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# What is an Interval?

William Thomson

Reader's Response

# WHAT IS AN INTERVAL?

Dear Editor:

I write for two reasons: first to praise the truly provocative and valuable Spring 1988 JMTP that focuses on teaching aural skills; and second to remind readers of an issue that lurks in the shadows of the excellent study of interval identification made by Ann Blombach and Regina Parrish. I refer to the anomalies that haunt our perspective of pitch intervals and the harum-scarum way we apply that shaky perspective in teaching young musicians. It is an issue that has been around implicitly since musicians first speculated about the relationship of one pitch to another, yet it occurs to me that the superior kind of empiricism exhibited in the article need not continue to lead us down blind alleys.

One of the major conclusions of the Blombach-Parrish study leaves us with more questions than answers, more frustration than enlightenment. As they appropriately observe, the results of their study "challenge the validity of some of our most basic aural-training assumptions and raise a question that most musician-teachers have not even considered."

The authors are led to this conclusion because rational interpretations of their data are hard to come by. Their careful hypothesizing and fastidious testings lead not to clear understanding but to even more discomforting confusion. Intervals just don't seem to yield their phenomenological secrets, and the authors (and we alike) are left with no plausible way of guiding our students in apprehending and perceiving the tonal building blocks of their art.

In the early and gullible years of my teaching career I marvelled on occasion at a few boastful colleagues who informed me of their individual roads to ear-training success. All one must do, one of them once told me, was spend the first two weeks with freshmen mastering aural interval recognition. From there on, the sailing was as on glassy seas. Some decade or so after these rash promises were made, I was forced to conclude, reluctantly, that my informants were either sorcerers or liars. Pitch intervals yield to no such "mastery," whether in two weeks or in two years. (And my students were often of uncommonly great talent.)

The reason for this anomalous and frustrating intervallic recalcitrance,

and the key to answering some of our most vexing questions, is, I believe, quite simple. (At least, in principle. But like the rules of chess, as opposed to playing a winning game, principles and application are quite different matters.)

Clearly, a pitch interval cannot be regarded as a singular entity, as a once-for-all-times unity whose "meaning" remains the same in all instances. As with similar simple pairings in perception, a pitch interval is to an extent whatever its many contexts lead us to believe it is. Even to achieve the perceptual level of intervallic unity—that is, *one thing* as opposed to *two things together*—some element of perspective, or structural "inclination," or "vectorial alignment" must enter into the act of identification.

We possess adequate data from other sensory modes to know the power of context in shaping our percepts. The viewer who observes that two dots are "about one-half inch apart" acts on unwarranted faith—a faith shattered when a shift of visual plane to "from above" clearly reveals that his "straight ahead" inference was perhaps premature: the attitude of those same dots changes considerably.

Straight-ahead dots: • •

Same dots from above: •

•

Now they are seen to be more like three times farther apart than imagined earlier. The contextual "new angle" gives "new meaning" to our percept. Phenomenally, we might as well admit that both perceived distances are experiential actualities, one "truth" for one perspective, another "truth" for the other. The history of experimental psychology abounds with such titillating surprises in visual perception, and I wager

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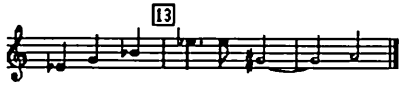
that in this respect the two sensory modes, vision and audition, are not different.

And further, I challenge anyone to be sure of his ability to identify a particular hue once he has carefully viewed the *Homage to the Square* series of painter Josef Albers. Homages to the square they may be, but what they reveal—and this was Alber's goal in doing the series—is the fragile identity of a particular color; placed in a new surrounding of color, the one hue can become, chameleon-like, transformed. In radical instances of this contextual displacement, even the color's very identity becomes problematic.

And so it is with intervals. *This* perfect fifth is not the same as *that* perfect fifth in respect to this aspect of identity, and until experimental studies (and pedagogy) respect this elusive, but captivating, reality, we shall remain uninformed of the perceptual nature of intervals. Ignorance or insufficient respect for this simple principle has plagued studies of intervals and studies of melody throughout the history of empirical psychology. Long before the handy term *closure* was applied to more than doors or wounds, W. Van Dyke Bingham studied just that—without calling it such—in his "Studies in Melody" (1910, *Psychological Review Monograph* XII: 1-88). And, sad to say, his path-breaking study was tragically foredoomed: he was unaware of one simple, yet overpowering, ingredient in the brew he mixed: how the perception of one intervallic relationship is affected by the intervallic context that precedes it—instances when the tonal content's dice have been unwittingly loaded.

Professors Blombach and Parrish note, toward the end of their article, that in introducing to students intervals for study "a random order that makes no assumptions concerning what we as teachers might perceive to be best, would probably work as well for a diverse population of students as any—and might work better than most." I suggest that one could go even further, stating emphatically that unless one learns how to anticipate and then control contextual sway, as it projects on an "isolated" interval, *any ordering will be more random than even suspected.* We cannot know *what* the auditing student may project onto the scene, what context he might frame (for sufficient or for insufficient reasons) for the interval in question, thereby skewing its "meaning" and denying our cherished, but improbable, expectations.

One of the most compelling examples of contextual influence I know occurs in a tune most Americans know, either from the original film track or from its ubiquity as the basis for jazz improvisations. It occurs in the thirteenth bar of David Raksins's *Laura.*



What will the sophomores make of this relationship (as auditory stimulus, not notation) if the context has been appropriately established (E-flat major transforming into G major) and if their "mastery of intervals" has led them to believe that this two-pitch relationship always "sounds like" it is the third-to-second partials of a harmonic series?

Did I hear someone say "But he has made a major error: the interval is not a perfect fifth but a diminished sixth!"?

Correct! And thank you. And my point has been made. The very conventions of notation have derived over the years largely from the recognition of contextual bearing; the very craziness of the E-flat/G-sharp, qua spacious intervallic presence, is just another reminder that a couple of pitches lying around seven-hundred cents apart don't always sound the same.

Sincerely yours,

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Response to Professor Thomson's comments:

I agree wholeheartedly with Professor Thomson's beautifully stated commentary, and I would like to respond by slightly extending the scope of the issues he raises. Although I obviously use the accepted step-by-step, "cumulative" method of teaching aural skills, I have often questioned the efficacy of teaching students to recognize and identify isolated musical events—e.g., intervals, scales, chords, duration patterns—without regard to a meaningful musical context. The results of our experiment did little to allay my fears that the usual teaching methods may not be effective and might, in fact, even be counterproductive in terms of teaching meaningful aural comprehension skills. Similarly, I also wonder about the musical validity of music perception and cognition studies that deal with anything less than real musical questions presented in real musical contexts. For more on that and other related subjects, I refer the interested reader to a pair of articles in the Spring 1987 issue of *Psychomusicology* (Volume 7): "The

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Perception of Sound as Music" by the late William Poland (pp. 63-70) and "Reflections on 'The Perception of Sound as Music'" by Ann K. Blombach (pp. 71-76).

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[Editor's note: for yet additional reading on these topics see Michael R. Rogers, "Beyond Intervals: The Teaching of Tonal Hearing," *Indiana Theory Review* (Spring 1983): 18-34. Coincidently, two additional pertinent comments can be found (for those who are not yet exhausted by the topic) in this issue of *JMTP*. See pp. 284-285 of the Karpinski review; and the quote from the Nicholas Cook book cited on pp. 303-304 of my review.]