

# Creative genius in classical music

Dean Keith Simonton examines biographical influences on composition and eminence

This article is about creativity in music. And not just any variety – it's about the rarer kind of musical creativity that has withstood the test of time. By that I mean the creation of compositions that people are still listening to – and are profoundly moved by – a century or more after the piece was first written. Although Beethoven's Fifth Symphony was conceived over two hundred years ago, it is still performed and recorded today. Fragments of the symphony, especially the dee-dee-dee-dah motif that opens the first movement, have even encroached on popular culture. The Fifth can be heard in cinema soundtracks, jazz improvisations, or comedy spoofs. So what does it take to create an immortal masterpiece?

An all too obvious answer is: You must be a musical genius! These classic works are presumably the upshot of flashes of insight or raptures of inspiration that only true geniuses experience. But doesn't this just beg the question? To say that geniuses create masterworks tells us nothing unless we know something about the origins of genius. To claim that it takes a Beethoven to write a Fifth then requires that we learn what it takes to become Beethoven.

Fortunately, this question has been addressed by various psychologists engaged in scientific research. By 'scientific' I mean investigations that (a) collect reasonably sized samples of

composers rather than engage in single-case studies, (b) quantify the variables relevant to explicitly stated substantive hypotheses, and (c) subject those variables to statistical analyses that precisely test those hypotheses. Let me outline a brief history of these scientific inquiries concerning creative genius in classical music.

## Last half of the 19th century

The first psychologist to grapple with this problem was none other than the notable scientist Francis Galton in his 1869 classic *Hereditary Genius*. As the title suggests, Galton was trying to prove that genius was inherited – born, not made.

Therefore, eminence in any given domain should run in family lines. To make his case, he devoted a

chapter to presenting the blood relationships for geniuses in each major area of achievement. One such chapter was assigned to classical composers. For example, Galton pointed out that Johann Sebastian Bach not only hailed from a distinguished pedigree of musicians, but also that he fathered four notable composers, namely, Wilhelm Friedemann Bach, Carl Philipp Emanuel Bach, Johann Christoph Friedrich Bach, and Johann

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Christian Bach – the so-called 'London' or 'English' Bach. Yet Galton also had to admit the intrusion of exceptions. The best pedigree he could devise for Ludwig van Beethoven was to repeat a reprehensible rumour that this compositional genius was the illegitimate son of King Frederick the Great of Prussia, an amateur flautist and composer!

Galton's study has often been criticised for neglecting the role of environmental influences. In fact, the first major criticism was published only a few years later by Candolle (1873) – a scientist who, ironically, Galton had explicitly identified as coming from a distinguished pedigree! Although this issue is extremely complex, it is evident that we cannot rule out the possibility that the development of musical genius reflects nurture just as much as nature. After all, Mozart was directly trained by his father, himself a musician of note. And J.S. Bach taught his own sons. Even Beethoven had a musician father who raised him to become another Mozart.

## First half of the 20th century

Although Galton (1869) attributed genius to intelligence, he couldn't actually measure the intelligence of his sampled geniuses (most of whom were deceased anyway). However, almost a half-century later one of Galton's admirers, Lewis M. Terman, was able to adapt the Binet–Simon intelligence measure into the Stanford–Binet IQ Test. More remarkably, Terman (1917) showed how IQ scores could be estimated from biographical information about a person's intellectual development. Terman specifically estimated that Galton's own IQ must have been close to 200! Almost a decade later one of Terman's doctoral students, Catharine Cox (1926), applied the same strategy to 301 eminent creators and leaders of history. Using these IQ estimates she was able to find a positive correlation between IQ and the eminence the individual attained in his or her field.

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Although Terman (1940) later said that 'IQ estimates of this kind are not to be taken too literally' (p.295), subsequent researchers, using more sophisticated methods and statistical controls, have validated both these scores and their correlation with eminence (e.g., Simonton, 2006). The results obtained are comparable to those obtained by the Stanford-Binet and other standard intelligence tests.

Accordingly, it is worthwhile to examine the 11 classical composers scored in Cox's (1926) investigation. Some were very bright. Thus, Wolfgang Amadeus Mozart's IQ was estimated to be somewhere between 150 and 155 – clearly at a genius level. Others were not nearly so sharp. Among the unlucky ones was Christoph Willibald Gluck, with the estimate ranging between 110 and 115, or about the same level as an average college student. Beethoven, by comparison, fell in the middle of the pack, with a score between 135 and 140, or smart enough to join Mensa. Still, I calculated the correlation between estimated IQ and eminence for just these 11 composers to be .54. Here the IQ estimate is Cox's score for ages 0 to 17 corrected for data reliability and the eminence measure comes from James McKeen Cattell's (1903) estimate based on the amount of space the geniuses received in several standard reference works.

Although the correspondence between IQ and eminence is not perfect, Cox (1926) would not expect it to be so. She also assessed personality traits and then used these assessments to show that character was as crucial as intellect in the emergence of high achievement. Exceptional composers, in particular, exhibited a 'degree of aesthetic feeling', 'desire to excel', 'belief in their own powers', 'originality of ideas', 'working toward a distant goal', 'persistence in the face of obstacles' and 'quiet determination'

(p.202). Motivational factors appeared to be especially critical. As she observed of geniuses in general, 'high but not the highest intelligence, combined with the greatest degree of persistence, will achieve greater eminence than the highest degree of intelligence with somewhat less persistence' (p.187).

So Beethoven may not have had the intelligence of Mozart, but he had more than enough persistence to compensate.

### Last half of the 20th century

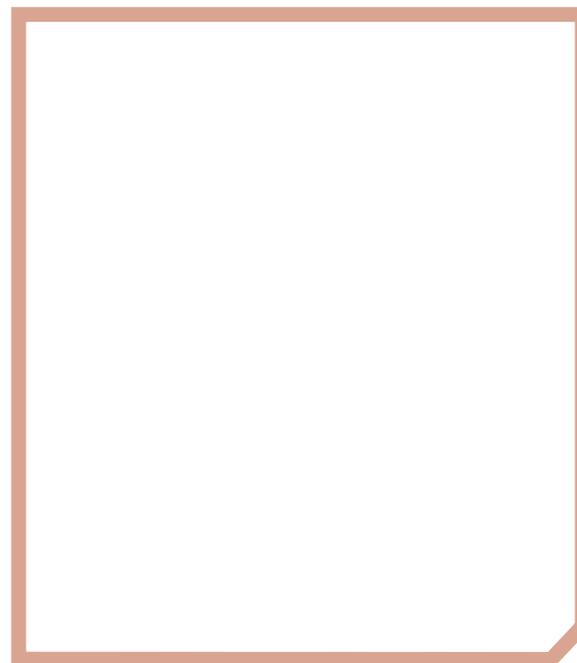
Neither Galton nor Cox was distinctively interested in classical composers. The latter were simply thrown in a big batch

exclusive look at such composers to understand fully what it takes to become an enduring genius.

Happily, because some psychologists are also aficionados of classical music, a number of articles have concentrated on just this group of geniuses. Better yet, these studies commonly use very large samples, sometimes as large as 696 (Simonton, 1977b). Such samples have two assets. First, they allow use of more advanced multivariate methods, which provide more control for spurious associations and measurement errors. Second, they permit the inclusion of many more obscure composers. This expanded variation in achievement and eminence allows us to discern what separates the wheat from the chaff. Taken together, these publications lead to the following general profile of the musical genius in classical music.

First, he was most frequently the firstborn child in the family (Schubert et al., 1977). He was also more likely to be born near the centre of musical activity for his day, where he could receive the best training and be exposed to the best role models (Simonton, 1977b). He began his apprenticeship at a very early age, but also progressed through training much more rapidly than normal (Simonton, 1991a). Mozart started young and ended young.

Second, after launching his career, he tended to be highly prolific, producing a large number of compositions, even though not all of them are masterworks (Simonton, 1977a). So prolific are the great composers that a mere handful of them account for most of the works that make up the classical repertoire. Of the approximately 250



Galton tried to prove that musical genius was inherited

of geniuses along with politicians, generals, philosophers, writers and visual artists. Yet it might demand a more

biographical time-series analysis of 10 classical composers. <i>Journal of Personality and Social Psychology</i> , 35, 791–804.	A multivariate computer-content analysis. <i>Journal of Personality</i> , 48, 206–219.	and Aging, 4, 42–47.	Simonton, D.K. (1994). Computer content analysis of melodic structure: Classical composers and their compositions. <i>Psychology of Music</i> , 22, 31–43.
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## looking back

composers who have contributed at least one work of lasting fame, a mere 16 are responsible for about half of all works performed, and just three – Bach, Mozart, and Beethoven – contributed nearly 18 per cent (Moles, 1958/1968).

Third, the composer's first masterpiece emerged from his pen at a very young age, almost often in his late 20s, and his last masterwork most often appeared toward the end of his life (Simonton, 1991a). Sometimes he even produced what could be considered a bona fide swan song just before he died (Simonton, 1989). Still, his single most acclaimed composition tended to emerge when he was in his late 30s or early 40s (Simonton, 1991a). The only exceptions to this rule are so-called 'one-hit wonders' who tend to peak at unusually young ages (Kozbelt, 2008).

Fourth, once the composer made a name for himself with his greatest works, his standing with posterity tended to be secure, with only minor ups and downs (Farnsworth, 1969; Simonton, 1991b). The stability of his posthumous reputation reflects the lasting success of the compositions that he contributed to the classical repertoire. In fact, a composition's popularity in the current repertoire is strongly related to how the audiences received the work during its debut performance (Simonton, 1998). We have even made progress in identifying the aesthetic traits that convert a composition into a masterwork (Simonton, 1994, 1995). For instance, durable compositions strike a delicate balance between originality and intelligibility (Simonton, 1980, 1987). Banal works too easily produce boredom whereas difficult works too easily provoke anxiety if not disgust (Simonton, 2001). Long ago Berlyne (1971) named this inverted-U relationship the 'Wundt curve', after an idea promoted by the very founder of scientific psychology.

The sensitive reader will have noticed



**A composition's current popularity is strongly related to how the audience received the work during its debut performance**

that I used male pronouns throughout. Classical music is dominated by men to a degree more extreme than seen in almost any other area of achievement (Murray, 2003). Yet there have been great women composers: I personally count Hildegard of Bingen as my absolute favourite musical genius of the European Middle Ages. Furthermore, there can be no doubt that women's representation among classical composers dramatically increased in the 20th century. I would be willing to venture that the sketch just given probably applies to female composers as well as to male composers.

### Postscript

The scientific research just reviewed has revealed a great deal about creative genius in classical music. Beethoven and other outstanding composers are by no means inexplicable phenomena. Not only do eminent composers display a recurrent pattern of biographical influences, but this profile follows very closely what is observed in geniuses in general, whether in the arts or the sciences (Simonton, in press). In a sense, geniuses are just

geniuses, all displaying parallel regularities. This congruence should be always remembered when critics claim that classical music is dead as a form of creative expression (e.g. Martindale, 2009; Murray, 2003). It may be that classical composers have moved on to other venues, but still composing music of genius. For example, research has provided empirical evidence that many film composers are actually classical composers operating incognito (Simonton, 2007). The movie theatre has just been substituted for the concert hall and opera house. If so, this shift has an important implication: that the history of scientific inquiries on this subject is far from over. History is still being made. I hope that some time in the future another psychologist will update this essay by adding sections on 'First half of the 21st century' and maybe even the 'Last half of the 21st century'.

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