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**Citation for published version:**

Della Sala, S & McIntosh, RD 2022, 'Righteous Adam, Sinister Eve', *Laterality*.  
<https://doi.org/10.1080/1357650X.2022.2151614>

**Digital Object Identifier (DOI):**

[10.1080/1357650X.2022.2151614](https://doi.org/10.1080/1357650X.2022.2151614)

**Link:**

[Link to publication record in Edinburgh Research Explorer](#)

**Document Version:**

Publisher's PDF, also known as Version of record

**Published In:**

Laterality

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# Righteous Adam, Sinister Eve

Sergio Della Sala  and Robert D. McIntosh 

Human Cognitive Neuroscience, Psychology, University of Edinburgh, Edinburgh, UK

## ABSTRACT

The symbolism of laterality in images implies that the virtuous figure is represented on the right of the scene whereas the sinful character is depicted on the left. In portraits of male and female characters this has reflected and reinforced stereotypes and inequalities down the ages. Given these premises, we hypothesized that the prototypical representations of Adam and Eve, as a man and a woman conflated with notions of virtue and vice, would show a non-random arrangement. We tested this hypothesis, sampling artistic depictions of the Garden of Eden, from the twelfth century to the present day in three separately-collected series of 100, 99, and 142 images respectively. Eve is depicted to Adam's left significantly more often than chance (between 70% and 83%), particularly in pre-1600 artworks. We interpret this asymmetry as reflecting the perceived lesser status of women in relation to men, since the allegorical incipit of humankind. We also provide experimental evidence that this asymmetry, although pervasive, has not been internalized by modern viewers. Cognitive sciences account for this spatial asymmetry in terms of preference for figures placed within the left visual field of the observer, i.e., within the right space of the objective scene.

**ARTICLE HISTORY** Received 1 September 2022; Accepted 19 November 2022

**KEYWORDS** Adam and eve; side of characters; pseudoneglect; spatial asymmetry; images

## Introduction

Aristotle's *Metaphysics* includes a table of opposites derived from Pythagorean philosophy, in which the right side is listed with male, light and good, and the left side with female, dark and bad (Lloyd, 1973). These archetypal associations of left and right have shaped symbolic depictions in the visual arts through the centuries, in sometimes subtle ways (Hall, 2008; Posèq, 2007). In a 1976 letter to *Nature*, McManus reviewed scrotal asymmetry in 107 ancient statues of men, finding the right testicle to be higher than the left twice as often as the reversed arrangement. He suggested that this symbolized the elevated

**CONTACT** Sergio Della Sala  sergio@ed.ac.uk  Human Cognitive Neuroscience, Psychology, University of Edinburgh, 7 George Square, Edinburgh EH8 9JZ, UK

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status of the right side, linked to a belief that the male child came from the right testicle and the female from the left (see also McManus, 2004).

The first treatise on iconography that explicitly considers laterality seems to be “The Painter’s Manual”, compiled by the monk Dionysius of Fourna on the Mount Athos monastery around 1730–1734, which prescribes patterns for positioning religious icons in images (Ferens, 2015). This manual defines left and right relative to the viewpoint of the characters in the image and implies that the right side is the virtuous side, with higher moral standing (see also Posèq, 1999). By the same convention, “in pre-modern artworks it was taken for granted that the mise-en-scene of the picture is set up in relation to its protagonists” (Hall, 2008, p. 25), whereby the laterality with respect to the viewer is also sometimes known as the “proper” left and right (see Couzin, 2021, p. 106). In images of the crucifixion, the bad thief is invariably on Christ’s left, and the good thief is on his right (Uspenskij, 1973); and in representations of the Last Judgement, the virtuous are placed on Christ’s right. Similarly, good Abel with his proper offer is represented on the right, whereas evil Cain with his unworthy offer is depicted on the left (Dinkler von Schubert, 1971, p. 514). A fine example of the association between the character status and their position in images is offered by Couzin (2021, p. 114) who notices that when Peter and Paul are depicted together in early representations, Peter, as the bishop of Rome, takes prominence and is almost invariably on the right of the scene. Given the relevance of the right hand of god in religious tradition (Ryken et al., 1998), and imagining god standing behind the characters depicted, the person on the right of the scene would be on the right hand side of god, hence held in holier or higher status.

These artistic traditions interact with concurrent ideas about the higher moral standing or rank of men over women. In early portraits of married couples, husbands are conventionally depicted on the right of their wives (Schleif, 2005). Indeed, Couzin (2021) reporting that 94% of wives are portrayed on the proper left (p. 141) states that “... it is not controversial that male priority at the right [of the scene] was a consistent principle rule in mediaeval imagery” (p. 149). Some examples are reported in Table 1 and reproduced in Figure 1 (for an exception see: Grant Wood’s American gothic).

**Table 1.** It is custom in couple portraits to depict the perceived more affluent person on the right of the subjective scene, i.e., on the left visual field of the observer. Here are some famous examples.

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- The Arnolfini Portrait, Jan van Eyck
  - The Jewish Bride, Rembrandt
  - Frida Kahlo and Diego Rivera, Frida Kahlo
  - The Honeysuckle Bower, Rubens
  - Tarquinius and Lucretia, Titian
  - The Marriage of the Prince and Princess of Wales, William Powell Frith
  - Portrait of a Married Couple, Anthony Van Dyck
-

The primacy of a figure on the right from the protagonists' perspective is compounded by the fact that this figure is on the left with respect to the viewer. In Western reading cultures, directional viewing is usually from left to right (Wölfflin, 1928), so that a figure to the left of the observer assumes prominence in the scene (Gaffron, 1950), is easier to notice by the observer (Van Sijll, 1954), and becomes the prime mover in the visual narrative (Chatterjee, 2002). In pantomime theatre, the audience is encouraged literally to take sides, with the villain entering stage left, the sinister side within the scene (Arnheim, 2004), which is the less-natural right-to-left viewing direction for the audience. The audience are encouraged to identify with the Fairy Queen, who enters from the opposite side, compatible with their preferred left-to-right scanning direction (Dean, 1941).

The symbolism of laterality has reflected and reinforced stereotypes and inequalities down the ages. Given these premises, we hypothesized that



**Figure 1.** Black/white and cropped reproductions of right/left positioning in famous paintings, the more affluent person (man) or the good (virtue) is depicted on the right side of the objective scene, whereas the lesser person (woman) or the bad (sin) is represented on the left of the actual scene. Clockwise from top left: The Arnolfini Portrait by Jan van Eyck, 1434; The devil holding up the Book of Vices to Saint Augustine, 1483, by Michael Pacher; Hercules at the crossroad by Annibale Carracci, 1596; Portrait of a Married Couple by Anthony Van Dyck, ca.1620.

the prototypical representations of Adam and Eve, as a man and a woman conflated with notions of virtue and vice (hinted at by Reynolds, 2016; p. 92; and by Couzin, 2021, pp. 149–150), would show a non-random arrangement: Eve, female, lesser, sinful temptress on the left; and Adam, male, higher, virtuous, and tempted on the right. We aimed at testing this hypothesis, sampling artistic depictions of the Garden of Eden, from the twelfth century to the present day.

## Methods

Initially, the first author (SDS) conducted a Google Images web search using the key terms “Adam & Eve painting(s)” plus “Garden of Even”, “Fall of man”, “Expulsion”, “Temptation” “Original sin”, or “Forbidden fruit”. He considered only images depicting the two main characters and clearly sided, typically Adam on one side and Eve on the other side of the tree of knowledge. No constraint on time period was applied to this search. When the search returned more than one image by same artist (e.g., Blake, Dürer, Gossaert, Raphael), or from the same source (e.g., Hunterian Psalter) or location (e.g., Cathedral of the Assumption, Monreale, Sicily; Pisa Dom), only the first result was included, unless two images from the same artist or the same location depicted Adam and Eve in reversed positions, in which case both were retained (e.g., Wtewael). The first hundred images fulfilling the selection criteria were considered. We provide the full dataset at <https://osf.io/h98se/> (Supplementary Material Appendix 1).

Second, a similar web search was then run by a person blind to the hypothesis who, due to their cultural background, was very little familiar with the biblical story. The selection criteria were slightly relaxed relative to the first search to facilitate sampling across a broader time period: a central element was not mandatory; the couple were not always both facing the viewer; and there could be other characters and animals present, though these were not coded or analysed. The sample comprised the first 33 results matching the selection criteria for each of three time periods: before 1600 (classical); 1600–1899 (pre-modern); and 1900 to the present day (modern) (Supplementary Material Appendix 2 at: <https://osf.io/h98se/>).

Google Image searches order results by “relevance”, hence an observed preponderance of one arrangement of characters in the previous two samples might reflect the popularity of this arrangement rather than its true frequency. Therefore, to collect a sample that would be free from such biases, we repeated the study, drawing images from the gallery database *Artstor*: <https://www.artstor.org/>. We considered only accessible content with “Adam and Eve” in the title. The search returned 260 results, of which 142 were deemed relevant, in that they depicted Adam and Eve, with the two characters clearly lateralized with respect to one another, and were not duplicates.

Finally, to check for the effects of lateral asymmetry in the mental representation of Adam and Eve scene amongst contemporary Western people we set up an online experiment. A total of 400 participants were recruited, via Prolific ( $n = 277$ ) for a small payment or via Twitter ( $n = 123$ ) as volunteers. The Prolific sample was restricted to US, UK and EU. Participants were presented with six trials, each one showing two versions of a painting, one above the other, with one a mirror-flipped version of the original. The task was to select the original painting. Participants were not given the titles of the paintings or the names of the artists. On one trial, the original painting showed Eve on Adam's left, and on one trial, the original painting had the opposite arrangement. Note that this task differs from the aesthetic preference examined in previous research (e.g., Friedrich et al., 2014) as participants' guesses as to which version is the original does not necessarily equate to their own personal preferences.

Two control trials showed abstract but asymmetrical paintings, for which responses were expected to be at chance levels. Three more images were used as check items for alert responding, whereby the images contained salient textual elements; the performance of any participant who did not respond correctly on all of the check items was excluded from further analysis (70 were excluded). The final sample had 330 participants (156 women, 171 men, 3 others; median age 33 years, range 19–75). Participants were recruited from countries (US, UK, EU) in which Christian imagery could be expected to be common, but personal familiarity with the story from the Genesis was not ascertained. The materials used for this experiment are detailed in Supplementary Material 3 (see <https://osf.io/h98se/>); the raw data and analysis code are also available at: <https://osf.io/h98se/>. The experiment received ethical approval from the University of Edinburgh, Psychology Ethics committee.

## Results

In the 100 images examined in the first search, Eve is portrayed on the left of the central element 83 times, Adam 17. Examples are shown in [Figure 2](#). A corpus of images of this size would provide approximately 85% power to detect a preponderance for one arrangement of 65% or more, using a two-tailed binomial test with a conventional significance criterion of .05.

The second search returned the outcome summarized in [Table 2](#). The asymmetry grossly replicates the previous search, but to a lesser extent. Eve is depicted to Adam's left a total of 69/99 times (70%). With this sample size, a proportion over 59% would mean significant support for expected bias (one-tailed  $p < .05$ ). The  $p$ -value attached to the observed result across all time periods is .00006. The data also suggest a possible trend for the asymmetry to have reduced over time, being more extreme in the classical period (82%) than in pre-modern or modern times (67% and 62% respectively).



**Figure 2.** Examples of classic paintings depicting Adam and Eve (particulars). Eve is depicted on the left of the actual scene, right side from the observer's viewpoint.

**Table 2.** The first 33 images returned from the Google search were considered for each of three time-windows. Number of times (and relative percentage) Eve is portrayed on the left side of the objective scene is reported.

Time window (centuries)	15th–16th	17th–19th	20th–to date
Eve on the left of objective scene	27 (82%)	22 (67%)	20 (61%)

The third search using a gallery database resulted in similar outcomes. Overall, Eve was represented on the left of the true scene 100 times (70%), and on the right 42 times. In the time period up to and including the sixteenth century Eve was depicted on the left a total of 49/65 times (75%); in more modern times from the seventeenth century, Eve was on the left 51/77 times (66%).

Unlike the examination of the images themselves, the online experiment did not show any asymmetries in the judgements made by modern viewers. The correct orientation of the two abstract paintings was selected by 50.0% and 47.3% of participants respectively, the canonical representation of Eve (to Adam's left) was selected by 48.2% of participants, and the correct non-canonical representation of Eve (to Adam's right) was selected by 53.9% of participants. In all cases, the 95% confidence interval was  $\pm 5.3\%$ , so the confidence interval always included the level expected by chance (50%).

## Discussion

Three surveys of visual artwork depicting Adam and Eve confirmed that Eve is most often portrayed on the left side of the scene, which corresponds to the right side from the observer's viewpoint. This clear asymmetry shows a possible trend to decline in more recent samples, which may be related to a move away from classical conventions to more diverse and experimental depictions. The great frequency with which biblical scenes were depicted during the European Renaissance (1400–1600) could have biased the first-author's

(familiar with the Genesis story) search, which was not selective for time-period, towards this era. These earlier depictions may exert an undue influence even on modern ideas of the prototypical scene, which the online experiment investigated. Consider the influence of Raphael's fresco in the "Stanza della Segnatura", Apostolic Palace, the Vatican or Michelangelo's Sistine Chapel depiction of the Garden of Eden scene.

Eve's positioning within the scene is not random, and the fact that she is consigned to its left side is unlikely to be an accident (for a discussion on the purposefulness of asymmetries in portraying characters in arts, see Suitner & McManus, 2012). It reflects the perceived lesser status of women in relation to men, ever since the allegorical incipit of humankind. The unquestioning acceptance of this tradition is abhorrent and pervasive: every time we visit a museum, every time we enter a church, every time we peruse an art textbook it may be implicitly reinforced. However, the online experiment demonstrated that this pervasive asymmetry has little influence on the perceived relative positioning of Adam and Eve in the classic representation of the Garden of Eden scene. We found no evidence that contemporary Western viewers were biased to judge the depiction of Adam to the right of Eve to be any more "correct" than the less traditional, reversed arrangement. Of course, we cannot know and would not like to speculate whether responses from earlier people to the experimental study would have been any different. Moreover, the null result observed could be related to the specific choice of images for this test, which was limited to two depictions of Adam and Eve, which may not have been representative. A more extensive survey would be required to confirm the impression that modern viewers are not systematically influenced by the traditional artistic biases for positioning that dominate amongst the images we sampled.

An exclusively gender-based account of the traditional asymmetry would predict that the female character would be depicted on the left in other scenes too, whereas a gender-virtue interaction account would predict that it depends on the woman's role in the story. Thus, although gender inequality is entrenched in Christian religions, the left-sided portrayal of female religious figures is not universal. Consider the iconic illustration of the Nativity of Jesus, in which Mary is often portrayed on the right of Jesus (see e.g., Botticelli, El Greco, Gentileschi, Giorgione, Giotto, Gossaert, Michelangelo, Rembrandt, Rubens, van der Goes; but see Lorenzo Lotto's "The Nativity", 1523). We are not making a universal claim about a gender effect in the representation of religious couples but pointing out a specific asymmetry in representations of Adam and Eve, in whom gender, and implied conceptions of virtue collide. Moreover, the examples of Virgin and Child paintings listed above suggest a pattern, but the sample is not random and far from complete. Future work should validate this claim by examining images of Nativity, of Mary at Crucifixion or flanking Christ paired with other iconic characters (for a discussion see Schleif, 2005, pp. 230–236).



This lateralized asymmetry is encountered in several other scenarios illustrating the dichotomy between higher and lower, good and bad, virtue and sin. In Western artworks, it is customary to depict on the right of the scene the more affluent or prestigious figure, whereas the figure on the left side (right side of the viewer) would be of lesser moral status (McManus, 2022; Pinotti, 2010). Hence, in “The devil holding up the Book of Vices to Saint Augustine” (by Michael Pacher, 1483) the devil is on the right of the viewer. The same is true for the 1887 Evelyn De Morgan’s pre-Raphaelite “Hope in a prison of despair” showing Hope holding a lamp on the subjective right, while Despair is grieving on the left. Paintings illustrating the choice between good and bad, invariably portray the same asymmetry: in 1596 Annibale Carracci’s “Hercules at the cross-road”, the hero has to choose between virtues on his right and temptations on his left (see also Dürer’s “The choice of Hercules”, 1498). In Raphael’s “An Allegory – Vision of the Knight”, the two ladies Virtue and Pleasure stand respectively on the right and left of the cavalier. See examples in [Figure 1](#).

The negative moral implications of the term *sinister* is common in most Western languages. The ancient name of Satan is Samael, deriving from the Hebrew *Smol*, which means Left, sometimes referred to as the name of the angel who planted the tree causing the fall of man (Posèq, 2007, p. 17). Lathrop (1906) proposed to use the term *sinister* to identify the figures depicted on the left the objective scene. Eve’s positioning on the objective left side of the tree in the Garden of Eden scenes represents her as the sinister character. Even in a right-to left reading culture, where the depicted narrative follows the opposite direction, Eve is still depicted on the left (*sinister* side) of the tree (Posèq, 2000, Fig. 12).

Cognitive sciences account for this spatial asymmetry in terms of a perceptual and representational preference for figures placed within the left visual field of the observer, i.e., within the right space of the objective scene (Friedrich et al., 2014). Such directional unbalance accounts for aesthetic preference that right-handed humans living in Western cultures attribute to objects figuring on the left of their visual field (McLaughlin et al., 1983). This preference to the left side (from the observer’s viewpoint) is likely due to a human universal, labelled *pseudoneglect* (Levy, 1976; Page et al., 2017). *Pseudoneglect*, a phenomenon first identified by Bowers and Heilman (1980), refers to an attentional bias to the left space when neurologically healthy individuals engage in perceptual or representational activities, so that objects on the left of perceived or imagined scenes, including face features (Voyer et al., 2012), assume prominence (Brooks et al., 2014).

## Conclusion

In images of the Garden of Eden, Eve appears on the left side of the objective scene more often than chance, and more than four times as often as on the

right side in pre-1600 artworks. We suggest that she is the victim of an unholy trinity of associations: she is a woman, thus responsible for original sin, thus consigned to the sinister side. This dark triad of original sexism permeates the visual art of Western, Christian cultures. It is worth bringing it to light, even though we have also found that it does not influence the perception of the representation of Eve in modern people in these cultures, which is reassuring.

## Acknowledgements

We are grateful to Nan (Elva) Peng, who collected the data reported in Appendix 2 of the Supplementary Material and to Elinor Mason who read an earlier version of the manuscript. We are also grateful to Robert Couzin and another anonymous reviewer for their constructive comments and to Carol M Richardson and Patricia Allmer, art historians at the University of Edinburgh for their help in identifying suitable galleries database and for their insight into the interpretation of biblical symbolism.

## Disclosure statement

No potential conflict of interest was reported by the author(s).

## Funding

The author(s) reported there is no funding associated with the work featured in this article.

## Data availability statement

The material used in this study and the experimental data that support its findings are fully available on the Open Science Framework at: <https://osf.io/h98se/>. Any further information relevant to the replication of the study will be made available upon reasonable request.

## ORCID

Sergio Della Sala  <http://orcid.org/0000-0003-4719-508X>

Robert D. McIntosh  <http://orcid.org/0000-0002-7615-6699>

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