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Wreath Lectures

## **Too Loud & It All Sounds The Same? Why Researchers Were Wrong On Pop Stephen Graham , December 5th, 2012 11:17**

Kicking off The Quietus Wreath Lectures 2012: After scientists earlier this year claimed to have proved that music has been sliding a path of diminishing returns and actually *does* all sound the same, musicologist Stephen Graham points out why pop music is probably as exciting now as it was in 1955.

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Pedants and cranks have been predicting pop music's demise ever since its emergence in its modern form in the 1950s and 1960s. Always informed by a strong dose of cultural prejudice, sometimes these predictions take the form of blunt broadsides about perceived pop ephemerality, sometimes they are accompanied by chauvinistic gnashings of teeth about authenticity, and sometimes they are snuck in under the radar of 'objective' scientific analysis. I want to discuss something that falls most definitely into that insidious last camp.

[A paper published in \*Scientific Reports\* on July 26 this year](#) claims to 'measure the evolution of contemporary western popular music', statistically analysing a 'dataset' of 465,259 songs dating back to 1955 and distributed evenly across those years and widely across various popular music genres. The paper analyses its dataset under three main criteria: pitch, timbre and loudness. The authors of the paper found a growing homogenisation of the first two of these 'primary musical facets', and additionally detected 'growing loudness levels' in pop music of the past fifty-seven years.

These findings are not in themselves inherently problematic, although they derive from a deeply flawed methodology, to which I'll come below. What are deeply problematic are the conclusions drawn from them by the authors themselves, first, and by a range of

journalists and music critics, second. My argument is that, in themselves, the measurements that the paper puts forward can basically be taken in good faith. However, since these measurements only take into account *some* elements of music on the one hand, and nothing of musical meaning and context on the other, the authors' attempt to build them into a grand narrative about pop music's evolving 'value' is shaky at best, and revealing of quite ugly cultural prejudices at worst.

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## Loud and homogenous pop?

The authors of the paper claim that they 'observe a number of trends in the evolution of contemporary popular music'. 'These point', they say, 'towards less variety in pitch transitions, towards a consistent homogenisation of the timbral palette, and towards louder and, in the end, potentially poorer volume dynamics'. As is their wont when confronted with apparently authoritative scientific 'data', journalists had a field day with the scientist's interpretations. Many used the paper's comparatively neutral conclusions as a springboard for a plethora of sweeping and condescending generalisations.

'Pop music is too loud and it all sounds the same. That's the conclusion of scientists at the Spanish National Research Council,' claimed Sean Michaels [in \*The Guardian\*](#). [Writing in the \*Irish Times\*, Brian Boyd, in more grandiloquent form, spat with potent self-satisfaction](#); 'If you've felt alienated and irritated by the pop music charts over the past few years, console yourself: it's been scientifically proven that the music you listened to when you were younger actually was a whole lot better than the beat-infested, pop-assembly-line rubbish that now thumps its way out of your radio and clutters up the charts.' The title of Rich Maloof's [article on MSN Living](#) was as blunt as you can get: 'Pop Music Stinks And We Have The Proof'.

However, the *Scientific Reports* paper itself, and, consequently, many of the newspaper and web articles that reported its findings and conclusions with such misplaced ideological glee, suffers from two fundamental and fatal flaws.

First, the paper's analytical framework is inadequate. Its claims to authority are hampered by the absence from its supposedly representative dataset of one of the key elements of music, rhythm, whether that be harmonic rhythm, timbral rhythm, melodic rhythm, or the mensural rhythms of tempo and metre. Although the paper uses 'the temporal resolution of the beat' to aid 'discretisation' of its musical facets, the word 'rhythm' does not appear once in an article aspiring to answer questions about the inner nature of musical discourse and musical evolution.

Similarly, since we are dealing with popular music, the absence of language from the sample frame, such as that contained in titles, lyrics, slogans or other pertinent materials, is just as deleterious. Finally, harmony is also ignored to a significant degree, since although the paper focuses on timbre and pitch, precise hierarchisations of pitch, such as chord voicings or layering of the musical texture in order to articulate bass, harmony and melody, are excluded from the analysis. Horizontal or consecutive pitch relationships are elevated over vertical or simultaneous ones.

A constituent issue of this first fundamental flaw, deriving more from the paper's methodology than its sample frame, relates to the fact that the authors isolate and thus absolutise various musical 'facets' (timbre, pitch and loudness). These 'facets', in themselves, have little business being isolated, since they gain meaning from various contexts; musical, social, cultural or otherwise. An abstracted set of pitches means little besides itself when considered separately from timbre, rhythm, phrasing, use of technology, language and other technical and expressive 'ingredients' of music. Although many valid and valuable analyses have been carried out under precisely this sort of isolationist rubric, the key point is that specific findings about pitch should not be extrapolated into generalised propositions about how music works; data about pitch organisation are just that, and are not in themselves anything more. The analytical framework of the paper thus pivots on the fallacy of misplaced concreteness, where constituent elements of music are seen as more distinct than they really are.

The second fundamental flaw of the paper also relates to this point about isolating and decontextualising musical 'facets', to continue to use the authors' terminology. I noted above that facets such as pitch gain meaning once they are situated in musical contexts. Equally important to this 'meaning' are the socio-cultural discourses through which music becomes encoded with conventionalised meanings.

The [sound of a repeated rising semitone](#) does not 'naturally' suggest an approaching shark, but does so conventionally through the encoding of the *Jaws* theme as a signifier of shark-related threat. The blues-inflected chord and melodic progressions of the Beatles' 'Please Please Me' would mean something very different to a classically-trained and a teenage pop musician in 1963, let alone to two 'average' audience members, one from 1963 and one from 2012. Similarly, [a recent 'wonky' track](#) and a much older [chamber work by Elliot Carter](#), though utilising [certain metrical processes](#) that [might be profitably compared](#), would have profoundly different significance and value depending on listeners' knowledge, experience, mood and expectations.

Musical meaning depends on knowledge of cultural codes shared between members of the same or overlapping social groups. Since meaning and, thus, perceptions of 'quality' shift so radically over time and across audiences, it makes little sense to form

judgements about recent 'pop music' 'stinking', or being better or worse than older pop music, simply on the basis of inferences drawn from (flawed) data about specific technical elements of music. By this criteria, much of the pop music known and loved by audiences worldwide would be seen to amount to little.

The slowly intensifying arrangement and rhythmic syncopations and suspensions of James Brown's '[Get Up \(I Feel Like Being a\) Sex Machine](#)' would be ignored and the song dismissed as a result of its pitch and timbral content being so circumscribed. The same would go for everything from Frank Ocean's '[Forrest Gump](#)', which feels so potent not only because of the beauty of the vocal performance, but also because it is one of the first love songs written to a man by a mainstream black male musician, to Beyoncé's '[Single Ladies](#)', which deploys a limited vocal compass and almost absent harmonies in a nevertheless seminal track, to Nicki Minaj's '[Beez in the Trap](#)', which is so interesting for its vocal ingenuities *and* for its reduction of harmony and texture to a bleeping and swooping zone of languid hostility. Musical meaning and value shift over time. It is up to analysts to try to cope with these shifting parameters.

### Is objective 'data' about musical evolution possible?

As Roland Barthes [famously wrote](#), 'a text's unity lies not in its origin, but in its destination'; an aphorism blithely ignored by the authors of the *Scientific Reports* paper and by the journalists who appropriated the scientists' findings, all of whose assertions about pop music stay at the level of technical design and thus ignore vital emergent phenomena and processes of perception, interpretation and meaning. It is indeed reasonable to attempt to generate 'objective' data about music in order to 'identify some of the patterns behind music creation'. But in doing so analysts must first of all ensure that the analytical framework is as all-encompassing as possible.

Second, they must avoid circularity in building conclusions, a pervasive fault of the paper here, where the authors claim that 'our perception of the new would be rooted on these changing characteristics' (i.e. on the criteria utilised in the paper). This is straight up circular reasoning based on an exclusion bias. Music is reduced by the paper to loudness, timbre and pitch, and in doing so the horizon of the 'new' is likewise reduced to these facets. If 'music' is disclosed by the paper, then any possibility of it becoming 'new' must therefore derive from that disclosure. But there's much more to music than is here, and perceptions of the new have to do with a much fuller panoply of musical facets, as well as, of course, shifting patterns of meaning, than they are given credit for here.

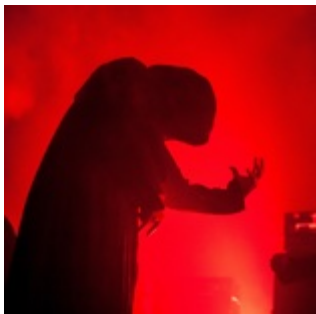
Third, and finally, it is vital that if analysts or journalists are seeking to draw conclusions about music's meaning and value, then due heed must be paid to the socio-

cultural discourses that largely generate music's meaning. Otherwise their analyses will simply serve to perpetuate antiquated ideas about what is and what is not musically worthwhile, and about what music might be seen to 'mean'.

*Stephen Graham is a musicologist and music critic based at Goldsmith's College, and an Editor at the Journal of Music*

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**Andrew**

Dec 5, 2012 4:34pm

Thank you for publishing this, The Quietus. While the pop science of the original Scientific Reports piece was clearly rather superficial, music criticism shouldn't be afraid to engage with scientific methodologies. This riposte suggests the complexity and effectiveness of blending scientific approaches with more traditional philosophical and musicological methods in criticism, and I for one would be up for reading more in this vein on music sites such as yours.

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**scott**

Dec 5, 2012 5:26pm

"Science" isn't right or wrong about anything. This particular research is or is not flawed and is or not misinterpreted.

[Reply to this Admin](#)

Dec 5, 2012 5:27pm

Enjoyed this, very good points made clearly and persuasively. Makes me wonder whether funding criteria shape reports like that one. As I understand it, research needs to have potential "impact" to get funded. One measure of that impact is press coverage. If your research is likely to confirm a perennial prejudice (e.g. "pop music is too loud and repetitive") then it's likely it will get press coverage. Bingo.

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**Ben**

Dec 5, 2012 5:38pm

I actually thought this was just another study regarding the tendency of recent years to heavily compress all recordings, thus increasing the perceived loudness and power of the recording, at the expense of the dynamic range, known as 'the loudness wars'.

As a musician and (primarily self-) producer, I agree that the heavy compression of recent years is often to the detriment of the music, but it's a tough one for pop music as unless you use the same amount of compression your song will be perceived by the listener as quiet or wimpy by comparison to other tunes.

I must confess, though, having read Stephen's article and subsequently revisited the paper in question, the 'pitch & timbre' aspects really to seem to be inherently flawed, and fodder for the grumpy brigade. Next thing you know they'll have developed an algorithm that indicates that 'their hair is too long' and 'you can't tell if they are boys or girls'.

Great article!

[Reply to this Admin](#)

**Rory Gibb**

Dec 5, 2012 5:56pm



A good article and a good argument.

Something that hasn't been mentioned - though that could have been - is that exactly the same problems of misinterpretation of scientific data in the wider media exist across the board. There's a lot of woeful reporting of scientific research that goes on in newspapers, tabloid and broadsheet alike, due to selective reporting of results, misunderstanding of the scientific process and what it's capable of, or simply the desire to whip up a stormy story out of very little concrete evidence. You only need to look at the Mail's daily swing between "[Item X] causes cancer!" and "[Item Y] cures cancer!" to see that process in action on a much wider scale. It's a systemic problem, and it's incredibly damaging to the wider public's understanding of what science is about and what it is and isn't capable of, and is used to argue far more pernicious points than whether pop music has diminished or not (climate skepticism is an obvious example). Though a fine demolishing of some sketchy reasoning and research nonetheless, bravo.

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**Stephen Graham**

Dec 6, 2012 12:19am

*In reply to [scott](#):*

I agree; didn't come up with that standfirst myself (devilish things to write, and this one does do a good job of bringing in readers, I think!).

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**Stephen Graham**

Dec 6, 2012 12:20am

*In reply to :*

I'd imagine it was either funding pressures, or just personal prejudice...

[Reply to this Admin](#)

**dirigible**

Dec 6, 2012 9:36am

Methodological critique of a single report doesn't show that science is "wrong" and is itself an application of the culture of science.



I will pray for the headline writer of The Quietus, although studies show that this will probably make the headlines worse.

[Reply to this Admin](#)

**James**

Dec 6, 2012 2:51pm

Awesome

[Reply to this Admin](#)

**Rory Gibb**

Dec 6, 2012 5:23pm

*In reply to [dirigible](#):*

Indeed. Duly amended.

[Reply to this Admin](#)

**dirigible**

Dec 7, 2012 9:18am

Thanks Rory.

It's e excellent article that deserves attention from the Digital Humanities community as well as popular music fans.

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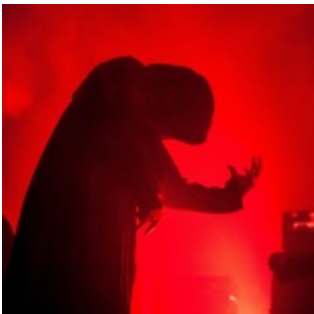


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