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# Signs of ageing, the lifespan and self-representation in European self-portraits since the 15th century

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***ABSTRACT***
Painters' self-portraits offer the opportunity to study signs of ageing through the centuries. In this paper, we examine 687 self-portraits by 506 European painters from the 15th to the 20th century. To qualify for the analysis, painters had to be unquestionably identified, have known years of birth and death, and the self-portraits had to be dated unequivocally. 'Age scores' for the characteristics of the lower face were developed. Ptosis of the upper eyelid, bags under the eyes and the characteristics of beards were also recorded. Among the main findings, the painters of self-portraits that exhibited ptosis of the upper eyelid had a higher actual age than those of portraits which did not (55 *versus* 38 years). Similarly, those that represented bags under the eyes were older painters (47 *versus* 33 years). The percentages of portraits with eyelid ptosis and bags under the eyes were similar through the centuries and in three zones of Europe. The age scores of the lower half of the face were also consistent in all centuries, except at ages 40–49 years. The painters' average lifespan significantly increased during the 18th century; and within Europe a north–south lifespan gradient has been evident since the 17th century. We conclude that ageing has had similar facial manifestations over the last five centuries, except between 40 and 50 years of age.

***KEY WORDS*** – lifespan, self-portraits, history of ageing, facial anthropomorphology.

## Introduction

Although portraits have existed since antiquity as murals (*e.g.* Ephesus) and wood-paintings (*e.g.* the Egyptian Fayoum paintings), the self-portrait first appeared in other genres (*e.g.* court scenes) before becoming its own genre during the Italian Renaissance. Dürer (1471–1528) marked a turning

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point: without being commissioned to do so, he painted himself as Christ (1500). This representation testified the importance that the artist accorded to himself and, more generally, to human beings in his conception of the world. This paper focuses on the ageing changes represented in painters' self-portraits. Most previous physiognomic interpretative studies have been essentially qualitative, while physicians have been most interested in detecting signs of pathologies in painters' self-portraits, as most thoroughly by Espinel (1997: 1835) of Rembrandt's work. Espinel's contribution has been followed by many other speculations about Rembrandt's illness (Duyff 1998: 915; Espinel 1999a: 1104; Hankey 1998: 915; Marcus 2002; Rothenberg 1999: 1392; Zlotnick 1998: 915). Each medical speciality promotes its own diagnostic view, as seen in the opinions of a dermatologist (Borroni 1992: 170–3), a neurologist (Meshberger 1990: 1837), ophthalmologists (Liebreich, Turner and Mulready 1872: 450; Lanthony 1998: 52), endocrinologists (Martino 2001: 386; Als *et al.* 2002: 1499), rheumatologists (Appelboom and Preaux 1988: 41) and a cardiologist (Abastado 1998: 15).

Celebrated artists constitute an interesting population from several points of view. Although they have emerged from diverse socio-economic backgrounds, all acquired at least a basic education which places them among a cultural elite. They all had lives that were to some extent removed from the political vicissitudes of the time (*e.g.* violent deaths and combat in war), and generally they have not been overly exposed to climatic rigours, or to the most discomfiting physical constraints of an unmechanised era.

The aim of the research reported here was to study facial signs of ageing through European painters' self-portraits from the 15th to the 20th century. A self-portrait may not necessarily reflect accurately what the painter really looked like; indeed, the way of painting is influenced by a painter's feelings, mood, style and technique. It is also acknowledged that facial signs of ageing may arise through a history of illness, malnutrition or poor personal hygiene. Nonetheless, self-portraits are in some respects controlled or consistent images, in that painters represent themselves facing the spectator. Only those with authenticated identities are included in the analysis. As only deceased painters are included, it so happens that all in the study were men.

## Methods

### *Study samples of portraits and painters*

A sample of 875 painters extant from the 15th to the 20th centuries was identified for this study.[1] In addition, a secondary sample of 128 sculptors

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extant from the 15th to the 17th centuries is used in an analysis of changes in the average lifespan of artists through the study centuries. The 1,003 artists represented all those identified by the screen or search. The artists' dates and places of birth allowed us to classify them by century and into three regions of Europe. The earliest, Memmi, was born in 1285 and died in 1361; and the most recent, Balthus, died in 2001. The geographical allocation was according to the place of birth rather than where they painted.[2] In this paper, when the name of the painter is followed by a single date, the date corresponds to the painting of the self-portrait, while two dates correspond to the birth and death of the artist.

Only paintings that were self-portraits which could be precisely dated and are in public collections were included in the study. A painting was excluded if there was any doubt regarding the identity of the person represented, if the smile was exaggerated, or if the representation of the face was too abstract. Many great contemporary paintings were thus excluded, such as Picasso's last self-portrait of 1972 and Chagall's self-portrait with seven fingers of 1913. If several dates had been assigned to a painting, it was excluded if the interval between the earliest and latest dates exceeded five years. Within accepted intervals, the median date was used. The final sample comprised 687 self-portraits by 506 painters.

### *Criteria for interpreting the self-portraits*

An original system was developed to rate the *represented* age of the self-portraits. Indicators of the anthropological representation of the painter were evaluated by a single observer (P.A.). The ratings were derived from the criteria currently used in cosmetic, plastic and reconstructive surgery for defining the age-related traits of the lower half of the face (Skoog 1974: 301). The markers employed were the naso-genial fold, which extends downwards between the nose and the cheek, the genio-chin fold, which extends between the chin and the cheek, and neck folds. Ageing is characterised by the sequential appearance of these three folds and the allocated ratings were: the absence of a naso-genial fold was rated '0', the presence of the fold was rated '1', a genio-chin extension was rated '2', loss of the facial oval was rated '3', and the presence of neck folds was rated '4'.

Other facial signs of ageing were recorded. The upper eyelid was categorised as either normal or exhibiting ptosis (droop), and the presence or absence of bags under the eyes was also recorded. Beards were categorised as absent or present (when they hindered the interpretation of the lower face) and as white or not. All the painters who depicted themselves painting are seen as right-handed except for Caracci (1560–1609). A careful search

for abnormalities of the hands and the eyes proved fruitless (Espinel 1994: 1750). The only two self-portraits in which teeth were visible (*Le Moqueur* by Ducreux of 1793, and Beckmann's *Self-Portrait with Red Scarf* of 1917) were excluded from the analysis because of the voluntary deformation of the lower half of the face. Systematic searches for pathologies of the eyes, skin, hands and hair were carried out. Examples include: *gerontoxon*, an opaque, greyish ring at the periphery of the cornea that frequently occurs in older people and may be associated with high levels of blood cholesterol; *strabismus*, a deviation in the alignment of one eye in relation to the other; face scars; arthritic hands; spectacles or eye-glasses; and hair loss.

The self-perception of the artist as a person and a painter is visually indicated by various socially significant artefacts that wax and wane through the centuries. The most consistent apparel indicator, the beret, was the classic occupational indicator of the *St Luc Guilde*.[3] Other references to the occupation are found: some self-portraits portray the actions and tools of painting, *e.g.* brushes in hand or a cartouche in praise of painting. Some paintings include a second signature in the form of initials (Strauch 1614) or a coat-of-arms (Wtewael 1601), and this signature was also taken into account. Social representation included the display of wealth such as highly ostentatious clothing or jewels (Vasari 1568), the proximity of silver or gold dishes, decorations (Ingres 1858) or signs of nobility (Velasquez, *The Maids of Honour*, 1656).

### *Statistical analysis*

For both painters and sculptors, the average lifespan throughout the centuries was compared using one-way analysis of variance. Painters' actual lifespan by century and region was analysed using two-way analysis of variance (century by region), and the represented age score (from the facial signs) was analysed using two-way analysis of variance (century by actual age). Qualitative characteristics were categorised and analysed using the chi-squared test. In all tests, statistical significance is established at the ($p$) level of five per cent unless otherwise indicated.

## Results

The average lifespan of 61/62 years of the artists included in the study hardly changed from the 15th to the 17th centuries, but increased markedly to 71 years in the 18th century, at which level it remained into the 20th century (Table 1). There was a significant north-south gradient in the average lifespan during the 17th and 20th centuries (Table 2). Turning to

TABLE 1. *Average lifespan (years) by century and profession and mode of representation*

| | Century of the self-portrait | | | | | | |
|---|---|---|---|---|---|---|---|
| | Pre-16th | 16th | 17th | 18th | 19th | 20th | Total |
| **Painters** | | | | | | | |
| Mean age | 62 | 61 | 61 | 71[1] | 69[1] | 68[2] | 62 |
| s.d. | 13 | 14 | 18 | 12 | 17 | 19 | 16 |
| N | 211 | 209 | 229 | 60 | 134 | 22 | 865 |
| **Sculptors** | | | | | | | |
| Mean age | 66 | 67 | 69 | | | | 67 |
| s.d. | 12 | 12 | 12 | | | | 12 |
| N | 71 | 34 | 23 | | | | 128 |

*Notes*: 1. Differences with the 15th, 16th and 17th centuries are significant at $p<0.01$. 2. Differences with the 15th and 16th centuries are significant at $p<0.01$. s.d. standard deviation.

TABLE 2. *Painters' average lifespans (years) by century and region of birth*

| | Century of artist's birth | | | | | |
|---|---|---|---|---|---|---|
| | 16th | 17th | 18th | 19th | 20th | Total |
| **North Europe** | | | | | | |
| Mean age of death | **63** | **60** | **69** | **64** | **64** | **62** |
| s.d. | 10 | 14 | 12 | 20 | 25 | 16 |
| N | 45 | 169 | 31 | 68 | 8 | 321 |
| **Central Europe** | | | | | | |
| Mean age of death | **60** | **63** | **78** | **68** | **68** | **69** |
| s.d. | 18 | 18 | 12 | 14 | 17 | 16 |
| N | 26 | 34 | 69 | 153 | 10 | 292 |
| **South Europe** | | | | | | |
| Mean age of death | **61** | **71** | **77** | **78** | **81** | **67** |
| s.d. | 17 | 11 | 9 | 20 | | 18 |
| N | 105 | 35 | 13 | 29 | 3 | 185 |
| **Other** | | | | | | |
| Mean age of death | | **64** | **78** | **77** | **64** | **75** |
| s.d. | | | 7 | 13 | 14 | 13 |
| N | | 5 | 11 | 51 | 10 | 77 |
| **Total** | | | | | | |
| Mean age of death | **61** | **62** | **6** | **70** | **67** | **77** |
| s.d. | 16 | 15 | 12 | 17 | 19 | 16 |
| N | 176 | 243 | 124 | 301 | 31 | 875 |

*Note*: s.d. standard deviation.

the representations of ageing in the artists' self-portraits, the observed percentages of eyelid ptosis and bags under the eyes, and the characteristics for the lower half of the face, were similar in all centuries and regions. Portraits which exhibited ptosis of the upper eyelid indicated a significantly older age than those which did not (mean 55 years, standard deviation

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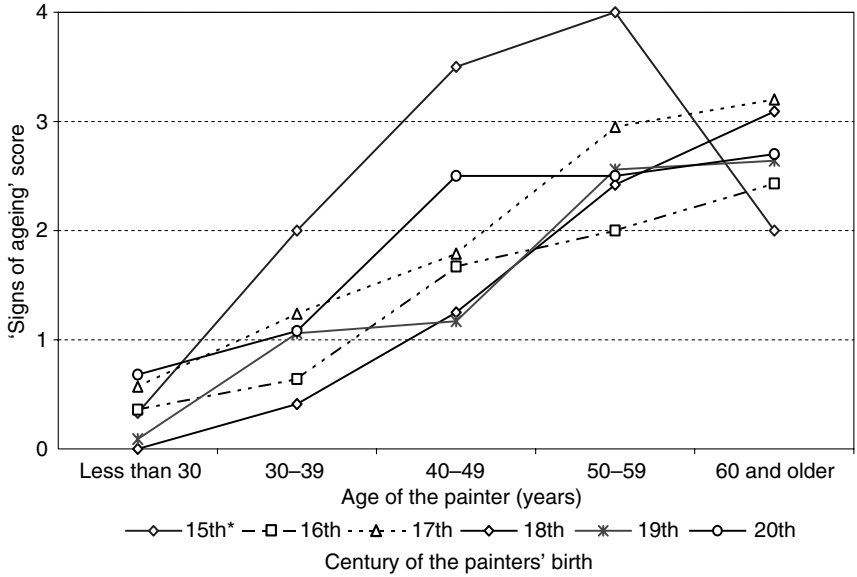


Figure 1. Age scores of the representation of the lower half of the face (Y) by actual age (X).

$\pm 9$ years, *versus* $38 \pm 5$ years), as did those which depicted bags under the eyes ($47 \pm 8$ *versus* $33 \pm 6$ years when absent). Ptosis of the upper eyelid had a slightly stronger positive association with age than bags under the eyes. Age was also related to the state of the lower half of the face and the whiteness of the beard, though the presence of the beard marked the century more than the painter's age.

The 'age score' of the lower half of the face was highly variable through the centuries (Figure 1). The greatest variability was in portraits of those aged 40–49 years, with many signs of great age during the 15th and 20th centuries but few during the 18th and 19th centuries. Eighteenth century portraits were exceptional, for painters of less than 50 years of age, and especially those aged 30–39 years, painted themselves as atypically young, while those aged 60 or more years painted themselves older than in the other periods. The converse was observed for 15th century portraits.

As for the social parameters, references to the occupation of the painter had significantly high frequency during the 17th century and even more during the 18th century, while such markers were exceptionally rare during the 20th as compared to all other centuries ($p < 0.001$). The appearance of the beret followed this temporal pattern. It was worn in 36 per cent of the 16th century paintings, 38 per cent of the 17th century, and 56 per cent of the 18th century portraits ($p < 0.01$), but subsequently declined to

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30 per cent of the 19th century portraits and 22 per cent of those painted during the 20th century. References to the occupation and material success of the artist were significantly frequent during the 17th century. The fashion for wearing beards was the mode during the 16th and 19th centuries (63 and 60 % respectively of the portraits), and least popular during the 15th (9 %), 17th (21 %), 18th (4 %) and 20th (22 %) centuries. The advanced 'age scores' of the painters in the 15th to 17th century portraits led us to cross-check the data with the sample of sculptors. They had a significantly longer lifespan ($67 \pm 12$ years) than the painters ($61 \pm 15$ years).

## Discussion

### *The signs of ageing represented in self-portraits*

Even though the average lifespan of painters increased significantly during the 18th century, this study of self-portraits over five centuries suggests that the facial signs of age and ageing have been remarkably consistent except among those aged 40–49 years. Why should this age group be associated with such inconsistent facial representations of age? The portrayed 'delay of ageing' among painters of this age during the 18th century did not correlate with an increased lifespan. Portraits which exhibited ptosis of the upper eyelid indicated an older age than those which did not, as did those that depicted bags under the eyes. By contrast, the representation of 'accelerated ageing' in 15th century portraits was not matched by a high frequency of bags under the eyes.

One possible explanation is that during the 15th century, painters were more interested in representing their importance or role than in providing accurate representations of their physical features (Pommier 1998: 47). On the other hand, while the portrayed 'youthfulness' of the 18th century painters might indicate delayed ageing, it may be no more than a disguise of the 'precious' era of powdered faces and periwigged crowns. Social interpretations of self-portrayals must be informed by the history of the portrait. Moreover, a painter may illustrate himself with and without social attributes in different works, so paintings must be analysed independently from one another. It is realised that calculations based on self-portraits favour the social representation of the most prolific artists, who maybe were those with the greatest egos. A study of berets and hats reveals the limits of this method, and Rembrandt produced a statistical bias: many of his numerous self-portraits depict hats. The beard, most frequent in the 19th century, shows the influence of fashion. Clothing is difficult to interpret because while most of the portrayed clothes are of the epoch, anachronistic references to an earlier work are common.

The literature on the evolution of the self-portrait focuses on the 'life-likeness' of the painting (Pommier 1998: 158; Laneyrie-Dagen 2003: 32–5; Roland Michel 2001: 119–28). The parameters examined in this study, however, reveal the historical changes in the painters' self-images: as straightforward practitioners of their art during the 15th century; as artists in the full glory of their excellence during the 17th and 18th centuries; and as complex human beings during the 20th century – by which time 'the man' was more important than 'the artist' (Pommier 1998: 260; Laneyrie-Dagen 2003: 65).

The form of the portrait prevents any evaluation of body weight, but fat painters were rare (*e.g. Cranach the Elder*, 1550 and *Rembrandt*, 1658). The identification of pathology requires a diagnostic examination, one painting at a time. Espinel's series of publications on Rembrandt have used this method well, and earlier studies also speculated about Rembrandt's diseases and ageing (Van Lennep 1957: 635–41; Dekemeier 1958: 301–9). Espinel extended his investigations to other great painters and has discussed juvenile rheumatoid arthritis in a painting by Caravaggio (Espinel 1999: 1750), and gouty tophi in a supposed representation of Michelangelo by Raphael (Espinel 1999b: 2149). This method elicits subjective conclusions (Kuehn 2000: 1104; Als *et al.* 2002: 1499). An Italian painter (Battoni 1708–87) is said to have died at 78 years of age while painting his self-portrait. In contrast to standard practice, he painted himself as the central character before filling in the background although, curiously enough, he looks very well for a dying man (Gregori 1998: 606).

Each of the 687 paintings in our sample was inspected for signs of pathology. Contrary to a recent study which found that 82 per cent of portraits showed signs of illness (Als *et al.* 2002: 1499), diagnostic signs were rare (but see Dürer's divergent *strabismus* of the right eye in his self-portrait of 1500) (Bourre 1996: 302). The most obvious and common marker is eye-glasses, as in Bening (1558) and Chardin (1771). They are shown more frequently during the 19th and 20th centuries.

### *The painters' lifespans*

Until the 17th century in Europe, the average lifespan was around 61 years for adults who avoided the rigours of manual labour (Houdaille 1988: 29–53). From the 18th to the 20th century, the average lifespan extended towards 70 years. Interestingly, Held reported that during the 19th and 20th centuries, 76 per cent of artists lived beyond 60 years of age (quoted in Deats 1999: 185). These figures should be compared to today's average life expectancy for men in the western world of around 75 years. The increase in the average lifespan during the 18th century corresponds to a medical

revolution: the appearance of the first state health policies. Our study has been confined to deceased figurative painters and has not therefore reflected the increases in the average achieved lifespan since the First World War. A significant north-south gradient in the average lifespan during the 17th to 20th centuries has also been revealed.

A lifespan of 70 years might seem short for painters of the 20th century, especially when compared to current life expectancy. The discrepancy partly arises from the difference between 'achieved lifespan', which reflects survival over eight decades including a childhood during which mortality conditions were generally less favourable than decades later, and 'average life expectancy', which is an abstract calculation based on the life table, *i.e.* one (or a few) year's age-specific mortality rates (which no one actually lives through).[4] It should be noted that our results are comparable to other published values (Houdaille 1988: 29–53; Deats 1999: 185).

The differences in the average lifespan of painters and sculptors are of particular interest. Given that they came from the same social backgrounds and had similar lifestyles, an occupational explanation is supposed. It is unlikely that the work of the sculptor prolonged their average lifespan, and more likely that the painters' average lifespan was shortened. One hypothesis is that contact with oils containing *céruse* (white lead) or *minium* (red lead), both now banned, as one might say, led to lead poisoning. *Céruse* can make its way into grazed fingers and hands. Anecdotes recount how Jean-Baptiste Régnault (1754–1829) nearly died of poisoning from using his palette knife to carve bread, and how the great Watteau (1684–1721) died from a habit of sucking his brushes (or from tuberculosis) (Arasse 1995). Other pigments are equally dangerous, some being made from arsenic, *e.g.* Veronese green, bright violet ammonium cobalt phosphate. There may however be other reasons for the shortening of painters' average lifespan and the subject deserves further investigation.

## *The self-portrait as a research tool*

The *self*-portrait was studied to maximise the consistency of the evidence but this constraint brought its own complexities. Self-portraits have been studied using social, phenomenological and psychological approaches that respectively emphasise the social construction of the self, self-presentation and self-awareness (Crozier and Greenhalgh 1988: 29). All but one of the studied artists painted themselves as right-handed, so the mirror-image showed the brush being held to the left. This voluntary inversion expresses not only a technical skill but also the desire to represent a man rather than

a composition. The frequency of the morphological parameters did not vary significantly between the 15th and the 20th century, although the corresponding age of appearance varied. Without passing any judgement on the artistic quality linked to these details, our medical perspective interprets the morphological constancy as validating self-portraits as windows on humanity's past.

The portraits in the study sample are those that have survived and are in the public domain because of the celebrity of the artists and the quality of their work. Inevitably, therefore, the samples of both painters and portraits are biased. Did unknown or unsuccessful painters age similarly to those who have been immortalised? The bias has selected painters who achieved maturity, success and maybe greater longevity. Some painters were highly praised for their portraits, *e.g.* Franz Hals and Largillière, but many talented landscape artists did not paint portraits, *e.g.* Claude Lorrain. These differences correspond to different artistic predilections which only another study can investigate.

## NOTES

1 The sample was collected over 10 years by the first author (P.A.). In the vast majority of cases, the original paintings are in the collections of Western European and American museums and have been analysed by P.A. In other cases, standard catalogues from national museums were used. Although it is acknowledged that the selection was in the strictest sense arbitrary (which we feel unavodable in such studies), all the major self-portraits of the European patrimony were included.

2 The three regions comprised the following main countries, as constituted and named today: *North*: Germany, Belgium, The Netherlands and the United Kingdom; *Middle*: France and Switzerland; and *South*: Italy and Spain.

3 According to the Roman Catholic tradition, Sainte Cecile was the patron of religious paintings. Elsewhere, Saint Luc was the patron of painters and symbolised by either the beret or the bullock's head. This convention was used by all (non-Catholic) painters, as in Rembrant's self-portraits.

4 More precisely, this entity is the 'average *period* life expectancy'. It is widely reported and discussed, even among the general public, but few understand its abstraction or unreal reference. 'Average *generation* life expectancies' can also be calculated. This is equivalent to the achieved lifespan, or the average age of death of a single year's birth cohort, but the figure is rarely reported.

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