabet (IPA) would perhaps be an apt analog here. But Beck’s example is useful in this context because it gives us a good sense of what GN is attempting to do. In separating out lexical elements (numbers) and grammatical structures (modifier-particles), Beck’s artificial language does what all attempts at universality must do: it is clear about task and function of each of its elements.⁶ In every language, meaning-bearing and structure-bearing components are intermingled, in ways of which we are not always conscious when we use a specific language. It’s no different with music—and this is borne out most clearly in musical notation (as anyone can confirm who has ever tried to explain why Western notation stubbornly holds on to enharmonic equivalents like *A \flat* and *G \sharp*).

It may be useful to recall that we use musical notation in three overlapping but distinct

5. Ernst and Kittler (2006) have written extensively about the Greek vowel alphabet’s capacity to constitute a sounding script. In Greek script—unlike Hebrew or Phoenician—words could be pronounced even if the speaker did not know their meaning. See also Butler (2015).

6. Foucault’s (1994, 78–124) analysis of universal grammars during the Classical episteme clearly belongs in this context. The taxonomies that make up the Classical episteme with its characteristic search for a transparent signifier–signified relationship, which are nowadays emblematically associated with Carl Linnaeus’s classification systems in biology, are functionally the same as the long numbered lists that make up the core of the polygraphic efforts from the seventeenth century.

ways. These can be broadly summed up under the three distinct functions:

- (1) It serves as an aide-mémoire. Staffless (adiastematic) neumatic notations are generally limited to this mnemonic function.⁷ Such notation can be as little as a rudimentary sketch, especially in activities that can be construed loosely as composition, as it only needs to reactivate sonic memories that were already present.
- (2) It serves as communication to or among performers; it can be used for instructive purposes and generally transforms sounds into visual symbols. In this function, notation is best compared to a recipe or a road map: it contains certain rudimentary information (notes) that form the basis for a creative activity (sound production). Some form of notations, for instance tablatures, are modeled specifically on the mechanics of the instruments for which they encode music, others can be more symbolic, abstract, or general. Still other forms of notation extend “invitations to production” (Georgiades 1964, 18), written documents that are starting points for elaborations or improvisations. Each (re-)production of notated music in sound is unique, though variation between individual manifestations can be very slight.
- (3) It can serve as a basis for silent contemplation. Silent score study and “inner hearing,” a skill that Western music students practice over years, is one of these highly specialized functions. But notation can be useful in any communication of analytical or intellectual content. One central benefit of notation is that it offers a synoptic version of music, in which moments that would be heard or performed at different points in time can be compared directly, outside of music’s “real time.” In this scenario, notation often resembles a graph expressed in musical symbols that may highlight certain musical aspects while downplaying others. It is not necessarily performable.

The third function is usually seen as the least important task because it requires both a high degree of specialization and is not a necessary part of the general framework that constitutes musicking. But it is this function that’s of central importance here. GN is not a composition or performance notation, though in certain situations it may—possibly—be able to function as such. Its primary function is to find a common basis on which music from different traditions can be productively represented and compared. Transcription into Western notation, which many such analytical efforts lean on, does not offer a neutral arena, as Hood (1971) outlines most clearly, since it can only offer a partial rendering of music that was not explicitly written within this tradition. The major benefit of Western notation is that most scholars who engage in these comparative analytical efforts read it without problems. But the genius of GN is that it uses our familiarity with its conventions as a starting point and bends them to the specific needs of different traditions. True, it is not “neutral” in every possible respect, but it is as flexible as anyone can reasonably expect.

7. I would also include other mnemonic techniques under this function of notation, such as the hand and body motions that accompany Vedic chant, though the impermanence of this bodily writing would obviously lead in a different direction than is central here.

Like the system Beck presented in *Universal Character*, GN thinks carefully about all the dimensions in which staff notation operates, and tries to formulate them in more general, more flexible terms. In this, GN strips Western diastematic notation down to the bare two-dimensional Cartesian diagram (with the *y* axis indicating the “tone height” and a temporal *x* axis) that it has at bottom always been, and builds it up again in creative new ways. Thus the staff lines that normally indicate specific tone heights, and that we have learned, over years of music lessons, to unthinkingly equate with the letter names for the pitches of the diatonic scale, are retuned in GN to indicate any cent-based intervals (or even any other scale degrees, such as South Asian *sargam*) that are needed. Likewise, duration is indicated by the length of the T-shaped mark that replaces the complex conventional system of noteheads, stems, and flags or beams. The very simplicity of these basics promises exceptional flexibility and adaptability.

But there is always a danger of staying within your own dimensions. This is aptly allegorized in Edwin Abbott’s classic Victorian tale *Flatland* (1885). In a two-dimensional world peopled with flat polygons, a new denizen arrives: a sphere. The square-shaped narrator, accustomed only to a two-dimensional existence, cannot perceive the third dimension of this new shape, and can only make out a circle of shifting dimensions, whose circumference confusingly waxes or wanes depending on which section of the sphere the square is level with. Only when the square visits Spaceland and is lifted out of his limited perspective does he (all squares are male in *Flatland*) begin to make sense of the third dimension.

One consequence arising from this process of reconceptualizing staff notation is that GN remains largely focused on the two dimensions that Western music has long considered central: pitch and rhythm. Just as the possibilities for parameters that Western music considers secondary, such as dynamics and tempo, remain rudimentary in its notation, so GN is also relatively light in this regard. Admittedly, in most musical traditions these parameters tend to be more closely associated with performance instructions and are probably less relevant in most comparative analytical situations. In specific cases, it is relatively straightforward to imagine how such accommodations could be made (see Stone 1963).

But two other parameters, articulation and timbre, might be bigger stumbling blocks.⁸ In Western music (and hence notation) these are relegated to the status of secondary parameters, with a smattering of articulation marks above notes, and with the role of timbre, well, pretty much reduced to the specifications of instruments at the beginning of the score.⁹ That Western notation has been inadequate in this regard becomes clear in much contemporary music. Take György Ligeti’s *Nouvelles Aventures* (1962–65), for instance, as shown in Figure 1. This untexted composition for voices and instrumentalists can be heard as a response to the

8. I will leave out the bigger problem here of representing musical traditions that are closely associated with dance or other visual and/or bodily elements, as this discussion would go far beyond what can be accomplished here.

9. The problem of adequate terms for timbre has long been recognized in the field. For two recent studies, see Latour, Wallmark, and Fink (2019) and Dolan and Rehding (2020).

sounds of Stockhausen's electronic pieces from the 1950s and 60s, recreated by other means.¹⁰ Much of the notational energy in Figure 1 is spent on describing in words the expression and specific vocal sound production that notation cannot convey.

Outside of Western music there are countless examples of musical traditions in which timbral differences, and specifically articulation, are primary parameters. Tablature notations for the prestigious Chinese *guqin*, for instance, are very specific about the aspects of sound production—articulation, plucking technique, even which finger stops the sound—while they are relatively lax in the rhythmic (or more generally, the temporal) dimension.¹¹ And the various throat singing traditions across the globe offer a range of repertoires that are essentially—not just secondarily—based on timbral differences.

29

Senza tempo (presto, feroce), ca. 13"

sempre *fffff* ausser sich, wild-konvulsiv, mit den letzten Kräften: im Ausdruck noch extremer als bisher (das Notenbild gibt hier lediglich Anhaltspunkte, da der Ausdruck Vorrang hat).

molto

Alt + Cb: plötzlich aufhören, wie abgerissen, als wäre die Stimme in der Kehle abgewürgt

(Einatmen stets sehr intensiv, schluchzend, keuchend) $\rho \rightarrow \rho$ → E!!! $\rho \rightarrow \rho$ → a!!!

Cadenza: virtuosissimo, presto, non legato, feroce, *tuato*

am talon wild: *fffff* sempre, *tutta la forza*: den Bogen stets sehr stark auf die Saite drücken, so dass die Saite ihrerseits zum Griffbrett gedrückt wird: zu jedem einzelnen Ton gesellt sich ein krachendes Geräusch. Bogen auch in den Pausen auf der Saite liegen lassen, damit kein Ton nachklingt.

* Cb.-Cadenza: Innerhalb der einzelnen Tongruppen die Töne sehr schnell spielen, eher aperiodisch, mitunter stolpernd. Plötzlich aufhören-Pause-plötzlich weiter spielen. Der Rhythmus der Kontrabass-Stimme ist im Einzelnen unabhängig von dem der Alt-Stimme,

mettere sord.

plötzlich aufhören, Saiten sofort abdämpfen

die gesamte Kontrabass-Kadenz richtet sich jedoch nach der Dauer der Alt-Kadenz; d.h. die letzten Töne des Kontrabasses können notfalls wegfallen (aufhören genau gleichzeitig mit dem Alt), anderenfalls kann auch eine (in der Partitur nicht vermerkte) kurze Pause nach dem letzten Kontrabass-Ton entstehen, während der Alt noch weitersingt.

Figure 1. A thicket of verbal performance instructions from György Ligeti, *Nouvelles Aventures* (1962–65), II, m. 29.

10. On Ligeti's relationship to Stockhausen and *elektronische Musik*, see Iverson (2011).

11. Despite its widely recognized problems, the classic text on the *guqin* in English remains Gulik (1940).

Is this a stumbling block for GN? Perhaps not. After all, on Jean-Jacques Nattiez’s semiotic continuum between *esthetic* and *poietic* levels, GN places itself firmly on the esthetic side.¹² What it aims to depict is avowedly in the realm of perception, and relatively uninterested in the creative or re-creative act. This is entirely in line with the mainstream of current music-theoretical interests. Picking up on a cue from Michael Tenzer, GN aims to describe how a culturally informed listener perceives unfolding musical processes. To return to our earlier example, the criteria of *guqin* tablatures are too different to be adequately converted into standard Western notation; therefore only individual renditions of *guqin* pieces can be transcribed, as reproduced for instance in Figure 2. But when this happens in Western notation, it will invariably be at the expense of the timbral subtleties that the original notation conveyed. From the perspective of requisite competence, to imagine a culturally informed listener, it is advisable, indeed necessary, to have familiarity with the principles of the music from which the musical performance originates. These are usually espoused in the notation system (if any) that the musical tradition uses. Once we weave in this additional criterion, GN’s place in Nattiez’s semiotic framework is no longer unambiguously esthetic, since the original notation refers us back irrevocably to the compositional, poietic, structural dimension of the music.¹³

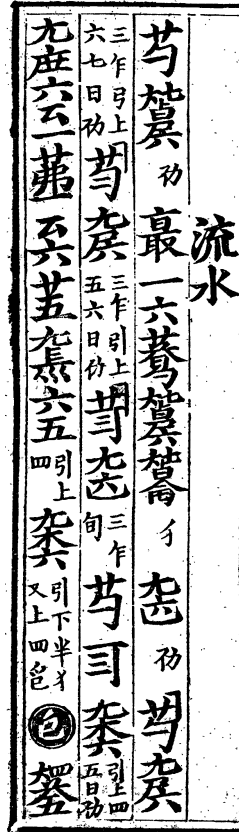
Killick offers a way out of this dilemma when he wisely reminds us that notes “are essentially a way of putting sounds into categories” (2020, 264), and that the relevant criteria from the perspective of the competent listener are operative ones, which may or may not map onto those criteria on which the notation is based. This is one important way in which GN differs from its precursors, such as the fastidious early recording transcriptions of Native American music by Benjamin Ives Gilman.¹⁴ Gilman aimed to use Western notation against the grain to give as exact a written account of a particular performance as possible—warts and all. If a singer’s intonation fluctuated, then this had to be reflected in the notation; if the pitch dropped, then the transcription would simply end in a different scale than where it started.¹⁵ By starting from the categories behind the particulars, by contrast, GN is able to emend some minor performance variations such as wobbly intonation or slightly unsteady rhythms—ignoring the particulars of the performance in favor of the categories that they represent. In this respect, GN is closer to the notated score of a musical work than to a transcription of a particular rendition.

12. The terms were popularized in Nattiez (1990). Nattiez’s colleague Philipp Tagg uses a less jarring spelling, which Killick adopts.

13. Killick shifts his position slightly but significantly over the course of the article when he goes on to argue that global notation “aims to be able to represent aesthetic categories *as well as* poietic ones” (2020, 264, my emphasis).

14. For a provocative reconsideration of this early chapter of global notation, see Walden (2020).

15. Gilman’s critic Carl Stumpf later retranscribed several of Gilman’s transcriptions by softening the exact objectivity for which Gilman strove. He added a key signature and adjusted the intonation. In this, he created a more unified sense of the songs, by injecting his understanding of what the singers “meant” to sing—precisely that which Gilman sought to avoid. For more on this debate, see Rehding (2005).



a. Facsimile reproduction from Zhu (2013), originally published 1425 CE, the first year of the Hongxi era in the Ming Dynasty.

流 水
LIU SHUI

官調定弦

b. Transcription by John Thompson from Zhu (2001).

Figure 2. Emic and etic notations of the opening of the traditional *guqin* piece *Liu Shui* (Flowing Waters). Thanks go to Lingwei Qiu and the Harvard-Yenching Library in the Harvard University Library.

Looking back to the problems of accommodating the parameters of articulation and timbre, it would seem that GN could be capable of including new symbols that indicate a variety of articulation in attack-specific repertoires like *guqin*, for instance, by modifying the initial bar of GN's sideways T (see Killick's [2020, 242] Figure 2) in creative ways to accommodate this specific dimension of *guqin* music in all its available categories.

The example of throat singing might offer a more serious challenge, since it evades the basic category of pitch as a fundamental determinant in its own right. But it would seem that there may be ways of accommodating this "third dimension" in GN.¹⁶ They would require fairly drastic reconceptions of the symbols and modes of representation, but depending on what questions are asked of the notation, there is no reason why GN wouldn't be capable of incorporating some perceptual aspects of the timbral dimension as well.¹⁷

Perfection, they say, is the enemy of the good. In this case, perfection may even be the enemy of the already-excellent. Quibbles about GN not accommodating every conceivable musical parameter are specific issues that shouldn't obscure the admirable work that it is doing. After all, notation is not subject to a black swan paradigm where a single contrary occurrence has the power to disprove and nullify a general statement.¹⁸ GN comes very close to its stated goal of being able to assert: "The organization of these sounds is this' rather than 'The organization of these sounds is *like* this, but different in these ways" (Killick 2020, 270).

Killick is clearly impatient to bring the analysis of world music to the next level. He draws on Hipkins to underscore that GN is "available now," and not at some unspecified time in the future, as Seeger and Laban have countered. His sense of urgency, given the importance of the task, is understandable: When, if not now? Ultimately, the answer to the question of when depends on how much pressure we wish to put on the term universal.

Time to channel our inner Bruno Nettle. When confronted with the dogged question of the musical universals, Nettle argued that it may be more productive to look at the question statistically: true universals are few and far between, but that doesn't mean we have nothing to talk about. Instead, for him the more interesting question is: what does it mean if *many* musical utterances share a specific characteristic? In the same spirit, GN may not be literally universal at this moment in time, but that shouldn't distract from the fact that it can be remarkably successful.

The final proof will be in the pudding. The technology of notation—any notation—can only ever be as good as its application in a particular context. A sensitive use of GN can reveal subtleties that would go unnoticed otherwise. Certain repertoires, especially those that focus

16. It is worth thinking about whether the dimensions of pitch and timbre can in fact ever be fully separated, certainly from an esthetic perspective. Walden (2019) makes a spirited case against parametric thinking *tout court*.

17. Ways of incorporating timbre are discussed on the GN website, at <http://globalnotation.org.uk/representing-timbre-with-a-spectrogram/>.

18. A single black swan would suffice to disprove the statement, "All swans are white." This classic example is associated with Karl Popper's principle of falsifiability; see Popper (2002).

on pitch and rhythm, will be fairly straightforwardly represented in GN; others that make central use of different parameters will probably require careful modification of the principles of GN. Genres like electronic music or noise music will probably remain something of a challenge. Nonetheless, GN offers a promising start: the fundamentals are solid, and what is more, they have the flexibility to be expanded to specific needs. It's time, then, to bring the reflexively jerked-up knee back to the floor. Full universality can safely remain a pipe dream. There is plenty here to celebrate.

REFERENCES

- Abbott, Edwin Abbott. 1885. *Flatland: A Romance of Many Dimensions*. Boston: Roberts Brothers.
- Accornero, Giulia. 2018. "The End of Music History?" Paper presented at the Material Cultures of Music Notation Conference, Utrecht. April 21.
- Adams, Douglas. 1979. *The Hitchhiker's Guide to the Galaxy*. London: Pan Books.
- Butler, Shane. 2015. *The Ancient Phonograph*. New York: Zone.
- Dolan, Emily I., and Alexander Rehding. 2020. *The Oxford Handbook of Timbre*. New York: Oxford University Press.
- Eco, Umberto. 1997. *The Search for the Universal Language*. Oxford: Blackwell.
- Ernst, Wolfgang, and Friedrich Kittler. 2006. *Die Geburt des Vokalalphabets aus dem Geist der Poesie: Schrift Ton Zahl im Medienverbund*. Munich: C. H. Beck.
- Foucault, Michel. 1994. *The Order of Things*. New York: Vintage.
- Georgiades, Thrasybulos. 1964. *Musik und Schrift*. Munich: R. Oldenbourg.
- Gulik, Robert Hans van. 1940. *The Lore of the Chinese Lute: An Essay in Ch'in Ideology*. Tokyo: Sophia University.
- Hood, Mantle. 1971. *The Ethnomusicologist*. New York: McGraw-Hill.
- Iverson, Jennifer. 2011. "The Emergence of Timbre: Ligeti's Synthesis of Electronic and Acoustic Music in *Atmosphères*." *Twentieth-Century Music* 7(1): 61–89.
<https://doi.org/10.1017/S1478572211000053>.
- Killick, Andrew. 2020. "Global Notation as a Tool for Cross-Cultural and Comparative Music Analysis." *Analytical Approaches to World Music* 8(2): 235–79.
- Latour, Melissa, Zach Wallmark, and Robert Fink. 2019. *The Relentless Pursuit of Tone*. Berkeley: University of California Press.
- Morris, Robert. 2017. "Notation Is One Thing, Music Analysis Another, and Musical Experience a Third: What Can They Have to Do with One Another?" In *Music in Time: Perception, Performance, Phenomenology*, edited by Suzannah Clark and Alexander Rehding, 71–107. Cambridge, MA: Harvard University Press.
- Nattiez, Jean-Jacques. 1990. *Music and Discourse: Toward a Musical Semiology*. Translated by Carolyn Abbate. Princeton: Princeton University Press.

- Nettl, Bruno. 2001. "An Ethnomusicologist Contemplates Universals in Musical Sound and Musical Culture." In *The Origins of Music*, edited by Nils L. Wallin, Björn Merker, and Steven Brown, 463–72. Cambridge, MA: MIT Press.
- Popper, Karl. 2002. *The Logic of Scientific Discovery*. New York: Routledge.
- Rehding, Alexander. 2005. "Wax Cylinder Revolutions." *Musical Quarterly* 88(1): 123–60. <https://doi.org/10.1093/musqtl/gd1004>.
- Stone, Kurt. 1963. "Problems and Methods of Notation." *Perspectives of New Music* 1(2): 9–31. <https://doi.org/10.2307/832100>.
- . 1975. Special Issue: Ghent Conference on New Music Notation 1974, Proceedings. *Interface: Journal of New Music Research* 4(1).
- Walden, Daniel. 2019. "The Politics of Tuning and Temperament." Ph.D. diss., Harvard University.
- . 2020. "Pitch vs. Timbre." In *The Oxford Handbook of Timbre*, edited by Emily I. Dolan and Alexander Rehding. New York: Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780190637224.013.33>.
- Zhu Quan. 2001. *Shen qi mi pu: The Transcriptions; Silk String Zither Music*. Transcribed and edited by John Thompson. Hong Kong: Toadall Sound.
- . 2013. *Quxian shen qi mi pu: san juan (Zhu Quan ji)* 麗仙神奇秘譜: 三卷 (朱權輯). Beijing: Guo jia tu shu guan chu ban she 國家圖書館出版社, 2013.

© 2021 by the author. Users may read, download, copy, distribute, print, search, or link to the full texts of this article without requesting permission. When distributing, (1) the author of the article and the name, volume, issue, and year of the journal must be identified clearly; (2) no portion of the article, including audio, video, or other accompanying media, may be used for commercial purposes; and (3) no portion of the article or any of its accompanying media may be modified, transformed, built upon, sampled, remixed, or separated from the rest of the article.