

# Creativity and life cycles of artists\*

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**Abstract** Age curves, which relate age to creativity or exceptional achievements, seem to take two forms: some artists bloom early (Picasso), others later in life (Cézanne). We argue that this objective fact is not related to their mode of creation according to which some artists proceed by drawings made prior to the painting's execution, while others are more likely to imitate and achieve this through color and the process of painting itself.

**Keywords** Age curves · *disegno* and *colore* · Modes of artistic creation

**JEL numbers:** Z10, Z11

## 1. Introduction

In a series of papers and in a book, Galenson (1999, 2000, 2001, 2002a, b, 2003), Galenson and Jensen (2001) and Galenson and Weinberg (2000) study the careers and life cycles of impressionist and modern French and American painters and consistently find that some artists bloom early, while others produce their best works later during their life cycle. The two types of careers are related to innovative behavior. In Galenson and Weinberg (2001), the approach is extended to Old Masters.

Conceptual artists, who bloom early “communicate specific ideas or emotions. Their goals for a particular work can usually be stated precisely, before its production . . . [and] consequently [they] often make detailed preparatory sketches or plans . . . [T]hey think of it as primarily making a preconceived image, and [the execution is] often simply a process of transferring an image they have already created from one surface to another” (Galenson, 2003, p. 5).

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Experimental artists, on the other hand, bloom late. They are “motivated by aesthetic criteria [and aim] at presenting visual perceptions. Their goals are imprecise, so their procedure is tentative and incremental. [They] rarely feel they have succeeded, and their careers are consequently often dominated by the pursuit of a single objective . . . They rarely make specific preparatory sketches or plans for a painting” (Galenson, 2003, p. 4).

The conceptual artist plans before working, he then works, and stops when the work is “finished.” The experimental artist does only seldom make “detailed plans or sketches before beginning a particular painting . . . [and] once a painting is begun, the working stage is open-ended . . . The painter stops when he is satisfied with the work’s appearance, or abandons it as a failed effort” (Galenson and Jensen, 2001, pp. 9–10). *Non finito* is thus considered a characteristic of experimental artists.

The classification of a painter into either group is essentially based on what she or critics and art historians who sometimes knew her well have written about her mode of creation, and is, according to Galenson, perfectly summarized by two archetype artists: Picasso, the conceptual painter, who claimed “I don’t seek, I find,” and Cézanne, the experimenter for whom the goal was “[to] seek in painting.”

“Signs” for early and late blooming are obtained by looking at (i) age at first one-man exhibitions, (ii) age at which paintings included in retrospective exhibitions or illustrated in American, English, and French art history textbooks were produced, or (iii) age at which the most expensive works were painted. Average ages of success (such as first solo exhibition or best works) are compared and used to show that conceptual painters are more precocious than their experimental colleagues.

We first relate Galenson et al.’s classification to the much older debate between drawing and color, and discuss briefly the process of creation in the arts (Section 2). In Section 3, we show that interpreting texts written by art critics and by artists themselves in order to classify them as conceptual or experimental is often difficult and misleading. We also show that *non finito* is not always related to experimentalism as suggested by Galenson. In Section 4, we use the same technique as Galenson and show that his conclusions on conceptualism and experimentalism leading to early and late blooming do not seem to hold for Old Masters. In Section 5, we turn to modern American painters, one of the main concerns in Galenson’s work, and argue that the age at which they reached their peak could also be attributed to factors other than mode of creation. Every artist happens to adopt both modes of behavior and moves from one to the other over time, if not in the same artwork.<sup>1</sup> Dichotomous classifications hardly work. This is briefly considered in the concluding section.

## 2. The process of creation

The dichotomy between conceptual and experimental creation is very reminiscent of a much older debate concerned with creation. It evokes the opposition in aesthetics between reason and sensitivity (senses), that started with Plato and crystallized around the conflict between *colore* and *disegno* in the time of Vasari (1578). It refers to the fundamental and very old, “debate over whether the value of a painting lay in the idea originating in the artist’s mind (the invention), which was explored through drawings made prior to the painting’s execution, or in the more lifelike imitation of nature, achieved through color and the process of painting itself” (Pace, 1996, pp. 6–9).<sup>2</sup>

Without entering too much into the history of aesthetics, it may nevertheless be worth describing the continuity that exists between this classical view and Galenson’s, and to highlight the dogmatic content of this dualism.

Plato's position reduces artistic creation to imitation (*mimesis*), that is no more than the paltry imitation (copy) of nature, itself a copy of the idea. During the 17th century, Boileau, Félibien and many others believed that the artist "designs what is in his mind," and that "those who are gifted must first conceive what they want to do, represent it in their imagination, and finally, express themselves" (Félibien, 1681, p. 80).

This internalized way of thinking gave birth to the notion of conception, which has always been present in aesthetic theory: the precedence and the superiority of reason over sensitivity and realization. The dispute between the liberal and the mechanical arts perpetuated this Manichaeic way of thinking. The social, political and economic conditions faced by artists changed dramatically during the Renaissance, and the opposition between liberal and mechanical arts disappeared, though the mathematical rigor that prevailed during the Renaissance stressed the superiority of the mind and of reason. Drawing (*disegno*) synonymous and homonymous with design or conception, both in Italian and in French, is more valuable. Vasari celebrates the superiority of Florentine artists and claims that "if there is some order in nature, there is also order in art; if nature is the mother of all arts, *disegno* is their father."<sup>3</sup> Venetian artists could hardly compete. They were hiding, with the charm of color, their clumsiness in drawing.<sup>4</sup>

After Italy, the debate spread to France in the late 17th century (marked by Cartesianism and the motto "unify, normalize and structure"), where the Académie Royale de la Peinture et de la Sculpture created in 1648 by the Royal Court, considered drawing to be the most important element in painting. This led to the doctrine which came to be called Poussinism. Poussin thought that "colors in painting were blandishments to lure the eyes," and Le Brun, Louis XIV's official painter "associate[d] true value in art with drawing, which exemplifies 'reason', with color being of lower account because it is concerned with the senses."<sup>5</sup> These views, shared by Félibien, the Academy's appointed art historian,<sup>6</sup> are disputed by the French art theorist and critic de Piles who, in his *Dialogue sur le coloris* published in 1673,<sup>7</sup> blames Poussin for neglecting color. He advocates the importance of color, and goes as far as writing that "there is no painting if color does not go with drawing," or that "color is the soul of painting." His admiration goes to Rubens, Van Dijck, Corregio and Titian,<sup>8</sup> and he is the initiator of Rubenism, in opposition to Poussinism. The debate was brought back to life during the 19th century with Ingres (who believed in drawing) and Delacroix as protagonists.<sup>9</sup>

This controversy between reason and the senses contains *ipso facto* normative arguments: the reason (*disegno*, invention, "it is the idea that is the contribution"<sup>10</sup>) dominates and precedes the senses (*colore*, "[experimental] artists are perfectionists, and are typically plagued by frustration at their inability to achieve their goals"<sup>11</sup>).

Similar arguments came up in music. Shortly after Gluck tried to reform the opera, Antonio Salieri composed (in 1786) *Prima la musica et poi le parole*, on a libretto by Giovanni Battista Cotta. A music director and a poet argue about the preparation of an opera. The director insists on the urgency to finish the work, but the poet pretends that he needs more time. The director explains that the music is already written, that the poet only needs to write some verses to fit the music, and that, anyway, the music expresses the meaning of the words.<sup>12</sup>

### 3. Misusing hermeneutics

To classify artists, Galenson (2001, 2003) uses what artists themselves or art critics write about their mode of creation. To illustrate the danger of this approach, we give a few examples concerning celebrated artists about whom a large amount of literature exists, and who are classified by Galenson.

In his *Notes d'un peintre*, Matisse claims that “for me, everything is concerned with conception. It is therefore necessary to have a precise vision of the whole, before starting.” This is from page 124, and one would therefore classify Matisse as conceptual. But three pages later, he writes that “I work without theory . . . pressed by an idea that I perceive and that develops only as the work on the painting proceeds,”<sup>13</sup> which leads one to think of him as being experimental.

Even Picasso’s “I don’t seek, I find,” quoted by Galenson as describing the prototypical creative behavior of a conceptual artist is followed by sentences that are ignored by Galenson: “When one starts on a painting, one needs to have an idea, but only a very vague one” (Kahnweiler, 1963, p. 173), and “What one does is what counts and not what one had the intention of doing” (Picasso’s words, cited by Baxandall, 1985, p. 69).

A further example is Mondriaan. According to Holty (1957, p. 31), Mondriaan was asked whether he was not losing good pictures by revising the same canvases. He replied “I don’t want pictures, I just want to find things out,” which leads Galenson (2003, p. 13) to classify him as being experimental. A paper by Guiraud (1986) leads to the opposite qualification. Guiraud, a mathematician, shows that the choices of colors and forms in Mondriaan’s paintings are all but random. They are derived from very thoughtful mathematical modeling, which, if this interpretation is sound, must have taken place before the work was started. Therefore he should be considered a conceptual artist.

According to Junod (1976, p. 132), such contradictions are typical of artists who had no theoretical training and who “borrow from here and there some commonplace arguments.” Hermeneutics is, therefore, an exercise that is often misleading. The examples of Michelangelo (whom Galenson and Jensen, 2001 consider as an experimental artist, while most art historians agree that he was the master of *disegno*) and that of Picasso (considered as a conceptual artist by Galenson) will illustrate that neither intentions nor deeds in an artist’s oeuvre are easy to interpret.

### 3.1. Is Michelangelo an experimental artist?

Though they recognize that sculpture, fresco painting and architecture need planning, including preparatory drawings, Galenson and Jensen (2001, pp. 14–15) suggest that “it is a measure of Michelangelo’s artistry that he managed to impose on each of these media the sensibility of an experimental artist.” Vasari considers him as the draughtsman *par excellence*. In his Michelangelo *Dictionary of Art’s* entry, Hughes (1996, p. 431) considers him “the supreme representative of the Florentine valuation of *disegno*.” Panofsky (1989, p. 145) adds that<sup>14</sup>

“Michelangelo admitted as evident that a work does not consist only in representing an externally given being, but rather in realizing an interior idea. But he did not think that the material realization has necessarily to give way to the interior idea.”

Galenson and Jensen (2001, p. 16) suggest that Michelangelo’s “inability to consider his works finished” is also linked to his experimental nature. Much has been written on this issue, starting with Vasari, who points out that dissatisfaction with his work led the artist to abandon it. Hughes (1996, p. 440) is of the opinion that

“it is far more likely that much of Michelangelo’s sculptured oeuvre was abandoned because he committed himself simultaneously to too many projects. Evidence for this comes from his own criticism of the rough surfaces of Donatello’s sculpture . . . Whenever possible, he crisply articulated surface detail and gave his statuary a final polish

... Of the apparent ‘unfinished’ elements in his completed sculptures, most are textural differentiation. The remainder are parts that were not meant to be seen at close quarters or seen at all.”

In his letters, Michelangelo also cites external circumstances, changes of plans that were imposed on him, interferences by his patrons, and interruptions that prevented him from working.<sup>15</sup> It therefore seems that there were multiple causes for which Michelangelo left many works (especially sculptures, but also some paintings) unfinished. Claiming that this was only due to his dissatisfaction is clearly far from being obvious.

This is also the opinion of Chastel (2000, pp. 33–45) who considers Michelangelo’s and Leonardo’s *non finito*, which appeared in Florence as a form of art, and not as a sign of the tragic feeling of “impotence.”

### 3.2. Is Picasso a conceptual artist?

As we already mentioned, Galenson considers Picasso as the archetypal conceptual artist: “I do not seek, I find.” Gombrich (1959, p. 301) interprets these words in a very different spirit:

“When Picasso says, ‘I do not seek, I find’, he means, I submit, that he has come to take as a matter of course that creation itself is exploration. He does not plan, he watches the weirdest beings rise under his hands and assume a life of their own. The films which show him at work, and his more playful creations, such as his *papiers déchirés*, show that here is a man who has succumbed to the spell of making, unrestrained and unrestrainable by the mere descriptive functions of the image.”

According to Baxandall (1985, pp. 62–63), Picasso was in full agreement about creation with Cézanne, though Galenson considers Picasso to be conceptual and Cézanne to be experimental:

“Cézanne had said, and Picasso later quoted him with approval as saying, that every brushstroke changes a picture. The point they were making was not that a finished picture will look different, if even one brushstroke is removed or changed. They meant that in the course of painting a picture each brushstroke will modify the effect of the brushstrokes so far made, so that with each brushstroke the painter finds himself addressing a new situation . . . This is to say that in painting a picture the total problem of the picture is liable to be a continually developing and self-revising one. The medium, physical and perceptual, modifies the problem as the game proceeds . . . This need not be argued out on the basis of some aesthetic theory of self-discovery; it is intuitively obvious to anyone who has made anything at all.”

What is now the difference between the two archetypes, Picasso the conceptual artist and Cézanne, the experimental one?

Simonton’s (2005) analysis of Picasso’s [forty-five] sketches for *Guernica* leads to an identical conclusion: “At the time of each sketch Picasso did not know exactly where he was going, and we can only discern the right from the wrong turns because we know where he ended up” (Simonton, 2005, p. 7).

Galenson and Weinberg (2001) consider *non finito* as a sign of being experimental, and, more generally, of the inability of an artist to decide when to stop. Picasso was in trouble with *Les Demoiselle d’Avignon*,<sup>16</sup> one of his most important paintings, since it announces cubism. It is not clear whether, though he had made over 400 preparatory drawings and sketches, the

artist considered the painting finished or not. The following two quotes are interesting in this respect:

“It is one of the few documentable facts about Picasso’s mind in these years that he was so sensitive to this difficulty. *Les Demoiselles d’Avignon* was pronounced unfinished; it stated problems rather than solving them” (Baxandall, 1985, p. 66).

and

“After a long and tumultuous period of gestation, he showed his painting to friends, who, with the exception of Uhde and Kahnweiler, did not think much of it. This happened in 1907. After that, he put it aside and did not touch it anymore, either because he thought it was finished, or because he did not find it worth finishing, until he sold it to Jacques Doucet in 1923” (Genette, 1994, p. 223).

A contradiction obviously follows. If *Les Demoiselles*, considered a breaking point in western art, painted when Picasso was 25 years old, is not finished, can Picasso be conceptual? Or is *non finito* not a sign of experimentalism only?

#### 4. Old masters

Most of Galenson’s writings are concerned with modern and contemporary artists. However, Galenson and Jensen (2001) suggest that their theory can be transposed to Old Masters.<sup>17</sup> This is consistent with the finding that differences and similarities between careers are cross-culturally and transhistorically invariant (Simonton, 1991, p. 128).

In this section, we look at the Galenson and Jensen conjecture using de Piles’ classification. Our interest in de Piles is essentially motivated by his important role in the debate between *disegno* and *colore* at the end of the 17th century in France, to which we alluded in Section 2 of this paper. In his *Balance des peintres*, an appendix to his *Cours de peinture par principes* (1708), he quantifies the distinction by rating 56 painters of his and previous times on a scale between 0 and 20. Rembrandt, for example, is low on drawing but high on color, obtaining 6 and 17, while Raphaël’s ratings are 18 for drawing and only 12 for color, confirming what Galenson and Jensen write. Michelangelo however is very high on drawing and low on color with rates of 17 and 4, respectively.<sup>18</sup> This allows for a much finer distinction than the dichotomous classification between the two extremes.

Galenson’s assumptions can be stated as follows:

*Assumption 1:* Conceptual artists bloom earlier than experimentalists.

*Assumption 2:* Conceptual artists are more innovative and (therefore) more influential than experimentalists.

He uses several measures to test these assumptions, in particular, the age at which artists produced works that are reproduced in a certain number of important art history books, or the age at which they produced their most expensive works.<sup>19,20</sup>

We reproduce Galenson’s technique, collecting the following data for each artist considered by de Piles:

- a: reproductions of works in six contemporary encyclopedias devoted to painting;<sup>21</sup>
- b: the number of lines devoted to each artist in Turner’s (1996) *Dictionary of Art*; and
- c: prices obtained by the same artists in auctions between 1977 and 1993.

**Table 1** Classifying de Piles' artists according to drawing and color

Name (1)	Name (2)	Born in (3)	Died in (4)	Rating drawing (5)	Rating color (6)	Color drawing (7)	Type (8)
Albani	Francesco	1578	1660	14	10	-4	Draughtsman
Arpino	Cesare Giuseppe	1568	1640	10	6	-4	Draughtsman
Barocci	Federico	1535	1612	15	6	-9	Draughtsman
Bassano	Jacopo	1510	1592	8	17	9	Colorist
Bellini	Giovanni	1431	1516	6	14	8	Colorist
Bourdon	Sebastian	1616	1671	8	8	0	-
Caravaggio	Michelangelo	1571	1610	6	16	10	Colorist
Correggio (da)	Allegri Antonio	1489	1534	13	15	2	Colorist
Cortona	Pietro da	1596	1669	14	12	-2	Draughtsman
Daniele	da Volterra	1509	1566	15	5	-10	Draughtsman
Diepenbeck	Abraham	1596	1675	10	14	4	Colorist
Domenichino	Zampieri	1581	1641	17	9	-8	Draughtsman
Durer	Albrecht	1471	1528	16	9	-7	Draughtsman
Giordano	Luca	1634	1705	12	6	-6	Draughtsman
Giorgione	da Castelfranco	1477	1510	9	18	9	Colorist
Giulio	Romano	1499	1546	16	4	-12	Draughtsman
Guercino	Barbieri Giovanni	1591	1666	10	10	0	-
Holbein	Hans	1497	1543	10	16	6	Colorist
Jordaens	Jacob	1593	1678	8	16	8	Colorist
Lanfranco	Giovanni	1582	1647	13	10	-3	Draughtsman
Le Brun	Charles	1619	1690	16	8	-8	Draughtsman
Le Sueur	Eustache	1616	1655	15	4	-11	Draughtsman
Leonardo	da Vinci	1452	1519	16	4	-12	Draughtsman
Les Carrache	Annibale et al.	1560	1610	17	13	-4	Draughtsman
Lucas van Leyden		1494	1533	6	6	0	-
Michelangelo		1475	1564	17	4	-13	Draughtsman
Muziano	Girolamo	1532	1592	8	15	7	Colorist
Palma Giovane	Giacomio	1548	1628	9	14	5	Colorist
Palma Vecchio	Jacopo	1479	1528	6	16	10	Colorist
Parmigianino	Francesco Mazzola	1503	1540	15	6	-9	Draughtsman
Penni	Giovan Francesco	1496	1528	15	8	-7	Draughtsman
Perino	del Vaga	1501	1547	16	7	-9	Draughtsman
Perugino	Pietro	1450	1523	12	10	-2	Draughtsman
Pordenone	Giovanni Antonio	1483	1539	14	17	3	Colorist
Pourbus	Frans 1, 2, Pieter	1523	1584	15	6	-9	Draughtsman
Poussin	Nicolas	1594	1665	17	6	-11	Draughtsman
Primaticcio	Francesco	1504	1570	14	7	-7	Draughtsman
Raphael	Sanzio	1483	1520	18	12	-6	Draughtsman
Rembrandt		1606	1669	6	17	11	Colorist
Rubens	Pieter Paul	1577	1640	13	17	4	Colorist
Salviati	Francesco	1510	1563	15	8	-7	Draughtsman
Sarto	Andrea del	1486	1530	16	9	-7	Draughtsman
Sebastiano	del Piombo	1485	1547	13	16	3	Colorist
Teniers	David	1610	1690	12	13	1	Colorist
Testa	Pietro	1612	1650	15	0	-15	Draughtsman
Tintoretto	Jacopo	1519	1594	14	16	2	Colorist
Titien	Vecellio Tiziano	1485	1576	15	18	3	Colorist

*(Continued on next page)*



**Table 1** (Continued)

Name (1)	Name (2)	Born in (3)	Died in (4)	Rating drawing (5)	Rating color (6)	Color drawing (7)	Type (8)
Udine (Nanni)	Giovanni da	1487	1564	8	16	8	Colorist
Van Dyck	Antoon	1599	1641	10	17	7	Colorist
Vanni (Vanius)	Francesco	1563	1610	15	12	-3	Draughtsman
Veen (Vaenius)	Otto	1556	1629	14	10	-4	Draughtsman
Veronese	Paolo	1528	1588	10	16	6	Colorist
Zuccaro	Federigo	1540	1609	13	8	-5	Draughtsman
Zuccaro	Taddeo	1529	1566	14	10	-4	Draughtsman

*Note.* Guido Reni and Polidoro de Caravaggio are not included, since their ratings were incomplete

The dates at which the works that are reproduced were created will be used to test Assumption 1, while all three sources will be used to test Assumption 2.

Since drawing and color are closely related to conceptualism and experimentation, we shall mainly be interested in de Piles' ratings on drawing and color, reproduced in columns (5) and (6) of Table 1, and use these to classify artists as conceptual or experimental. Column (7) of this table shows the difference between the rating on color and on drawing. Two artists (Guido Reni and Polidoro di Caravaggio) were excluded since their ratings were incomplete, while three others (Bordone, Guercino and Van Leyden) could not be classified since their ratings on drawing and color are equal. In order to discriminate more strictly between draughtsmen and colorists, we also give results obtained after eliminating those artists for which the difference between the two ratings is smaller than five (an arbitrarily chosen threshold).

#### 4.1. Do conceptual painters bloom earlier?

Table 2 reproduces information on the number of reproductions (paintings and frescoes) collected for the two types of artists in the six encyclopedias cited earlier. Two groups of artists are considered: "all artists," and "selected artists," that is, those for whom the difference in de Piles' ratings is at least equal to five. For each artist, we look at how old he was when he created each work reproduced, and compute an average age. We also use age for the earliest painting reproduced.<sup>22</sup> Results are shown in Table 3. In 10 cases out of 24 (6 encyclopedias times 4 groups of artists), the age of colorists is less than that of draughtsmen; in 14 cases, it is larger. It is thus worth testing more formally the hypothesis that means between the two groups of artists are equal or different. Two tests are used: (a) Student's classical *t*-test, which means assuming that the two groups come from the same population (and have thus equal variances), and that the populations are normally distributed,<sup>23</sup> and (b) the Kruskal-Wallis test<sup>24</sup> which needs none of these assumptions. Conclusions are identical: in 23 cases there is no significant difference between the two groups; in one case (see asterisks in Table 3), the tests show that colorists (experimental artists) bloom earlier than draughtsmen (conceptual artists).<sup>25</sup>

In Figure 1, we consider a smoother classification than the dichotomous one, giving full credit to large and small differences between a painter's color or drawing mode of working. The figure illustrates the relation between the difference in ratings (color minus drawing) attributed by de Piles and the age of the artist for the average painting illustrated in the *Dictionary of Art*. The diagram clearly shows that there is no relation between the two variables.



**Table 2** Data collected for de Piles' artists

	All artists		Selected artists	
	Draughtsmen	Colorists	Draughtsmen	Colorists
No. of artists	29	22	20	14
Dictionnaire de la peinture				
No. of reproductions	15	23	13	11
No. of artists	13	12	11	7
No. of reproductions/artist	1.15	1.92	1.18	1.57
Dictionary of Art				
No. of reproductions	86	100	60	58
No. of artists	29	21	21	13
No. of reproductions/artist	2.97	4.76	2.86	4.46
Encyclopédie de l'art				
No. of reproductions	81	91	70	55
No. of artists	16	15	12	10
No. of reproductions/artist	5.06	6.06	5.83	5.50
Pelican History of Art				
No. of reproductions	144	172	123	100
No. of artists	27	18	20	12
No. of reproductions/artist	5.33	9.55	6.15	8.33
Propyläen Kunstgeschichte				
No. of reproductions	81	71	70	45
No. of artists	23	16	18	10
No. of reproductions/artist	3.52	4.44	3.89	4.50
Visual Dictionary of Art				
No. of reproductions	32	26	26	13
No. of artists	17	13	13	8
No. of reproductions/artist	1.88	2.00	2.00	1.62

*Note.* By "all artists," we mean the 51 artists included in de Piles' balance (except Guido Reni, Polidoro di Caravaggio, as well as Bordone, Guercino et Lucas Van Leyden whose rating of color and drawing are equal); by "selected artists," we mean those for whom the difference between the two ratings is at least equal to 5.

Galenson's hypothesis that conceptual artists bloom earlier thus cannot be accepted for Old Masters.

#### 4.2. Are conceptual artists more influential than experimentalists?

To test this assumption, we use several measurements. The first one is the average number of reproductions for each group of painters listed in Table 2. If Galenson were right, this number would be larger for draughtsmen. As Table 2 shows, in two cases out of 24 this number is indeed larger for draughtsmen than for colorists; in all other 22 cases, it goes the other way. Equality tests could also be computed, but it is obvious that Galenson's assumption would not pass the test.

A second measurement is based on the length of entries devoted to the painters in de Piles' (1715) *Abrégé de la vie des peintres*, and in Turner's (1996) *Dictionary of Art*. Though de Piles was defending color, and his description could be suspected of being biased, he devotes an average of 120.5 lines to a draughtsman, and only 110.4 lines to a colorist. If the hypothesis that draughtsmen were more influential than colorists were true, one would

**Table 3** Do draughtsmen bloom earlier?

	Average painting		Earliest painting	
	All artists	Selected artists	All artists	Selected artists
<b>Dictionnaire de la peinture</b>				
Average age draughtsmen	37.6 (13)	37.8 (11)	36.3 (13)	36.2 (11)
Average age colorists	38.7 (12)	37.4 (7)	34.8 (12)	35.4 (7)
Student test	0.26	0.07	0.41	0.16
Kruskall-Wallis test	0.01	0.29	0.39	0.25
<b>Dictionary of Art</b>				
Average age draughtsmen	37.8 (29)	38.6 (21)	29.3 (29)	29.1 (21)
Average age colorists	38.7 (21)	38.1 (13)	29.1 (21)	29.8 (13)
Student test	0.33	0.13	0.10	0.27
Kruskall-Wallis test	0.21	0.03	0.02	0.28
<b>Encyclopédie de l'art</b>				
Average age draughtsmen	40.7 (16)	39.3 (12)	35.7 (16)	34.1 (12)
Average age colorists	36.4 (15)	35.6 (10)	27.9 (15)	28.3 (10)
Student test	1.37	1.02	2.44*	1.44
Kruskall-Wallis test	2.08	1.49	5.36*	2.01
<b>Pelican History of Art</b>				
Average age draughtsmen	38.2 (27)	38.2 (20)	30.6 (27)	29.2 (20)
Average age colorists	42.1 (18)	42.1 (12)	31.6 (27)	34.0 (12)
Student test	1.24	0.92	0.24	1.05
Kruskall-Wallis test	0.80	0.11	0.23	0.30
<b>Propyläen Kunstgeschichte</b>				
Average age draughtsmen	37.0 (23)	36.6 (18)	30.7 (23)	30.2 (18)
Average age colorists	41.1 (16)	38.2 (10)	30.9 (16)	27.8 (10)
Student test	1.25	0.40	0.07	0.71
Kruskall-Wallis test	1.54	0.13	1.08	0.19
<b>Visual Dictionary of Art</b>				
Average age draughtsmen	38.2 (17)	37.7 (13)	34.7 (17)	33.4 (13)
Average age colorists	44.7 (13)	42.5 (8)	39.3 (13)	40.2 (8)
Student test	1.38	0.82	0.95	1.10
Kruskall-Wallis test	0.74	0.08	0.11	0.58

*Note.* (a) The number of paintings from which the average age is computed is given between brackets. (b) Student test. The computed value is a Student  $t$ -variable with  $n-2$  degrees of freedom ( $n$  is the number of observations, here the number of painters). At the usual 5% probability level, the calculated value should exceed 1.8 (for 10 df) and 1.75 (for more than 15 df) in order to reject  $H_0$ : the two means are equal. (c) Kruskall-Wallis test. The computed value is a  $\chi^2$ -variable with 1 degree of freedom. At the usual 5% probability level, the calculated value should exceed 3.8 in order to reject  $H_0$ : the two means are equal.

expect this difference to increase over time. Written some 280 years later than the *Abrégé*, the *Dictionary of Art* devotes an average of 311.2 lines to a draughtsman, and 374.5 to a colorist. This does not support Galenson's assumption either.

Finally, Ginsburgh and Weyers (2005) regress two measures of value, one that is art historic (length of entries in the *Dictionary of Art*) and one that is economic (prices obtained at auction between 1977 and 1993) on de Piles characteristics, and show that color is the most important explanation of both types of values, as they are measured at the end of the 20th century. This is again at odds with the hypothesis that *disegno* (conception) is regarded as more important than *colore* (experimentation).



Fig. 1 Type of artist and age at which illustrated

**5. Conceptual and experimental american painters**

Galenson looks at Old Masters in only one of his papers (Galenson and Jensen, 2001). Most of his writings are concerned with modern and contemporary art, to which we briefly turn now using one example. Table 12 of Galenson (2003) displays the ages of 23 American artists at the time of their first one-man show in a New York gallery. The table is reproduced here as Table 4. Galenson shows that the 11 artists considered as experimental were 35.1 years old when they had their first solo exhibition, while this age drops to 28.3 years for the 12 conceptual artists. The difference in age is statistically significant at the 5% probability level (the comparison of means, assuming that the variance is the same in the two groups, generates a *t*-value of 3.13). It is, however, interesting to point out that the average experimental artist was born in 1907.7, the average conceptual one in 1930.2, that is 22.5 years later. Why may this be important?

Because another interpretation of Galenson’s finding that older artists had to wait much longer to peak than younger ones, may be the result of the change in market conditions and atmosphere in New York after the Second World War, and not necessarily to the difference between experimental and conceptual painters that he suggests.

The art market in New York changed drastically after 1945. What World War II did was to bring many European artists to New York, as well as many European gallerists (think of Castelli and Sonnabend, among others), as well as figures such as Barr, Greenberg, Miller and Seitz who, according to Irving Sandler (1988, p. 11), “literally constituted a new art world” and played such an important role in the late 1950s.

To make our point, let us quote Wheeler (1991, p. 25) and his starting sentences of Chapter 2 on the New York School:<sup>26</sup>

“When the production of new art began to revive in 1945, it had undergone not only a six-year interruption but also a major sea change. Both occurred as consequences

**Table 4** Ages of American artists at the time of their first one-man show New York gallery exhibitions

	Year of birth	Year of show	Artists' age
Experimental artists			
Adolph Gottlieb	1903	1930	27
Mark Rothko	1903	1933	30
Arshile Gorky	1904	1938	34
Willem de Kooning	1904	1948	44
Clyfford Still	1904	1946	42
Barnett Newman	1905	1950	45
Franz Kline	1910	1950	40
William Baziotes	1912	1944	32
Jackson Pollock	1912	1943	31
Philipp Guston	1913	1945	32
Robert Motherwell	1915	1944	29
Conceptual artists			
Roy Lichtenstein	1923	1951	28
Larry Rivers	1923	1951	28
Robert Rauschenberg	1925	1951	26
Sol LeWitt	1928	1965	37
Cy Twombly	1928	1955	27
Andy Warhol	1928	1962	34
Jasper Johns	1930	1958	28
James Rosenquist	1933	1962	29
Jim Dine	1935	1960	25
Frank Stella	1936	1960	24
David Hockney	1937	1964	27
Robert Mangold	1937	1964	27

Source: David Galenson (2003, Table 12).

of the Second World War, which had driven the European avant-garde from their natural habitat in Paris and into exile across the Atlantic in New York. There, with the arrival of such luminaries of high modernism as Dali, Ernst, Léger, Lipchitz, Masson, Matta, Mondrian, Tanguy and the Surrealist pope himself, André Breton, the American city became, for the first time in its three hundred-year history, the world capital of international art. Suddenly, and for the duration of the Nazi's presence in Paris, progressive members of the local artistic community – a tiny, sorely isolated and undervalued lot – found themselves surrounded by the living exemplars of a glorious tradition that the Americans, despite the impediment of great distance, had long taken as their primary inspiration. Of course, the tradition and its future development would eventually have returned to France, along with the homing émigrés themselves, had the Americans not been fully prepared, through a fortuitous combination of rather unpromising factors, to accept the challenge posed by their distinguished guests and carry it to new, more logical or moving conclusions than those proposed elsewhere in the postwar world. However, thanks both to their own readiness and to the stimulus they received from direct exposure to European modernism at its cutting edge, the more ambitious and visionary younger American artists finally succeeded in surmounting their inherited handicaps – provincialism, over-reliance on half-understood European models, nonex-

istent or unsupportive critics, and indifferent or even hostile public – and liberated their art into an expressive force of stunning power and independence.”

To this Sandler (1988, p. 105) adds the following:

“The members of this art world appointed themselves – that is they designated *the* artists, *the* dealers, *the* critics, *the* curators, etc., who ‘belonged’. How this came about is not clear; perhaps it is unknowable, but it did take place.”

Finally, the role played by American politics, that eventually led to Rauschenberg’s (well deserved!) success at the Venice Biennale in 1964 should not be neglected either.

It may thus well be that those artists whom Galenson qualifies as conceptual and who, on average, were born 22.5 years later than those who are considered experimental could have their first one-man show arranged much faster. There is obviously some “correlation,” and the market and atmosphere may have done it at least as much as the creative nature of artists. It seems therefore very difficult to identify the cause of the change, deciding whether it was due to the creative process or to the change of atmosphere in New York.

It also goes without saying that the war may have delayed exhibitions of experimental painters by 2–3 years. Three among the eleven appearing in Table 4 (Gottlieb, Rothko and Gorky) had their first one-man show before World War II (at an average age of 30.3 years), three more (Pollock, Baziotos and Motherwell) were exhibited during the war (at an average age of 30.7 years), while only the five last (de Kooning, Still, Newman, Kline and Guston) had to wait until they were 40.6 years old, and had their first one-man show after the war only. None of the conceptual artists was shown during the war, since the oldest of them (Lichtenstein and Rivers) were less than 20 years old in 1942.

## 6. Concluding comments

According to Simonton (1988), age curves, in which creative output is represented as a function of age, are typically single-peaked and concave. The peak varies according to the discipline: Poets, pure mathematicians and theoretical physicists peak early (around 30); writers, historians, and philosophers produce their most important work at some later age (in the 40s). This peak may be followed by a second one, usually much smaller than the first, in the 60s or even later, but this second peak is “more artifactual than real” (Simonton, 1988, p. 253). However, when the standards of excellence are loosened, age curves flatten out, so that “the relation between age and outstanding creative achievement very much hinges on how strictly we impose the requirement that a prospective contribution be outstanding” (Simonton, 1988, p. 254).<sup>27</sup>

A second very strong conclusion emerges from such studies. The number of important, creative or “best quality” works is proportional to the total number of works produced, so that the ratio of quality to quantity is, on average, constant over the life cycle, leading to the so-called “constant-probability-of-success model” (Simonton, 1988, p. 254), and creative achievements are generated at any moment in the life cycle.

Most studies on which the previous conclusions are grounded compare different professions. Galenson and his colleagues have innovated in showing that, within the arts profession, there exist two types of artists, those who are successful when young, and others. This appears very clearly from some of their papers, Galenson and Weinberg (2000, 2001) in particular.<sup>28</sup> They are certainly also right in suggesting that some artists are more innovative than others, though this claim may be considered less objective than the first, since only time

makes it possible to distinguish and tell us who will be remembered for his innovations, who contributed innovations that changed art, and who will not be remembered.

They may appear too affirmative in classifying artists as conceptual and experimental. Some may be more conceptual than others, but both modes of creation are present in almost every artist. This is illustrated in Section 3 with some incursions into the writings of artists (Picasso, Matisse, and Cézanne), or into those of art critics (on Picasso, Michelangelo and Mondriaan).

While Galenson and his coauthors put all the “new” ideas on artists, that is on supply, they give no room to demand or exogenous shocks, such as World War II – see Section 5. Ekelund (2002, p. 327) adds that Galenson “measures [art] revolutions by the age when art was created, not when it had an economic effect,” that is when “significant price effects occur” and argues “that the directions of and age profiles in the contemporary art market are as much attributable to demand and other factors as to the ones that Galenson attempts to isolate.” The chapter devoted by Burke (1986) to patronage during the Italian Renaissance, also makes it clear that art was as much driven by demand as it was by supply. As is shown in many examples given by Burke, the influence of the patron was considerable. Filarete (1400–1469), for example, used to say that the patron was the father of the work while its mother was the artist.

Finally, one may be skeptical about their association of conceptualism (or *disegno*) with youth, and experimentalism (or *colore*) with old age. It is quite clear for the few 20th century painters discussed in Section 3, very obvious in the case of Old Masters as long as one takes de Piles (the French art theorist at the center of the dispute between the two modes of creation during the late 17th century) seriously (Section 4), and may even be so for modern American painters considered in Section 5. The main reason is probably due to the fact that no artist falls into one of the two categories. They move between both modes over time, and even while they work on the same painting, produce great works at any time in accordance with the constant-probability-of-success model.

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## Notes

1. On this and other issues, see also Ekelund’s (2002) critical book review of Galenson (2001).
2. Or, as is written in a short but powerful sentence by Junod (1976, p. 18), citing Fiedler (1971), “painting ideas or imitating nature: that is the question.”
3. See Rouchette (1959, p. 79).
4. Note that this controversy is even much older, since it can be traced back to arguments between the architect Vitruvius (90–20 BC), the historian Plinius (23–79 AD) and the Greek philosopher Plutarchos (46–125 AD). Vitruvius and Plinius claimed that the fall into decay of art was due to the “abuse of colors, under the influence of the Barbarians” (Junod, 1996), while Plutarchos defended the supremacy of color over drawing.
5. See Newman (1996).
6. And author of *Entretiens sur les vies et les ouvrages des plus excellens peintres anciens et modernes*, published between 1666 and 1686.
7. See Teyssède (1964) and Puttfarken (1985) for details and Rosenberg’s (1967) essay on de Piles.
8. As well as to Raphael, though de Piles’ appreciation of Raphael’s way of using colors is not very high.
9. According to Pace (1996), “Delacroix sought to reconcile drawing and painting and believed that Titian, the greatest of the colorists, was also ‘the first of draughtsmen, if by drawing we understand drawing from nature and not that in which the artist’s imagination plays a greater part than imitation’ (Delacroix, *Journal*, 25 Jan. 1857).”

10. Galenson (2003, p. 5).
11. Galenson (2003, p. 5).
12. In the early 1940s, Richard Strauss composed his last opera *Capriccio*, built around the same ideas.
13. Our own translation from the following texts in French: Page 124: “Pour moi, tout est dans la conception. Il est donc nécessaire d’avoir, dès le début, une vision nette de l’ensemble.” Page 127: “Je travaille sans théorie . . . poussé par une idée que je ne connais vraiment qu’au fur et à mesure qu’elle se développe par la marche du tableau.” Both excerpts are quoted by Junod (1976, pp. 111 and 132).
14. Our translation from the French.
15. See Schulz (1975) for details.
16. And with other paintings as well. On this issue, see Baxandall (1985, p. 66) for example.
17. They look at Masaccio, Michelangelo, Raphaël and Titian, as well as at Rembrandt, classifying Masaccio and Raphaël as conceptuals, while the three others are considered experimental.
18. Titian’s ratings are 15 on drawing and 18 on color, confirming again Galenson and Jensen (2001). Masaccio is not rated by de Piles.
19. Galenson also considers the age at which artists had their first important one-man show. This makes little sense in the case of Old Masters.
20. An additional problem with this approach – which we did not take into account either – is due to the fact that if, say, colorists (experimental artists) are more prolific than draughtsmen (conceptual artists), it is likely that they will be more heavily reproduced.
21. The choice is restricted by the fact that each encyclopedia has to be “universal” since de Piles’ list includes Italian, French, German, Dutch and Flemish artists. Therefore, to be consistent we cannot use works that are devoted to a country or a region. The following works are used: *Dictionnaire de la peinture. La peinture occidentale du moyen-âge à nos jours*, dirigé par Michel Laclotte et Jean-Pierre Cuzin, Paris: Larousse, 1989; *The Dictionary of Art*, 34 vol., edited by Jane Turner, New York: Grove, 1996; *Encyclopédie de l’art, Peinture, sculpture et architecture de la Renaissance*, edited by Pierre de Martino, Paris: Editions Lidis, 1970–1973; *Encyclopédie de l’art, Art classique et baroque*, edited by Pierre de Martino, Paris: Editions Lidis, 1970–1973; *Encyclopédie de l’art, Haute Renaissance et âge d’or*, edited by Pierre de Martino, Paris: Editions Lidis, 1970–1973; *The Pelican History of Art, Art and Architecture in France 1500–1700*, edited by Anthony Blunt, London: Penguin Books, 1953; *The Pelican History of Art, Art and Architecture in Italy, 1600–1750*, edited by Rudolf Wittkower, London: Penguin Books, 1958; *The Pelican History of Art, Art and Architecture in Belgium, 1600–1800*, edited by H. Gerson et E.H. ter Kuile, London: Penguin Books, 1960; *The Pelican History of Art, Dutch Art and Architecture*, edited by Jakob Rosenberg, Seymour Slive and E.H. ter Kuile, London: Penguin Books, 1966; *The Pelican History of Art, Painting and Sculpture in Germany and The Netherlands 1500–1600*, edited by G. von der Ost et H. Vey, London: Penguin Books, 1969; *The Pelican History of Art, Painting in Italy 1500–1600*, edited by S.J. Freedbeg, London: Penguin Books, 1970; *Propyläen Kunstgeschichte. Spätmittelalter und beginnende Neuzeit*, edited by J. Bialostocki, Berlin: Propyläen Verlag, Band 7, 1972; *Propyläen Kunstgeschichte. Die Kunst des 16. Jahrhunderts*, edited by G. Kauffman, Berlin: Propyläen Verlag, Band 8, 1970; *Propyläen Kunstgeschichte. Die Kunst des 17. Jahrhunderts*, edited by E. Hubala, Berlin: Propyläen Verlag, Band 9, 1970; *A Visual Dictionary of Art*, Greenwich, CT: New York Graphic Society, 1974.
22. Consider an artist born in 1480, represented in one of the encyclopedias by three paintings produced respectively in 1510, 1525 and 1530. His age for the average painting reproduced will be equal to  $(1510 + 1525 + 1530) / 3 - 1480 = 41.66$ . His age for the earliest painting is  $1510 - 1480 = 30$ .
23. When the number of observations is larger than 30 (which is not always so in our case), normality is not needed, and the test takes a slightly different form. We also ran this test, but do not report the results in Table 3. It leads to the same conclusions.
24. See e.g. Siegel (1956).
25. We also did some quick robustness checks to see whether the results change if the threshold between the ratings is changed from 5 (as is the case in Tables 2 and 3) to 3 or to 7. When the threshold is reduced to 3, the results can hardly be different from what they are for a threshold of 0 (in which case all 51 artists are included), and a threshold of 5 (with 34 artists). For a threshold of 7, the number of artists that are compared is reduced from 34 to 29, and the differences between draughtsmen and colorists are again not significantly different from zero. Kathryn Graddy suggested to pooling all six encyclopedias, and run the same test. Since the number of reproductions per artist varies greatly across encyclopedias, variances would also increase, and this would probably even reduce the value of both the *t*-test and the Kruskal-Wallis test.



26. Similar views can be found in Sandler (1988, pp. 60–88).
27. It may be worth testing this model on artists, using data similar to those used in this paper, but this was not our concern here.
28. Note that Simonton (1975) finds a difference between poets and novelists, but fails to find any such difference in age between informative and imaginative prose.

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