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hey, welcome to 12tone! ever since that Jacob Collier interview came out a couple years ago, I've been getting a lot of requests to talk about a concept he mentioned called negative harmony, but honestly I've never really seen the point of making a video on it. everyone was already talking about the idea, and I didn't think I had anything useful to add. but recently, I had a revelation: I realized that my job is in viral media, so I don't actually have to say anything useful, I just need to get you to click so I can roll around on my giant pile of ad revenue. just kidding, it's a normal-sized pile, and besides, I think I have something to contribute.

but first, we need to talk about what negative harmony is, and this is a surprisingly difficult question to answer because it's not actually super well-defined. heck, despite all the attention, it still doesn't even have a wikipedia page, although now that I've said that it probably will pretty soon. so to help track down a good working definition, I'm turning to three main sources.

first, the invention of negative harmony is generally attributed to Swiss composer Ernst Levy, whose book, A Theory of Harmony, was largely written in the '40s, but wasn't published until 1985, a couple years after his death. my second source is an essay by American saxophonist Steve Coleman, where he develops Levy's ideas for use in a modern, improvisational context, and my third source is Collier's own discussions, where he seems to be using an even more formalized version of Coleman's model. these three sources describe three related but noticeably different versions of negative harmony, and by taking them all together we can start to form a more complete picture of how it all works. that said, I'll be biasing my analysis toward Collier's version because it's the one that's captured the most attention, and besides, it's the one that makes the most sense to me.

so, at its heart, negative harmony is a modern application of a pretty old idea called harmonic dualism. I already made a video about harmonic dualism, link in the description, so I won't go too far into the history here, but basically, there's two main schools of thought on where chords come from: there's harmonic monists, who believe there's only one real chord, the major triad, and that all other chords are some sort of alteration of that model, and there's harmonic dualists, who believe there's two real chords, major and minor, which are reflections of each other and thus equally valid.

both schools base their arguments on the overtone series, which is just what you get when you take a note, like this A, and then multiply its frequency by each whole number, so if we double it, we get this A, tripling gets E, then A, C#, and E again. these first six notes form what Levy calls the Senarius, which is a really fancy word for a group of six things, but you may have noticed that it also forms something else: an A major triad. the major triad shows up at the very beginning of this very important natural series, and thus is the true foundation of all harmony. at least, according to the monists.

dualists, however, have another trick up their sleeve: the undertone series. this is exactly what it sounds like: it's what you get when you take a note, like this A, then divide its frequency by each whole number. doing that here gives us A, then D, then A, F, and D again, forming an inverted Senarius and, more importantly, a D minor triad. and since we can derive the minor triad in much the same way as the major one, dualists argue that it deserves equal footing.

now, there's a lot more nuance to this: for starters, the overtone series actually exists in nature, whereas the undertone series is just a mathematical construct. but if you want to know more about the debate you'll have to watch my other video. for now we're just gonna assume the dualists are correct because otherwise negative harmony doesn't work.

anyway, back to our system, there's a bit of a problem: when we went up the overtone series starting on A, we ended up with an A chord, but when we went down the undertone series starting on A, we got a D chord instead. this means that, in traditional dualist models, D minor isn't actually a D chord at all: the root of the chord is the A we started on, which is a problem because that's not really what we hear. the relationship between A major and D minor feels much less solid than the one between A major and A minor, which implies we're missing something.

this is where Levy steps in and introduces an idea he calls gravity. well, he actually calls it telluric gravity, but I don't want to have to say the word "telluric" any more than I already have, so we'll just call it gravity. basically, a gravitational view of a chord means looking at it from the bottom up, so the gravitational root of our D minor would be D, like we'd expect. Levy contrasts this with what he calls absolute conception, which is based on the chord's relation to the senarius, where D minor is a kind of A chord. using these two separate approaches, Levy establishes that a minor chord actually has two different roots, depending one which context you view it in, but the important point is that A major and A minor have the same gravitational root, explaining why they feel so similar without abandoning our dualist principles.

but what if we could combine these two approaches? what if we could keep the chord-flipping aspect, but make it so that A major flips into A minor so we keep the same gravitational root too? I mean, the chords share two notes in common, A and E, so what if we set it up so that when we invert it, those two notes just changed places? well, in that case we have to abandon the idea that we're reflecting across the root of the chord, and instead invent a new concept, which we'll call the chord's axis. that axis is the exact midpoint between the root and the fifth, which in the case of A winds up halfway between C and C#, so when we invert the chord, the root becomes the 5th, the 5th becomes the root, and the 3rd just changes qualities.

modern negative harmony takes this idea and pushes it a step further: what if, instead of the axis of a chord, we reflected across the axis of a key? basically, if we're in A major, we'd use the same point of reflection, halfway between C and C#, no matter which chord we're inverting. to make this easier, I think it's worth taking a second to check each note's reflection: as we saw, the A becomes E and the C# becomes C. moving out, D becomes B, D# becomes Bb, F#

becomes G, and G# becomes F. feel free to double-check me on those, by the way: it really helps to do some of this stuff by hand.

anyway, once we have this chart, we can plug in any chord we want, and get its negative version in the key of A. so if we took E7, the V chord, and inverted it, then E becomes A, G# becomes F, B becomes D, and D becomes B, and if we play the right bass note under it, this is D minor 6. so did our transformation work? well, the main job of V7 is to resolve back to I, and if we try it with IVmi6: (bang) it's still a pretty satisfying resolution. a bit darker, but still strong, so yeah, I'd say it's a good negative version.

and this is where most discussions of negative harmony seem to focus: on all the cool chords you can make using this system. but that's not what's exciting about it to me. that's not why I wanted to make this video. I think there's something much more interesting happening here. negative harmony tells us there's a clear, predictable way to find chords that have the same harmonic function, but here's the thing: chord functions aren't random. we're not just picking jobs out of a hat. chords are made of notes, and the way a chord wants to behave depends on the way those notes want to behave, so if inverting a chord around the axis gets us another chord with the same function, then inverting a note around that axis will do the same thing.

this means that, if negative harmony is correct, then the 12 notes in standard tuning can all be broken up into 6 functional pairs. first, as we saw, there's the root and the 5th. I'll call these the stable notes, because they're the foundation of the key. if we don't have A and E, we're probably not in the key of A, so chords that contain these notes help reinforce that tonality. this is especially true when the chord contains both of them.

next up are the major and minor 3rds. these are the modal notes: they're what tells us whether we're in major or minor. the stable notes are too sturdy to really provide any sense of color, so the modal notes step in to help provide the scale with emotion. unlike the stable notes, though, you don't usually want both modal notes at once: each one works best in isolation.

moving on, there's the major 6th and minor 7th. I'll call these the hollow notes, because on their own they sound pretty neutral. slightly pleasant, but largely just unintrusive. they have a dark side, though: each one is a tritone away from one of the modal notes, so if you pair it with the wrong one the whole thing becomes really dissonant.

then there's the major 2nd and perfect 4th. these are the unstable notes: they each sit a half-step away from one of the modal notes, making them dissonant, but the modal notes aren't a strong enough point of resolution so these notes just feel kinda lost. they disrupt the modality of the key without really offering an alternative.

after that are the major 7th and minor 6th. these are the leading notes: they're each a half-step away from one of the stable notes, so they have a strong pull towards that resolution. this is

probably the most interesting group to me: I'd never considered the b6 as a minor variant of the leading tone until I started looking at negative harmony, but it makes a lot of sense.

and finally, we come to the minor 2nd and augmented 4th. these are the only intervals that don't exist in major or minor. each of them is a half-step away from one stable note and a tritone away from the other. they're kinda like the leading notes, but a bit more alien, so I'll call them the uncanny notes. they're just not something we're used to hearing much of.

and now that we have this list, we can apply it not just to negative chords, but positive ones too. like, the I major 6 chord has two stable notes, a modal note, and its associated hollow note, making it really comfortable and restful, whereas the V7 chord has a stable note, two unstable notes, and a leading note, so it's really dissonant and points you back home. even more directional, though, is something like VII diminished 7, which has two unstable notes and two leading notes, so everything about it is pushing you to resolve. interestingly, though, chords that have a leading note but no unstable ones, like III minor, don't really have that same directional quality: it seems like maybe you need to destabilize the chord first in order to really get that effect.

and there's lots of other observations to be made here, but my point is this: it's easy to get caught up in the flashy side of a new theory. it's easy to get distracted by all the cool things it lets you do. but it's always worth asking why, because at the heart of any good theory is a model that can tell you a whole lot more about music than just a few new chord relationships. when we first made the note inversion chart, it was for the sake of convenience, to make chord inversions easier, but ultimately that chart wound up being the most important thing negative harmony had to tell us. so yeah, when you find a new concept, dig deep, 'cause the answers are a lot better when you look beneath the surface.

SOURCES:

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