

Composition Is Not A Jaffa Cake, Research Is Not A Biscuit: A Riposte to John Croft

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In the April 2015 issue of *Tempo* (Croft, 2015, pp 6-11), John Croft made the bold statement that “composition is not research”, claiming that conflating the two amounted to a “category error”, a fact somewhat unsurprising when he spends the entire article defining (when he can be bothered) both composition and research so myopically that the question is not whether he can see the wood for the trees, but whether he can see the trees at all, as he has probably mistakenly categorized them as “leaf-holders”, “not-yet-sawdust”, or “soon-to-be-tables”, and written a strongly-worded letter to Forestry Monthly in which he complains that, in failing to accurately define what a tree is, they are committing a category error that prevents him from using them to support mugs, plates and coffee table books, or the absorption of vomit following a rollercoaster ride; finally concluding that the only solution to this is to lie to himself and use the trees as if they were tables and sawdust, without bothering to rethink his ideas about what trees, tables or sawdust might be.

Croft's article is so riddled with holes that it would be easy to mistakenly categorize it as Swiss cheese, a sieve, or the proverbial fish in a barrel which I am about to shoot, but he raises one good point in his seven pages, and regurgitates a series of myths about research and composition which are worth correcting just so I never have to waste my life reading them again.

Croft's main argument is so tautological, it's worth repeating twice:

In the “practice-as-research” system that has arisen in European universities, as a result of the incursion of neo-liberal thinking into Higher Education, research has to be structured through the use of a quantitative methodology taken from scientific research i.e. the proposal of a hypothesis, that is then tested and conclusions drawn from the relationship between the results and the hypothesis. Croft argues that this methodology is antithetical to the process of composition. Yet despite railing against this quantitative methodology, he uses it as the basis for defining both composition and research, an approach that allows him to discredit the idea of the relationship between composition and research in the terms of the neoliberalism he dislikes, but only by buying into the values of this very system.

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At the heart of Croft's problem is the conflation of five separate ideas:

1. The bureaucratic implementation of research in academia is not conducive to the production of good music.
2. The bureaucratic implementation of research in academia is based upon the “Scientific Method”.
3. Research in science and the arts proceeds via an idealized version of the “Scientific Method”.

4. Musical composition has characteristics that make it unsuitable for operating within the bureaucratic implementation of research mentioned above.
5. Musical composition has characteristics that make it incompatible with the methodologies of research adopted by science.

This mixture of ideas and definitions fudges together institutional bureaucracy, badly researched pronouncements on the nature of research and composition, the execution of composition and research, and an implicit aesthetic conservatism that makes not only for a read as confusing as it is unenjoyable, but Croft's conclusion reeks of a naïve and colloquial cynicism which, should anyone take his article seriously, would undoubtedly have a detrimental effect upon the world of research and composition were it implemented.

1. The bureaucratic implementation of research in academia is not conducive to the production of good music.

“... in universities today research income has become a proxy for quality. The effect of this is pernicious enough for activities that are properly described as research: doubly so for musical composition, which now must justify its place in the academy by obtaining money for something it isn't really doing in the first place. This is all part of a more general tendency to outsource qualitative judgement to quantitative measures. This academic commodity fetishism is manifested not just in the humdrum money-grubbing of the modern university, but in the broader culture of accountability that dominates both the academy and arts funding organisations.”(Croft, 2015, pg. 8)

Above, is the sole good point in Croft's paper. Croft reads the movement towards the “researchizing” of composition as part of a larger neoliberal movement towards the commoditization of knowledge in academia. He argues that the outsourcing of “qualitative judgement to quantitative measures” is the application of a metric unsuitable for the production of good art. Due to the encroachment of neoliberal ideology, the ability to evaluate, in ways which are tied to numbers allow the justification of the funding of artistic endeavours through the metric of the market, even though the adoption of quantitative metrics go counter to the function of what public funding under neoliberalism should function as: a corrective for errors in the same market. If one is applying the same analytical tools (quantitative ones), as those used for market analysis, then one is unlikely to be able to direct money towards that work which is valuable in a sense other than that defined by the biased nature of the market. If public arts funding in neoliberalism has any function, it should be to guard against quantitative assessment bias, a bias which Croft identifies in the “objectively 'innovative'” nature of his hypothetical “polar-ice-based internet improvisation event” (Croft, 2015, p. 8).

Yet, whilst Croft is happy to rail against the type of content driven by this type of quantitative bias, he seems unwilling to question the implicit problems with funding art in the first place. In other words, whilst the nature of the system is up for critique, the system itself avoids it.

A few years ago, I wrote a paper which examined problems related to qualitative bias in public funding in the Netherlands (*Public Funding, Music, and Sub-Prime Culture in The Netherlands* (<http://aces.ricercata.org/research/aces001.pdf>) which looked into the way in which the introduction of money into art changes what is produced. The conclusion drawn from experiments in motivational psychology, shows that, in tasks which require anything more than “rudimentary cognitive skill” financial incentives lead to the production of worse work. In Dan Pink's *Drive* (2010), he recounts the following experiment:

“Teresa Amabile, the Harvard Business School professor and one of the world's leading researchers on creativity, has frequently tested the effects of contingent rewards on the creative process. In one study, she and two colleagues recruited twenty-three professional artists from the United States who had produced

both commissioned and noncommissioned artwork. They asked the artists to randomly select ten commissioned works and ten noncommissioned works. The Amabile and her team gave the works to a panel of accomplished artists and curators, who knew nothing about the study, and asked the experts to rate the pieces in creativity and technical skill. 'Our results were quite startling', the researchers wrote. 'The commissioned works were rated as significantly less creative than the non-commissioned works, yet they were not rated as different in technical quality.'" (Pink, 2010, pp 44-45)

This is just one piece among many outlined in the motivational psychology literature that shows the detrimental effect of monetary incentives upon creative work. So, contrary to Croft's point that the bias in the system is solely responsible for the creation of worse music, an existence within this system and acceptance of paid commissions contributes to a culture of sub-prime art, with no monetary or aesthetic value.

2. The bureaucratic implementation of research in academia is based upon the "Scientific Method".

Often, in reading Croft's essay, one has the feeling that one is reading a work by someone who is writing about research and composition, yet who knows what neither is. So, some definitions might be helpful...

The bureaucratic concept of research, discussed above, is a hold-over from the integration of arts into the postgraduate landscape in the UK in the 1980s. The practice-based/led/as-research, which is the model of research Croft is clearly referring to, is the dominant research paradigm in the arts in the UK.

Practice-based/led/as-research in relation to doctoral qualifications, has been in operation for some time, especially in the United Kingdom, where its genesis can be traced back to the 1980s, parallel with Finland (Nelson, 2013, p. 11). This research model then received its main boost following university reforms in the 1990s with the granting of polytechnics equal status to universities, allowing art schools to receive direct and indirect public funding for research (Borgdorff, 2006, p. 4).

It is notable that, at an institutional level, the distinction is negligible between, not only practice-based/led/as-research and scientific research, but between different research methodologies that exist within the natural sciences, from whence many of the evaluation frameworks have been extrapolated. As Nelson (2013) points out, "positivism and the 'scientific method' have lingered in informing a dominant understanding of academic research and the criteria of knowledge, even though many innovative scientists have moved away from this nineteenth-century research paradigm" (Nelson, 2013, p. 26). The national and international bureaucratic decisions and structures responsible for this state of affairs are too extensive to cover here, but the interested reader is directed towards Henk Borgdorff's essay *Artistic research within the fields of science* (n. d.).

Clearly, the criteria and structuring of the bureaucratic and institutional response to research in the arts is coloured by the process through which research is done in the sciences, yet, as Nelson points out "many innovative scientists have moved away from this nineteenth-century research paradigm". Nonetheless, artistic research is, in its institutional form, related to concepts of scientific research. This idea underpins much of Croft's argument and occurs in one of the essay's most conceptually confused sections:

Research, at least of the scientific kind to which musical composition is generally assimilated, aims to produce generalisable results; the significance of a piece of music lies, on the contrary, in its particularity. This is not to say that music has no cognitive dimension, or that it does not have a kind of truth – only

that it does not have the kind of truth that is discovered by research. (Croft, 2015, p. 8)

This quotation is taken from later in the article than the one at the start of the previous section (“... in universities today research ...”) yet, although we have switched from describing the ideology of a university in the grip of late capitalist ideology to the author's own ideas, notice how he still buys in to the idea that the importance of a musical composition is located in its “particularity” i.e. its originality. The use of originality (along with quality) as the fundamental properties that a good composition should have is an idea that occurs repeatedly throughout the essay (“the most original things that happen in music...”, “the most original music...”, “By reducing compositional quality and originality...”, “the most radically original music for string quartet” (Croft, 2015, all page 10). Here we see that Croft is invested in the very capitalist value system that he declaims the university for investing in, a way that prevents “going to the trouble of a risky aesthetic judgement” (Croft, 2015, p. 8). He regurgitates the very same quantified versions of neoliberal ideology. His view of research is not that of the sciences, but that of the institutions.

But is it the view of the institutions?

Croft singles out the Research Excellence Framework (REF) as a possible cause of the problems related to composition as research:

If the answer to your ‘research question’ is always (trivially) ‘yes’, then there’s no research going on. But this is in fact what grant applications, composition PhD abstracts, and the ‘research narratives’ we are required to write for the ‘Research Excellence Framework’ (or its equivalents in an increasing number of other countries) tend to look like. (Croft, 2015, p. 7)

But what does the Research Excellence Framework actually say about what research and impact actually are? According to the *Assessment Framework and Guidance on Submissions* (REF, 2012) for REF 2014, research is defined in the following way, which I shall quote in full:

1. For the purposes of the REF, research is defined as a process of investigation leading to new insights, effectively shared.
2. It **includes** work of direct relevance to the needs of commerce, industry, and to the public and voluntary sectors; scholarship, the invention and generation of ideas, images, performances, artefacts, including design, where these lead to new or substantially improved insights; and the use of existing knowledge in experimental development to produce new or substantially improved materials, devices, products and processes, including design and construction. It **excludes** routine testing and routine analysis of materials, components and processes such as for the maintenance of national standards, as distinct from the development of new analytical techniques. It also **excludes** the development of teaching materials that do not embody original research.
3. It **includes** research that is published, disseminated or made publicly available in the form of assessable research outputs, and confidential reports (as defined at paragraph 115 in Part 3, Section 2). (REF, 2012, p. 48)

So, far from Croft's argument about the constricting powers of the REF, it appears that research is defined here in a much more open and sympathetic way than Croft would care to admit, similarly with his assumptions about the REF's attitude towards “impact”:

Factors like the number of people that hear a piece, and how much they are affected by the music, do not count as ‘impact’ in the sense required by, for example, the UK’s Research Excellence Framework or Arts and Humanities Research Council. But if I write an opera about global warming, and someone does a survey about whether it has ‘raised awareness’, then that, it seems, is ‘impact’. Needless to say, the impact agenda is harmful to many disciplines, and reflects a profound misunderstanding even of how even [sic] paradigmatic research progresses. (Croft, 2015, p. 7)

Croft's claim that the number of people that hear a piece and how much they are affected by the music seems in direct opposition to what the REF actually defines “impact” as:

4. For the purposes of the REF, impact is defined as an effect on, change or benefit to the economy, society,

culture, public policy or services, health, the environment or quality of life, beyond academia (as set out in paragraph 7).

5. Impact **includes**, but is not limited to, an effect on, change or benefit to:
 - the activity, attitude, awareness, behaviour, capacity, opportunity, performance, policy, practice, process or understanding
 - of an audience, beneficiary, community, constituency, organisation or individuals
 - in any geographic location whether locally, regionally, nationally or internationally(REF, 2012, p. 48)

Disregarding the fact that Croft uses quantitative ways of measuring the success of a piece (“the number of people”, “how much they are affected”) that seem even more neoliberal than the REF itself, it is clear that the assessment criteria of the REF do, in fact, lay open the possibility that impact could be judged by “an effect on...an audience”. In fact, there's nothing in the specification itself that seems to imply that “an opera about global warming” with attendant survey would be any more impactful according to its criteria. Furthermore, it would seem that the hypothetical survey that Croft posits would probably be categorised as “the advancement of academic knowledge within the higher education sector” (REF, 2012, p. 48) which is explicitly *excluded* from being classed as “impact” (REF, 2012, p. 48). Oh, the irony of someone writing about research who doesn't seem to have done any!

Although the origins of the practice as/led research paradigm that Croft is critiquing seems to have originally come out of the sciences and their empirical methodologies, it appears that the modern attitude towards the categorisation and legitimation of research, as embodied in the Research Excellence Framework, has departed from this, instead embracing a much more open idea about what research is that is not tied to presumed ideas about scientific research.

Croft not only buys into the capitalist model of value, but he buys into a supposed institutional model of research which no longer exists, taking it at face value without casting a critical eye over what that might mean. Yet, even if we were to believe Croft's idea that artistic research is tied to the same values of scientific research, the sciences have long had a questioning and philosophical inquiry into the nature of how research is conducted. Far from the view, seemingly common in the arts, that science proceeds via the “scientific method”, various philosophers of science, most notably Karl Popper and Paul Feyerabend, have frequently called this concept into question.

3. “Research” in science and the arts proceeds via an idealized version of the “Scientific Method”.

Croft clearly thinks that, in order to satisfy institutional demands, “research” must be conducted through a methodology mirroring that of the “Scientific Method”, as Karl Popper describes it:

“A scientist whether a theorist or experimenter, puts forward statements or systems of statements, and tests them step by step. In the field of the empirical sciences, more particularly, he constructs hypotheses, or systems of theories, and tests them against experience or observation and experiment” (Popper, 1972, p. 27)

In Croft's institutional interpretation, this consists in posing a hypothesis (research question), testing the question and reporting “findings” (Croft, 2015, p. 7).

Research Question As Hypothesis

“Composing of course, might on occasion *depend* on research – how do I make an orchestra sound like a

bell? How do I electronically sustain a note from an instrument so that it doesn't sound mechanical? What is the best way to notate microtones or complex rhythms so that they can be accurately played? But none of these is actually the composition of music. Rameau's harmonic theory was research, and it surely influenced his music (and music in general), but the *Traité de l'harmonie* is not a musical composition. The development of the pianoforte involved research and influenced music in profound ways, but it was not composing.” (Croft, 2015, p. 6)

Ignoring the fact that all of the first three examples in the above quotation sound like research to create terrible music in the 1980s, Croft here makes his strongest argument about the differences between research and composition. Yet being able to take each of these as a valid argument is based upon buying into his heavily biased version of what research and composition are. His idea of research, as we know, is adopted wholesale from an institutional idealization of the scientific method, and here we are given two examples of what he considers research:

1. Rameau's harmonic theory
2. The development of the pianoforte

But, if research is defined by the posing of research questions (hypotheses), what are the research questions for these two types of research? Surely, if Croft identifies these as being examples of research, they should come with an accompanying hypothesis that is being tested. However, any attempt to do this results in exactly the same type of *reductio ad absurdum* questions that Croft uses to try and disprove the idea that composition is different from research: “Suppose someone had asked Beethoven what is researched questions were in the Ninth Symphony. For a start, Beethoven would surely have been mystified to say the least, by such a demand” (Croft, 2015, p. 9).

Rameau's harmonic theory and the development of the pianoforte are both used as examples of things which are not musical compositions, yet why not? Here we come across an implicit aesthetic bias as to what Croft is willing to accept as a musical composition, which, consequentially, impacts upon the veracity of his statement that composition is not research. So, before we assess whether or not Rameau's harmonic theory or the development of the pianoforte are compositions, we have to define the limits of what Croft thinks composition is.

Unpacking Croft's ideas about composition is as unpleasant and confusing as finding that a bottle of glue has exploded inside your holiday suitcase mid-transit. But, in order to work out what is not research, we have to painstakingly pull apart this nonsensical mess, only to find that, underneath, is the most banal kind of aesthetic conservatism, the artistic equivalent of y-fronts.

At its most practical level, composition might involve “pick[ing] up a pencil, start at the beginning and stop when the piece is finished” (Croft, 2015, p. 7), but, perhaps most tellingly, “The most original things that happen in music are usually not 'ideas' had in advance, but striking or idiosyncratic *musical* solutions to problems of *musical* material that arise only during the process of composition” (Croft, 2015, p. 10).

Here we find the crux of Croft's false dichotomy between musical composition and research. In essence, this is a dichotomy between “ideas” and “music” (later represented as a duality between language and music). Glossing over the fact that “original” is used as a synonym for “good”, it is telling that “ideas” are not “musical”, a statement which off-handedly dismisses a broad swathe of experimental music and all of conceptual music (even Xenakis!). In order to buy into Croft's concept of music, we must jettison all music based on ideas. i.e. “ideas' had in advance” cannot be “the process of composition” by Croft's definition, or at the least they cannot be “original”, Croft's synonym for good.

Even discarding this enormous problem, Croft opens himself to real questions about the ontology of composition, and the location of where a composition actually starts, (a challenge I will leave for much greater minds than mine). For example, does not writing a composition for piano come front-loaded with so many givens, already built into the construction of the instrument itself, that surely a

case could be made for the construction of a piano being a compositional act?¹

Piece #1
for John Croft

Rameau's *Traité de l'harmonie*

Piece #2
for John Croft

The development of the pianoforte

Above are two pieces I have written for this article. Ignoring for a moment my own personal feeling that both Rameau's *Traité de l'harmonie*, and the development of the pianoforte are beautiful musical compositions without this framing, surely the two above pieces are a direct contradiction of Croft's assertion that "A good theory can be poorly articulated, but there is no such thing as good music badly composed" (Croft, 2015, p. 9). Here are two beautiful pieces of music that show little invention in reframing readymades as text scores, and look – the second one even has a spelling mistake in it!

All this reminds me of one of my favourite thought experiments: Damien Hirst's sculpture *The Impossibility Of Death In The Mind Of Someone Living* (Hirst, 1991) consists of a dead shark suspended in a large tank of formalin. The realisation of this piece is extremely neat – clean white vertices, centred shark, filled tank etc. but how badly can this piece be made before it ceases to function? Can it be leaking? Can there be huge scratches on the glass? How cloudy can the water be? How rotten can the shark be?² In other words, how badly can the concept be realized before the realization destroys the concept. When music can be a concept, then good music can be badly composed (think of the multiple re-writings in George Brecht's sketches of his text pieces shown in Saunders and Lely's *Word Events* (2012, pp. 113-120)).

So, here we can perhaps rework Croft's title to reflect the content a little clearer:

"Composition (which cannot be based upon ideas) is NOT Research (which is defined by the institutional implementation of bureaucratic frameworks that are no longer in effect and are based on the idealization of the "Scientific Method")

Perhaps it's not so catchy...

Now that composition has been defined, we can return to the idea of the hypothesis, and how this might be manifest as a research question.

One might argue that at least the construction of compositional systems is research. Now, even granting this, it would remain the case that good and bad music can be made from any system – so after all the explications of technique, the compositionally important thing would remain unexplained and untouched. But in reality even compositional systems are not research in any strong sense. This is because the answer to any conceivable 'research question' that might be involved is known in advance. Imagine, if you will, a research funding application from Schoenberg. Research question: 'can I make music in

1 In reference to this, I would direct the reader to my paper on key usage in Beethoven's piano sonatas, which shows how the topology of the keyboard directly impacts upon the work written for it <http://cerenem.ricercata.org/articles/beethoven/page01.html>.

2 These last two are actual issues.

which all pitch classes are played equally often?' Answer: yes! Or one from Grisey: 'can I make chords out of the pitches revealed by spectral analysis?' Answer: yes!...If the answer to your 'research question': is always (trivially) 'yes', then there's no research going on. (Croft, 2015, p. 6)

Here Croft seems to be arguing that any research question whose answer is known in advance is not part of the process of research. The solution that he has seen used to correct this problem, is the use of the word “coherent”:

“Sometimes, as if aware of the problem, we insert an evaluative term: 'can a *coherent* musical structure be developed from sonification of the human genome?' Without the word 'coherent', the answer is of course yes.” (Croft, 2015, p. 7)

What Croft touches upon here, is an idea that Karl Popper refers to as “falsification”: “The criterion of the scientific status of a theory is its falsifiability, or refutability, or testability” (Popper, 1989, p. 37). In other words, if a theory cannot be refuted, it cannot stand up as a scientific theory. In Croft's example, the addition of the word 'coherent' potentially allows the falsification of the claim. However, in the sciences, this falsification would come through experimentation – something Croft argues transforms the status of composition:

“Now, we could, of course conduct research into questions like this: we could for example, empirically test the perceived cohesion of music constructed in a certain way. But composition in this case would be the *test stimulus* for a music psychology experiment, not itself research.” (Croft, 2015, p 7).

Croft argues against the possibility of falsifying the premises of a musical work through experimentation, as this means that refutation is not embodied in the music itself. This aligns with his contention that musical questions must have musical answers, and discursive questions must have discursive answers (Croft, 2015, p. 9). But, whilst this might stand on its own as a statement, it is implanted into Croft's network of confusion in such a way that it creates a tautological system that shores up its own definitions, whilst negating any ontological meaning that isn't complete gibberish. One could lay out Croft's argument like so:

1. Research is defined by the asking of research questions (hypothesis).
2. If the answer to a research question is known before the research is commenced, it is not research.
3. By adding a qualifier, such as 'coherent' into a research question we can make it falsifiable.
4. Using 'coherent' as a qualifier ceases to make the question falsifiable if the composer is the sole judge of the coherence.
5. We cannot use a composition to empirically test the falsifiability of a research question, as this causes it to cease to be a composition (instead it becomes a “test stimulus” or “data”).

Croft manages to create a situation in which *by definition* composition cannot be research, as Croft's definition of research rests on a research question which is falsifiable, and yet he precludes the use of composition as being a way of falsifying the data, as he claims this changes its ontological status. Croft has managed to create definitions that are explicitly exclusive, which allow him to argue his point but whose tautological nature forces a duality which only exists if one buys into all five of Croft's propositions, listed above.

However, in his book *Conjectures and Refutations* (1989), Karl Popper lays out more than a single rule that would be necessary for the falsification of a hypothesis:

- (1) It is easy to obtain confirmations, or verifications, for nearly every theory – if we look for confirmations.
- (2) Confirmations should count only if they are the result of *risky predictions*; that is to say, if, unenlightened by the theory in question, we should have expected an event which was incompatible with the theory – an event which would have refuted the theory.

- (3) Every 'good' scientific theory is a prohibition: it forbids certain things to happen. The more a theory forbids, the better it is.
 - (4) A theory which is not refutable by any conceivable event is non-scientific. Irrefutability is not a virtue of a theory (as people often think) but a vice.
 - (5) Every genuine *test* of a theory is an attempt to falsify it, or to refute it. Testability is falsifiability; but there are degrees of testability: some theories are more testable, more exposed to refutation, than others; they take, as it were, greater risks.
 - (6) Confirming evidence should not count *except when it is the result of a genuine test of the theory*; and this means that it can be presented as a serious but unsuccessful attempt to falsify the theory. (I now speak in such cases of 'corroborating evidence')
 - (7) Some genuinely testable theories, when found to be false, are still upheld by their admirers – for example by introducing *ad hoc* some axillary assumption or by re-interpreting the theory *ad hoc* in such a way that it escapes refutation. Such a procedure is always possible, but it rescues the theory from refutation only at the price of destroying, or at least lowering its scientific status.
- Popper, 1989, pp. 36-37

What is interesting, in relation to much academic research, is that Popper locates the strength of a proposition, not in its generality, as Croft presumes (“Research...of the scientific kind...aims to produce *generalisable* results” (Croft, 2015, p. 8)), but in its ability to be refuted. In fact, the more general the theory, the less like scientific research it becomes. In talking about the difference between psychology and sociology, and the natural sciences, Popper remarks that “I could not think of any human behaviour which could not be interpreted in terms of either [Freud or Adler's] theory. It was precisely this fact – that they always fitted, that they were always confirmed – which in the eyes of their admirers constituted the strongest argument in favour of these theories. It began to dawn on me that this apparent strength was in fact their weakness.” (Popper, 1989, p. 35) Popper locates the power of a scientific theory in the “risk” of its predictions, in talking about Eddington's confirmation of Einstein's predictions that light would be attracted by heavy bodies such as the sun:

Now impressive about this case is the *risk* involved in a prediction of this kind. If observation shows that the predicted effect [the apparent shifting of distant stars away from the sun, due to the sun's gravity bending its light en route to the earth] is definitely absent, then the theory is refuted. The theory is *incompatible with certain possible results of observation* – in fact results which everybody before Einstein would have expected. (Popper, 1989, p. 36)

When applied to the process of academic research in the arts, we often find that this risk of refutation is entirely absent, particularly in those works in which poststructuralism is used as its intellectual basis. Even ignoring Croft's arguments that composition itself is not research, the application of Popper's criteria of falsification onto existing writing in music composition highlights a real lack of risk. For instance, the now all-to-common usage of *A Thousand Plateaus*-era Deleuze and Guattari illustrates exactly the type of sweeping theories, similar to the Freudian and Adlerian theories described by Popper, which cannot be falsified, and show a distinct lack of *risk*, and not only on Popper's terms, but on intellectual ones, as well. For instance, when Deleuze and Guattari propose their idea of the “smooth” and the “striated” in the fourteenth chapter of *A Thousand Plateaus* (Deleuze & Guattari, 2004, pp. 523-551), they explain it through analogies to Seventeenth Century quilt making (p. 525-526), Boulez's music (pp. 527-528), nautical navigation (pp. 528-530), Riemannian topology (pp. 532-5537), the division of time under capital (pp. 541-542), and nomadic art (pp. 551). Here we have exactly the type of all-encompassing theoretical model whose generalisability Popper claims precludes falsification, and thus its status as scientific theory, a generalisability that is at work in the theories proposed throughout the entirety of the book. And, while Deleuze and Guattari, make no claims about their book being a scientific endeavour, but a philosophical one, it means that any composition (or compositional research) which seeks to justify itself through reference to the theories of *A Thousand Plateaus* is not putting forward a “risky proposition”. For how interesting is it to claim that your work has parallels with Deleuze and Guattari's idea of “the smooth and the striated” when it is patently obvious that this theory can be used to encompass anything, given the enormous diversity of references that are used when illustrating it in the philosophy itself.

This lack of “risky propositions” is not limited to the poststructuralists, but in the way in which any set of theory that has large enough applications can be used to shore up any type of musical output. Even if one was to hold up Croft's assertion that “how do I make an orchestra sound like a bell?” is a type of research, the big question is: “who cares?” this idea doesn't call into question ideas about music, composition or research.

So, how can Popper's ideas of falsifiability be applied to the idea of composition. Here is where Croft's ideas clearly skirt around a central issue of who is judging? In order for something to be falsified, it must be falsified by someone. Croft attempts to complicate matters for some cheap point scoring through some linguistic trickery and logical fallacies:

“Sometimes, as if aware of the problem, we insert an evaluative term: 'can a *coherent* musical structure be developed from sonification of the human genome?' Without the word 'coherent', the answer is of course yes. So we put something in to make it seem like the result is not a forgone conclusion. But of course it *is* a foregone conclusion, because what one generally means by such a question is 'can I write convincing music with this technique?' Where the person to be convinced is ... me! Can I write music that I think is good? It turns out I can.” (Croft, 2015, p. 7)

Croft here uses three different statements as if they were synonymous:

“Can a coherent musical structure be developed [from this technique].”

“Can I write convincing music with this technique.”

“Can I write music I think is good.”

To write convincing music with a technique, is not the same as the general sentiment that one can write music that one thinks is good, and only for the most delusional composer and basest narcissist are these things the same, even if the only judge is oneself. Croft clearly sees a problem with the creator being the primary evaluator of a work, and yet, in the sciences which he, and supposedly the REF, lionizes, the very same process of an individual evaluating their own work is in operation, and in both cases, they gain their efficacy through the secondary evaluation of the results by a committee of experts. The very same peer-review process which has failed so drastically in allowing Croft's article towards the stage of publication, is what allows personal observations to be verified. Here the distinction between “good and bad” music can be made and, however easy it is to claim that peer-review undermines the subjective nature of musical composition, we must at least buy into this idea, or we must abandon the idea of music in academia *at all*.

Despite his logical fallacies, Croft may have a point here, in that, if we follow Popper's logic, very few research questions are able to be falsified, thereby discounting them as scientific research from Popper's perspective.

While Croft is happy to perform *reductio ad absurdum* arguments in order to demonstrate the ridiculousness of the idea of the research question in historical musical contexts:

Imagine, if you will, a research funding application from Schoenberg. Research question: 'can I make music in which all pitch classes are played equally often?' Answer: yes! Or one from Grisey: 'can I make chords out of the pitches revealed by spectral analysis?' Answer: yes!
(Croft, 2015, p. 6)

OR

Suppose that someone had asked Beethoven what his research questions were in the Ninth Symphony. For a start, Beethoven would surely have been mystified, to say the least, by such a demand.
(Croft, 2015, p. 9),

he rarely turns the absurdity of the same questions upon the scientists whose research processes he sees as such an anathema to the process of composition. On page 9, he mentions Einstein and his Theory of Relativity, yet is it any more absurd to ask “When Einstein was coming up with his Theory of Relativity, what was his research question?”, or, similarly, what were Darwin, or Mendeleev's research questions? Even a briefest look at the historical emergence of these theories would show that this type of scientific research, which Croft paints as so different to compositional research, has as little to do with (supposedly) REF-inspired scientific positivism as musical composition does.

And it is here that Popper's description of the development of scientific knowledge becomes of no use to us any more, as it is still grounded in the idea of a methodological progression of science, in line with the ridiculously naïve positivist idea of science 'unearthing knowledge' that Croft betrays when he claims that “if Einstein had not existed, someone else would have come up with relativity” (Croft, 2015, p. 9), as if Relativity was an oil deposit of truth lurking just below the surface of our collective consciousness, just waiting for someone to drill in the right place. It is this type of naivety as to the way in which science is conducted that allows Croft to buy into the ideas about research he thinks are implicitly embedded into academic institutions and blinds him to the fact that the bureaucratization of research often misrepresents a type of scientific research which is grounded in as much chaos, creativity and uncertainty as composition. And so he is then able to mobilize this scientism to set it against musical composition, claiming that “If Beethoven had not existed, nobody would have written the Ninth Symphony”, an idea that, once again, doesn't stand up when actual “research” is brought against this supposition, here Jliat's investigation into the amount of possible CDs (<http://jliat.com/APCDS/>), shows that there is a finite amount of possible CDs:

All possible CDs is a thought experiment, which runs as follows:

An audio CD stores music by patterns of bits. Each audio sample is 16 Bits, and each second of sound has 44100 samples. So a second of sound is 16 multiplied by 44100 bits, or zeros and ones in the binary number system. Multiply this by two for stereo, and then by 60. And this gives the number of bits which make up one minute of sound. The original Audio CD standard allowed for a maximum recording time of 74 minutes, so multiply this number again by 74, And this will give us the maximum number of bits on a CD.

Multiply 16 by 44100, by 2 by 60 by 74 and we get 6265728000. That is the total number of bits that can be stored on a normal CD or CDR. If you convert this to bytes, you get around 740 megabytes, which is about right, 740 megabytes is the storage capacity of CDs and CDRs. Given that each bit in this totality can be different this gives us 2 to the power 6265728000 possible CDs, and no more, in this format. What we have done in effect is to create a virtual fixed universe of finite objects. The arithmetic is simple, if we only had 2 bits, then the possible number of combinations would be , 0 0, 0 1, 1 0, and 1 1. No more possible combinations using only two bits can be made...

...Most of these CDs would sound like noise, though this might not be so simple, with more thought, more properties emerge, for instance not only would Beethoven's Symphonies 1 through 9 be there but also Beethoven's 10th, 11th, 12th and 13th, any recordable “Beethoven” work that both exists or could possibly exist would be present, and that seems very strange.
(Jliat, n.d.)

Jliat shows that, in fact should Beethoven not exist, the *9th Symphony* would still exist, as part of the set of 2 to the power 6265728000 possible permutations of the 1s and 0s in the CD format. So Beethoven's *9th symphony* exists, whether or not Beethoven does, in the same way that the theory of Relativity exists inside the *Library Of Babel*-style finitudes of noise, that define the possible permutations of language.

This is not to say that Beethoven's *9th Symphony* exists without him, but that the conceptual framework (the paradigm), derived from computer science, that Jliat imparts, allows for it to be possible that Beethoven's symphony exists without him. The combinatoric and binary mode of

conceiving of sound allows the possibility of the symphony existing without Beethoven, in the same way that the paradigmatic mode of thinking imparted by Einstein allows the conception of things which would not exist otherwise. In other words, Croft is wrong on both counts: When we no longer take for granted the promises of Truth implicit in the positivist project, there is no guarantee that, should Einstein not exist, Relativity is discovered, as this is ultimately just another creative fiction that allows us to interact with the universe more effectively. Similarly, when a different creative paradigm is utilized, it allows us to conceive of a Beethoven symphony *zonder* Beethoven.

4. Musical composition has characteristics that make it unsuitable for operating within the bureaucratic implementation of research mentioned above.

One of Croft's main arguments about the incompatibility between composition and research is based on his opinion that they are manifestations of different forms of knowledge. To return again to a quotation used earlier in this essay:

“There is a fundamental distinction at work here: research *describes* the world; composition *adds something* to the world. Research, at least of the scientific kind to which musical composition is generally assimilated, aims to produce generalisable results; the significance of a piece of music lies, on the contrary, in its particularity. This is not to say that music has no cognitive dimension, or that it does not have a kind of truth – only that it does not have the kind of truth that is discovered by research.” (Croft, 2015, p. 8)

Here we see Croft's opinion that research and composition embody different types of knowledge which are incompatible with each other. Research (and here Croft is clearly making a statement about research as a generalised phenomenon, not one specifically tied to the institutional definition of it), “describes the world”, whereas composition “adds something to it”. This supposition is caught up in a general assumption that music generates knowledge in a way which is outside language, whereas research is bound to language. This idea is probably best represented by Croft's comparison between scientific research and musical composition:

There is a reason we prefer Darwin to Lamarck, and it isn't one of style. Einstein corrects and supersedes Newton; Schoenberg does not correct and supersede Bach. One can understand Gauss's flux theorem perfectly well having never read a word of Gauss; one cannot understand Debussy's music without ever hearing a note of it. (pg. 9)

Let's ignore the first sentence, as it presumes Occam's Razor doesn't exist, that there will not be a point at which Darwin and Lamarck both seem as redundant as the Plum-Pudding Model, and that the construction of a scientific hypothesis has nothing to do with style. Then let's gloss over the implicit scientism in the idea of “correction” and “superceding” which presumes we have absolute knowledge at the current time, whilst buying into the inviolate and static nature of the beauty of compositions by dead, white, male “geniuses” (a major problem with nearly all the musical examples in this paper)³. Instead, let us look at how Croft locates research solely in language, and music outside of it. Here Croft, attempts to justify the difference between “scientific research”, (which by this point, remember, has become completely synonymous with his perception of academia's bureaucratized version of it), and “music”. Croft clearly sees music as existing outside of language, which may be a valid point if one discounts text scores, conceptual music and quite a

³ It seems that both comparisons are based upon a certain utilitarian functionality, and one that, especially given the constant way in which physics has been consistently wrong, and had to correct itself over the years (see especially the ideas about the construction of the atom from the 1880s to the present day), it seems extremely smug to conclude that Einstein is better than Newton, and not equally wrong, as we never know the exact state of our knowledge until it has been surpassed.

lot of the experimental back-catalogue, yet justifies this idea using a concept philosophically vaguer than ghost piss: “understanding” - he talks of “understanding Gauss's flux theorem” and “understanding Debussy”, without ever indicating what exactly “understanding” is in either case. Yet, surely one could make the case that, in the same way that Croft says (presumably, as it is extremely unclear) we can receive Gauss's concept second or third hand and still “understand” it, couldn't we also claim that the second or third hand aesthetics of Impressionist imitators allow a comparable “understanding” of Debussy(whatever that might mean)?

Yet, only a few paragraphs later, Croft argues:

This is not to say that music cannot be discussed in language – of course it can, and there are vocabularies and ways of talking about music that do help us understand it – the languages of music aesthetics, criticism and analysis for instance – but these are far removed from the language of composition-as-research. On the one hand we have writing that attempts, however imperfectly, to articulate something about existing music, in all its complexity and ambiguity; on the other, we have a language aimed at shoehorning music – often music that does not yet exist – into an inappropriate category. Research *about* music that already exists is a real activity, composition-as-research is not. (Croft, 2015, p. 10)

Well, hold on a moment! I thought we were talking about how research is different from music, as one is linguistic, and one is not, yet here Croft seems to be arguing about the difference between language used to *describe* research or music, not how these two things might be embodied. But even in this argument, Croft seems unable to construct a coherent logical argument, building a false dichotomy that once again reveals his inherent scientism: i.e. that there is:

1. Writing that “attempts...to articulate something about existing music, in all its complexity and ambiguity”.
2. Writing that is “aimed at at shoehorning music – often music that does not exist yet – into an inappropriate category”.

But it's pretty clear that there are several other permutations possible here, that are discarded for point scoring cheaper than a Poundland basketball game:

1. Writing that attempts to articulate something about existing music in all its complexity and ambiguity.
2. Writing that attempts to shoehorn existing music into an inappropriate category.
3. Writing that attempts to shoehorn music that does not exist yet into an inappropriate category.
4. Writing that attempts to articulate something about music that does not exist yet in all its complexity and ambiguity.

One would only buy into the reductionist dualism that Croft proposes if one:

1. Followed all of the deeply flawed arguments as to the nature of research that Croft had put forward thus far.
2. Believed that there was a fundamental difference between “shoehorning” and “articulating” in an analytical context, or that these were meaningful criteria by which to distinguish between good and bad analysis. (I'd argue that pitch set analysis when applied to Second Viennese works, and Schenkerian analysis applied to classical works, are examples of “shoehorning”, as they are retrofitted after-the-fact, yet I also think they are extremely helpful in articulating aspects of these works that aren't accessible by any other way).
3. Believed that there was an underlying truth implicit in a musical work that can be “uncovered” through the correct analytical procedure, rather than conceiving of analysis as a way of imaginatively reconstructing the reality of a work, to reveal otherwise unseen facets.

It is clear that Croft does not believe in the idea that research can meaningfully articulate ideas about works that do not yet exist, an idea that also comes up when he claims that

It might be objected that the idea that composition is a kind of research, despite being strictly false, is still applicable in a looser, even metaphorical sense. But the value of an analogy or metaphor is surely in its utility – does it help our understanding, or provide a fruitful insight? So we have to ask: when a composer is working on a piece, is this work helped in any way by the thought that it is research, or the presentation of research 'findings'? While I find it hard to see this thought making much difference to any compositional decision, it's entirely possible that some composers might find it useful in some way. All kinds of things can be suggestive, after all – but that's precisely the point: equally suggestive might be the metaphor of composing as gardening, or alchemy, or fishing. The institutional imposition of the research metaphor is scarcely less perverse than would be the imposition of a gardening metaphor, and rather more destructive. (Croft, 2015, p. 10)

As has become typical, I will ignore the last sentence about how a research metaphor would be more destructive than another type of metaphor, as it is not backed up by any evidence, other than the roughest of suppositions, and most of the related arguments that occurred previously in the paper, I think I've more than thoroughly dismantled.

Here is also another spaghetti-like mess of confusion. Throughout the last three pages, Croft switches between using the term “composition-as-research” as meaning either a composition which embodies knowledge through its ability to answer a research question (an idea Croft thinks is impossible), and referring to a composition that is created through the use of research, but in which the research question is answered in writing outside of the composition. In this quotation, Croft uses another meaning, one that implies research is used as a “metaphor” - an inspiration for composition, which could potentially be swapped out for other (seemingly unimaginative) things such as “gardening, alchemy, or fishing”. It is here, that the real power of “research” as a metaphor becomes apparent, and the sad reality that some composers operating in academia don't see a metaphorical reframing of their composition as an opportunity, but as a burden, opting instead to “make up some nonsense to get the money and then forget the nonsense and write the piece you wanted to write in the first place” (Croft, 2015, p. 7).

5. Musical composition has characteristics that make it incompatible with the methodologies of research adopted by science.

Science is an essentially anarchic enterprise: theoretical anarchism is much more humanitarian and more likely to encourage progress than its law-and-order alternatives. (Feyerabend, 2010, p. 1)

Croft reflects an ideology based around an idealized version of “the Scientific Method”, in which a hypothesis is proposed, then tested, and conclusions drawn from the results. Croft alludes to this several times in his essay: his “research questions” are clearly hypotheses, and he rails against the idea that “the purpose of a musical composition is to *report findings*” (Croft, 2015, p. 7). However, in the sciences, the idea of a “Scientific Method” has long been contested.

Paul Feyerabend's book *Against Method* (1984 & 2010) dismantles the idea of a single scientific methodology.

In [*Against Method*] ... I inferred that famous episodes in science that are admired by scientists, philosophers and the common folk alike were not 'rational', they did not occur in a 'rational' manner, 'reason' was not the motivating force behind them, and they were not judged 'rationally'. (Feyerabend, 1982, p. 14)

This lack of rational judgement implicit in science, clearly goes against Popper's idea of

falsification, and the problems that Croft sees in the disconnect between scientific research and composition. Feyerabend sets out the premises of his attack upon the idea of a scientific method in the opening chapter of the book:

The idea of a method that contains firm, unchanging, and absolutely binding principles for conducting the business of science meets considerable difficulty when confronted with the results of historical research. We find, then, that there is not a single rule, however plausible, and however firmly grounded in epistemology, that is not violated at some time or other. It becomes evident that such violations are not accidental events, they are not results of insufficient knowledge or of inattention which might have been avoided. On the contrary, we see that they are necessary for progress. Indeed, one of the most striking features of recent discussions in the history and philosophy of science is the realization that events and developments, such as the invention of atomism in antiquity, the Copernican Revolution, the rise of modern atomism (kinetic theory; dispersion theory; stereochemistry; quantum theory), the gradual emergence of the wave theory of light, occurred only because some thinkers either *decided* not to be bound by certain 'obvious' methodological rules, or because they *unwittingly broke* them.

(Feyerabend, 2010 p. 7)

The ending of this paragraph clearly goes against Croft's supposition that:

“Compositional originality is of a different order to that found in research ... the most original music, whatever its debt to the past, has a kind of waywardness or intransigence that has more to do with *rejecting* unwanted influences, or hermetically pursuing something that nobody else is interested in. In this is it [sic] the opposite of research – in general a researcher cannot simply decide to ignore swathes of previous research because it suits her to do so, or cultivate obliviousness to the scholarly context in which she works. But for a composer, this might just be the right thing to do.”

Most importantly, Feyerabend has some extensive historical research to back up these claims, not the pseudo-philosophical guesswork and blind-supposition which peppers Croft's prose like glass in pasta.

Even disregarding the fact that the above quotation makes no sense, either historically, or even in regard to Croft's example on the previous page his article between Darwin and Lamarck, which involved one researcher (Darwin) ignoring the entire output of another contemporaneous researcher (Lamarck) in order to propose his own view of the world (you could also swap these two people out for Einstein and Newton, who are also mentioned), Feyerabend's book demolishes this idea, with an extended look at Gallileo's adoption of Copernicanism far too long and complex to recount here. Much scientific research *has* to reject unwanted influences, due to the multiple competing views in a particular field, what Feyerabend refers to as the “Problem of Incommensurability” (Feyerabend , 2010, pp. 213-221) In fact, this principle is the basis for the paradigm model that Thomas Kuhn famously proposed in *The Structure Of Scientific Revolutions* (Kuhn, 1996).

It seems we have a situation in which the academic, bureaucratized view of the way in which research is conducted, and consequentially, John Croft's view of it, is based upon a presumption about scientific research and its following of a fixed methodology which doesn't happen in practice.

This brings us to some questions about why research in the arts tries to model research in the sciences, and the answer to this question will define what possible solutions there might be to closing this gap between theory and practice. Given the creeping neoliberal ideology that Croft sees infecting academia, it seems obvious to conclude that, if one were to believe in the efficacy of the scientific method, it allows not only a quantitative metric in the form of falsifiability, but it also offers up the possibility of a method which offers replicable creativity. In the same way that following the scientific method allows the falsifiability of a hypothesis each time, perhaps following the same methodology in the arts will create innovation, creativity and good quality music each time?

Now, given that the scientific method is a myth, and not the actual way in which science is conducted, it seems that the arts have no need for following it in the creation of research, instead perhaps the adoption of Feyerabend's idea of *Epistemological Anarchism* can provide us with a new way of generating knowledge.

Epistemological Anarchism is a view of research which argues against the view of the scientific method as a set of universally binding methodological rules, and instead proposes an approach premised upon the idea that the best methodology is to avoid developing a single position (Oberheim, 2006, p. 220).

The idea of *Epistemological Anarchism* arises directly out of the observation that the progress of science and the creation of knowledge is not a “rational” endeavour and does not proceed by a singular methodology. As Feyerabend famously says, if a rationalist were looking for a single, overarching, and unanimously adhered-to methodology that led scientific practice, they would find only one: “anything goes” (Feyerabend, 2010, p. 7).

It is notable that significant extemporizations of Feyerabend's idea of *Epistemological Anarchism* (in Chapter 16 of *Against Method*) were excised from the second edition of the text onwards (1988), as well as the removal of the subtitle “Outlines of an anarchistic* theory of knowledge” (Hacking, I. in Feyerabend, 2010, p. xiii). Perhaps this is due to his wish that “having read [*Against Method*] the reader will remember me as a flippant Dadaist and *not* as a serious anarchist.” (Feyerabend, 2010, p. xiv). As this excised description provides a primary definition of Epistemological Anarchism and is extant from all three subsequent editions of the work, I quote it here almost in its entirety:

Epistemological anarchism differs both from scepticism and from political (religious) anarchism. While the sceptic either regards every view as equally good, or as equally bad, or desists from making such judgements altogether, the epistemological anarchist has no compunction to defend the most trite, or the most outrageous statement. While the political or the religious anarchist wants to remove a certain form of life, the epistemological anarchist may want to defend it, for he has no everlasting loyalty to, and no everlasting aversion against, any institution or any ideology. Like the Dadaist, whom he resembles much more than he resembles the political anarchist, he 'not only has no programme, [he is] against all programmes'¹⁸ though he will on occasions be the most vociferous defender of the *status quo*, or of his opponents: 'to be a true Dadaist, one must also be an anti-Dadaist'. His aims remain stable, or change as a result of argument, or of boredom, or of a conversion experience, or to impress a mistress, and so on. Given some aim, he may try to approach it with the help of organized groups, or alone; he may use reason, emotion, ridicule, an 'attitude of serious concern' and whatever other means have been invented by humans to get the better of their fellow men. His favourite pastime is to confuse rationalists by inventing compelling reasons for unreasonable doctrines. There is no view, however, 'absurd' or 'immoral', he refuses to consider or to act upon, and no method is regarded as indispensable. The one thing he opposes positively and absolutely are universal standards, universal laws, universal ideas such as 'Truth', 'Reason', 'Justice', 'Love' and the behaviour they bring along, though he does not deny that it is often good policy to act as if such laws (such standards, such ideas) existed, and as if he believed in them.

(Feyerabend, 1984)

It seems that, although Feyerabend proposed this idea in 1975, there has been little effort to put it into practice. Even though Feyerabend's descriptions of the creation of facts are as pertinent as ever, and now find themselves backed up by sociological studies into the practice of science (e.g. Bruno Latour and Steve Woolgar's *Laboratory Life* (1986)), his work seems to have been taken primarily as either descriptive de-construction or nihilistic critique of scientific positivism (Feyerabend, 1982). To my knowledge, organizations and institutions which practice the scientific creation of knowledge have not seen any attempts to systematically implement Feyerabend's ideas, neither have the arts, despite their fetishization of science at an aesthetic level and their embeddedness in scientific frameworks of validation at an institutional level.

Yet, here we have a framework for the creation of knowledge, and perhaps the solution out of

Croft's nihilistic, free-market conclusion (“make up some nonsense to get the money”, “guard against actually *believing* in our research narratives”) is to implement Feyerabend's ideas about the processes of constructing knowledge which are based upon his historical research. Perhaps it is possible to turn it into composition-as-research by drawing parallels between his *Epistemological Anarchism* and John Cage's professed anarchism. I propose that Cage's work and writing offers some technical and methodological foundations for the “composition” of an anarchistic creation of knowledge, in line with Feyerabend's thinking. However, whilst Cage clearly holds anarchist political views, espoused most clearly in *Anarchy*, a book-length lecture of twenty mesostic poems based on the writings of anarchist thinkers (Cage, 2001), Feyerabend is not an anarchist and wrote the book *Against Method* “...in the conviction that *anarchism*, while not the most attractive *political* philosophy, is certainly excellent medicine for *epistemology*, and for the *philosophy of science*.” (Feyerabend, 2010, p. 1).

Some Risky Propositions

John Cage once ran a class at University of California at Davis

...which had as its hypothesis that we didn't know what we were going to study and that we wouldn't divide ourselves into students and non-students: all of us, including myself were students...We subjected the university library to chance operations and in the group – there were about a hundred of us – each person had two chance operations to determine the works he would have to read. Next, still using chance operations, we divided up into flexible groups. Each group had to meet and exchange information on what had been read. It was a technique fulfilling [Marshall] McLuhan's wish. He considers that our work must henceforth consist in brushing information against information. (Cage, 1976,p. 89).

Cage was a composer for whom the difference between life and art was much less divided than Croft seems to think is necessary. Instead of the idea of composition being limited to the pen-and-paper activity, it grows to encompass all activities, including research. Here composition *is* research – knowledge is emanating from nearly identical methodologies to that through which sound is composed. It is, as Peter Ablinger might refer to it, a composition beyond music.

Yet, surely this will only lead to chaos? Not the generation of a “*coherent*” type of knowledge? Well, it is here we must throw off the shackles of scientific positivism.

As we have seen, throughout his essay, although at first criticizing it, Croft fully buys into the same scientific positivism that he presumes bureaucratized, academic research frameworks use as their benchmark. “Research”, in Croft's definition, is inseparable from the discursive, and the written, and arrived at through the utilization of the scientific method. He implicitly argues, like Comte or Saint-Simon before him, that “the methodology of science is the only valid path to reliable knowledge” (Rohman, 2001, p. 308). It is this mentality that allows him to make otherwise logically unjustifiable claims such as “Einstein corrects and supersedes Newton; Schoenberg does not correct and supersede Bach” or that “There is a reason we prefer Darwin to Lamarck, and it isn't one of style.” (Croft, 2015, p. 9)

Never does Croft seek to questions the limitations of the two categories with which he is concerned, nor investigate how each is weighted in institutional or aesthetic bias.

It's amazing how easy it is to claim that something is not something else:

A jaffa cake is not a biscuit.

Wow! Maybe I can get published in *Tempo*, now!

Yet, underneath this supposition is a large structure of power that controls how we use language, and how things are defined. In the case of the jaffa cake, the definition now commonly held is related to a 1991 legal case, in which Her Majesty's Revenue & Customs brought a case against McVitie's, the manufacturer, in relation to Value Added Tax classifications, that taxed chocolate covered biscuits differently to cakes, and argued that Jaffa Cakes were biscuits and not cakes and should be taxed. McVitie's won the case, yet the definition of both cake and biscuit are defined through both the UK government and, since 1991, the multimillion pound McVitie's corporation (Wallop, 2012). I bring this up mainly to make the point that, similarly with composition and research, in choosing to unquestioningly adopt the classifications of composition and research we believe (however wrongly) are handed down from institutions, we invest in, and implicitly condone that power structure – especially if we then refuse to confront it by “retreat[ing] to our garrets” (Croft, 2015, p. 11).

Instead of Croft's idea of research as an unwanted millstone, perhaps it could be seen as an opportunity for the extension of the self into areas that would otherwise stay closed.

A fantastic example of how research can be an opportunity for an extension of self and the creation of work unimaginable without it, is Jennifer Walshe's ongoing project on the “Irish Avant-Garde”, which attempts a “communal thought experiment, a revisionist exercise in “what if?”, a huge effort by many people to create an alternative history of avant-garde music in Ireland, to write our ancestors into being and shape their stories with care. We played fast and loose with history and the truth and we like to think Flann O’Brien would have approved.” (Aisteach, 2014). Walshe's work consists in creating fictional histories, research as a way of building constraints for the creation of music that would not exist otherwise – what the philosopher Frederick Droppe refers to as a “Speculative Historiography” (Droppe, 2013, p. 97):

In poststructuralism, the idea of the singular, objective Truth is submitted to morphological and pluralistic bastardisations into “truth”, “Truth” and multiple truths. A creative and speculative historiography is the phantom limb of this formulation: multiple untruths. Great manifestos thrive not on their objective Truth, but on their power to delusionally spur others to creative actions, fired by the fervour of the true believer. *Speculative Historiography* replaces this mirage of certainty with a mixture of truths and blatant untruths that make possible a creativity unthinkable without them. (Droppe, 2013, p. 97)

Perhaps artistic research can push towards a model of research I refer to as “Research as Leyden Jar”, in reference to the Eighteenth Century electrical apparatus. As Thomas Kuhn discusses in his book *The Structure Of Scientific Revolutions*:

Those electricians who thought electricity a fluid and therefore gave particular emphasis to conduction provide an excellent case in point. Led by this belief, which could scarcely cope with the known multiplicity of attractive and repulsive effects, several of them conceived the idea of bottling the electrical fluid. The immediate fruit of their efforts was the Leyden jar, a device which might never have been discovered by a man exploring nature casually or at random, but which was in fact independently developed by at least two investigators in the early 1740's. Almost from the start of his electrical researches [Benjamin] Franklin was particularly concerned to explain that strange, and in the event, particularly revealing piece of special apparatus. His success in doing so provided the most effective of the arguments that made his theory a paradigm... (Kuhn, 1996, p. 17)

The modern conception of electricity is based upon research that could only have been conducted using apparatus that could only be constructed if you have a false conception of the nature of electricity. Perhaps what this shows is that the “Truth”, or otherwise, of a particular paradigm can be seen as secondary to its utility to generate unique ways of thinking that would be unthinkable without it.

Perhaps, also following Kuhn, we can start to approach composition, and art in general, in a way that allows its recategorization as an “Extraordinary Science”, rather than “Normal Science”:

In this essay 'normal science' means research firmly based upon one or more past scientific achievements, achievements that some particular scientific community acknowledges for a time as supplying the foundation for its further practice. (Kuhn, 1996, p. 10)

“Closely examined, whether historically or in the contemporary laboratory, that enterprise seems an attempt to force nature into the preformed and relatively inflexible box that the paradigm supplies. No part of the aim of normal science is to call forth new sorts of phenomena; indeed those that will not fit the box are often not seen at all. Nor do scientists normally aim to invent new theories, and they are often intolerant of those invented by others. Instead normal-scientific research is directed to the articulation of those phenomena and theories that the paradigm already supplies.” (Kuhn, 1996, p. 24)

In opposition to this, “Extraordinary Science” is that which involves the creation of new theories and the creation of a new paradigm “when ... an anomaly comes to seem more than just another puzzle of normal science, the transition to crisis and to extraordinary science has begun.” (Kuhn, 1996, p. 82)

Much contemporary practice-led/as-research is a type of “normal science”, the “mopping-up” work of existing conceptual and artistic paradigms. My approach is to push for a reconsideration of the artistic and conceptual paradigm in each work, attempting an art that has the characteristics of extraordinary science.

Composition *can* be research, if we choose it to be, if we decide to lay aside the definitions handed down to us by large institutions and false prophets, whose papers act as a clarion call to stupidity, and to more vigorously question the historical, financial and aesthetic reasons for them. If artistic research should model itself on scientific research, then it should be modelled on the *actual* process of scientific discovery, not on the positivist or scientific idealizations of bureaucrats.

Research shouldn't be an excuse to shirk risk, to simply “make up some nonsense to get the money, and then forget the nonsense and write the piece you wanted to write in the first place” (p. 7), but an excuse to reframe your thinking and extend aesthetic possibilities to the point at which they become a liability, for that money is exactly the incentivisation that will lead to the creation of sub-prime music.

If anything, *John Croft's article* is not research, as it barely holds together on a conceptual, logical, historical or categorical level, it doesn't put forward a risky proposition, but instead engages with the laziest logical constructions and aesthetic and intellectual conservatisms that conclude with a call for an embrace of the neoliberalism he, apparently, disdains through investing in the humdrum money-grabbing of the modern university. Categories are there to be questioned, not to advance an agenda that will leave the world intellectually and aesthetically poorer, but to reconfigure the system of academic institutions so that good work is almost inevitable.

In the same way that scientific research treads that fine line between beauty, imagination and utility, composition can also do the same.

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