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PORTRAIT PROFILES AND THE NOTION OF AGENCY

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ABSTRACT

Artists tend to draw portraits from an angle so that more of one side of the subject's face is depicted. The tendency to draw more of the left or right side of the face is influenced by gender, social, and personality characteristics of the subjects, and has changed over time. Several hypotheses have been advanced to account for these orientation biases, including effects of maternal imprinting, hemispheric specialization for emotional expression, hemispheric specialization for facial perception, and some form of symbolic communication. None of these hypotheses seem to account adequately for the range of observations reported thus far. I propose an agency hypothesis, which is based on the fact that right-handed subjects tend to conceptualize agents of actions to the left of where they conceptualize recipients of actions. This hypothesis emerged from studies on the interactions of language and space, and seems in accord with the art observations. The agency hypothesis suggests that remarkably simple spatial schemas influence several cognitive domains, including language and aesthetics.

Portrait painters rarely paint the face of their sitter "head-on." Instead they paint faces from an angle, depicting more of the left or right cheek of their subject. One might think that oblique views are painted to convey depth within the flat picture plane. The desire to convey depth may contribute to the tendency to paint faces at an angle. However, if conveying depth were the only reason for these depictions, then simply by chance, half the portraits would depict more of the left cheek and half more of the right. It turns out that orientations in portraits are not distributed evenly (McManus & Humphrey, 1973).

I will review data on profile biases in portraits and the explanations that have been advanced for these biases. I will then propose an alternate account, which I call the "agency" hypothesis. This hypothesis is rooted in empirical investigations of the interactions of language and space (Chatterjee, 2001) and seems to offer a parsimonious explanation for the painting biases.

EMPIRICAL OBSERVATIONS

1. Painters tend to portray faces with more of the left than the right cheek displayed. The bias to show the left cheek is accentuated in depictions of women than in men. McManus and Humphrey (1973) examined 1,474 painted portraits produced in Western Europe from the 16th to the 20th century. The sources for the portraits were museums, catalogues, and art books. They found that 56 percent the men and 68 percent of the women were portrayed with more of their left cheek showing. This bias was further exaggerated when the body was depicted in addition to the head: 62 percent for men and 70 percent for women. Gordon (1974, 1981) pursued this initial observation and found the same biases in 295 portraits painted by Goya. The left sides of cheeks were depicted more often and this bias was accentuated in portraits of women.

2. The portrait profile biases have changed over time. Grusser, Selke, and Zynda (1988) examined 933 portraits in central European museums and found a similar gender bias, but the bias diminished over time. For women, the ratio of left to right cheek depictions was about 8 to 1 in the 15th century, and diminished gradually to a ratio of slightly above 1 to 1 in the 20th century. For men, the ratio of left to right cheek depictions was about 3 to 1 in the 15th century, diminishing to about 1 to 1 thereafter. The authors also noted that portraits of women with the right cheek depictions were frequently portraits of sovereigns or other women of high social rank (although they do not report actual numbers).

3. The "social distance" between the artist and subject influences the bias in portrait profiles. Humphrey and McManus (1973) found that Rembrandt painted the left cheek in 15.8 percent of his self portraits, 17.6 percent of male kin portraits, 39.1 percent of non-male kin, 56.2 percent of female kin and 78.8 percent of female non-kin. They found similar biases in pooled data of 1776 portraits by different artists, in which the left cheek is painted in 39.4 percent of self-portraits, 56.2 percent of male portraits and 67.2 percent of female portraits. Among Goya's paintings, Gordon (1974) found similar gender differences but did not find systematic biases related to degree of kinship.

4. Portraits depicting the right side of faces are perceived as more "potent" and "active." Benjafield and Segalowitz (1993) used four portraits of men and four portraits of women drawn by Leonardo da Vinci as their stimuli. Half of the portraits showed the left and half the right cheek. The same images were also shown in mirror-reversed versions. Subjects rated the drawings on a Semantic Differential Scale. Portraits originally drawn by da Vinci with their right cheek

exposed were judged as more potent and more active, even when these images were shown in mirrored versions. Thus, original depictions with the right cheek exposed, rather than the orientation of the images themselves influenced these attributions.

5. Normal subjects "prefer" portraits depicting the right side of their cheek. McLaughlin and Murphy (1994) presented subjects with portraits in their original orientation and in their mirrored versions and asked subjects to choose which of the two orientations they preferred. Both men and women preferred portraits with the right cheek showing rather than the left, irrespective of the gender of the person in the portrait.

EXPLANATIONS FOR PORTRAIT PROFILE BIASES

1. Right-handed mechanics. According to Humphrey and McManus (1973), most art historians think that the directional bias in portraits occurs because right-handed artists find it easier to draw portraits facing left. This hypothesis may contribute to the general bias to draw left cheek portraits. However, the hypothesis does not account for gender differences, the historical and social variables and the personality characteristics ascribed to da Vinci's portraits.

2. Maternal imprinting. Right-handed mothers are likely to hold their babies in their left arms. Consequently babies imprint the left side of their mothers' faces (Grusser et al., 1988). This imprinting presumably influences artists, who are then more likely to depict the left side of women's faces in portraits. This hypothesis might account for gender differences in portraits. However, the shift in proportion of left cheek depictions from the 15th to the 20th century would mean that over these six centuries mothers declined in their propensity to carry infants in their left arms, which seems unlikely. This hypothesis does not address the social or personality variables in portrait biases. It also does not explain why normal subjects prefer portraits displaying the right side of the face.

3. Hemispheric differences in emotional expression. According to this view, the right hemisphere mediates emotions, which are expressed more vividly in the left side of the face (Rhodes, 1985). If artists were inclined to depict women as "emotional," then they would tend to depict the left side of their face. This hypothesis might account for some of the gender differences in portrait profiles. It would also mean that the tendency to identify women as emotional has steadily decreased since the 15th century. The hypothesis does not make clear predictions about portraits of men. Nor does it have anything to say about self-portraits, the characteristics ascribed to the da Vinci portraits, or viewers' preferences for right cheek depictions.

4. Hemispheric differences in facial perception. McLaughlin and Murphy (1994) suggest that the right hemisphere is specialized to recognize faces, and therefore normal right-handed subjects prefer parts of faces that fall in their left

visual field (Gilbert & Bakan, 1973; Levy, Heller, Banich, & Burton, 1983). Spatial attention can be directed at both viewer and object centered reference frames (Chatterjee, 1994). McLaughlin and Murphy's view collapses these reference frames. They assume that if the right hemisphere is specialized to processes information on the left of the viewer, then this hemisphere is also specialized to process information on the left of objects being viewed. They also assume that specialized processing of sensory information corresponds directly to a preference in processing that information. While these assumptions may ultimately turn out to be true, it is not clear that they necessarily follow.

The hypothesis is also difficult to reconcile with the other data cited reporting a general bias to depict the left and not the right cheek in painted portraits. Perhaps naïve viewers look at faces differently than artists, but the nature of this difference and how different biases would follow from this difference is not known. In the McLaughlin and Murphy study (1994) subjects were asked to choose the portrait that they "preferred." The notion of preference seems unconstrained. We simply do not know what motivates a subject's preference in such a task.

5. Symbolic communication. Humphrey and McManus (1973) suggested that the portrait profiles might be communicating something symbolically, but were not very specific about what might be communicated. Based on their observations of Rembrandt's portraits, they proposed that social distance determines the profile orientation. The closer the subject is to the painter, the more likely the portrait will display the right cheek. This hypothesis does not address the historical shifts in profile orientations, nor does it address the attributes ascribed to the da Vinci portraits, or why subjects in the McLaughlin and Murphy (1994) study preferred portraits with right cheeks depicted.

To summarize, the various hypotheses proposed to account for the orientation biases in portrait paintings seem plausible for some, but not all, of the extant observations. That is not to say that a single hypothesis should necessarily account for all the observations. However, all else being equal, I suggest that the agency hypothesis offers a more parsimonious account for most of these observations.

THE AGENCY HYPOTHESIS

Right-handed subjects are more likely to conceptualize agents (those doing the action) on the left of recipients of actions. Consequently, agents are more likely to be conceptualized as showing more of the right than the left side of their faces. This hypothesis derives from observations of an aphasic subject and behavioral studies in normal subjects. In what follows I will describe the empirical bases for the agency hypothesis and then discuss the extent to which the hypothesis accounts for the biases in portrait orientations.

THE EMPIRICAL FOUNDATION OF THE AGENCY HYPOTHESIS

People with brain damage may have remarkably selective language deficits. Some people with brain damage have trouble assigning thematic roles in sentences, or determining who is doing what to whom in reversible sentences, such as "the girl kisses the boy" (Chatterjee & Maher, 2000; Saffran, Schwartz, & Marin, 1980; Schwartz, Saffran, & Marin, 1980). This sentence is considered reversible because either the girl or the boy could be the agent (or doer of the action) of the sentence. Patients are sometimes tested with pictures of circle and square stick figures to avoid confounding the assessment of thematic role knowledge with semantic associations of real world actors.

The agency hypothesis can be traced back to observations in WH, a college professor who had significant difficulties in producing and comprehending reversible sentences. However, rather than performing randomly, he used a spatial strategy. In describing pictures, he consistently produced sentences in which the participant on the left of the picture was the agent (Maher, Chatterjee, Gonzales-Rothi, & Heilman, 1995). Thus, if a picture showed a circle stick figure on the left kicking a square, he accurately stated that the circle was kicking the square. However, if the picture depicted the circle on the right kicking the square on the left, he would say that the square was kicking the circle. Similarly, in comprehension tasks in which he matched sentences to choices of pictures, he was more likely to match "the circle kicks the square" to pictures with the circle on the left regardless of whether the circle was doing the kicking or receiving the kick (Chatterjee, Maher, Gonzales-Rothi, & Heilman, 1995a).

The observations in WH raised the question of whether his use of a spatial strategy in assigning thematic roles was simply idiosyncratic or whether his brain damage was revealing an underlying primitive representation of thematic roles. This primitive representation might have a spatial structure before being elaborated in and by language.

If thematic roles are represented spatially, then normal right-handed subjects might have spatial biases when conceptualizing thematic roles. Several experiments have confirmed this prediction (Chatterjee, Maher, & Heilman, 1995b; Chatterjee, Southwood, & Basilico, 1999). Normal subjects are more likely to draw the circle on the left when asked to draw events like "the circle pushes the square." They are also likely to draw the agent (circle in this example) to the left of where they draw the patient when asked to draw just the circle or just the square on separate cards. They are more likely to depict horizontal actions with trajectories moving from left to right than right to left. When shown a single picture of either an agent or a patient of an action indicated by an infinitive verb, subjects are more likely to draw the complementary thematic role with a bias to place the agent on the left of where they place the patient (see Figure 1). In reaction-time experiments, subject match heard sentences to pictures more quickly if the agent is on the

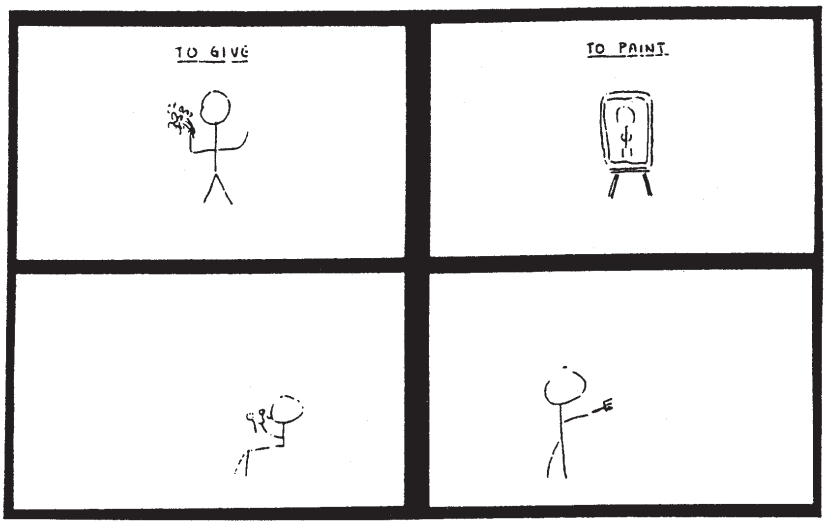

Figure 1. Examples of stimuli cards and responses used in a previous study (Chatterjee et al., 1995b). Cards on the top of the figure shows the stimulus card, which was removed before the subject made the drawing shown on the bottom. On the left is an example in which the stimulus depicted the agent and the subjects drew the patient. On the right is an example in which the subject drew the agent. The example of portrait stimulus and painter response is a coincidence.

left than on the right, and if the action proceeding from left to right than from right to left. In this experiment the location of the agent and the direction of actions were assessed separately by using verbs such as "push" and "pull" which the action moved away from or toward the agent.

Thus, right-handed subjects conceive of actions as moving from left to right and locate agents of actions to the left of recipients of actions. As an aside, several studies find that subjects are likely to judge visual images as more pleasing if they depict implied motion from left to right (Christman, 1995; Freimuth & Wapner, 1979; McLaughlin & Kermisch, 1997; Mead & McLaughlin, 1979). But, the link between the direction of implied motion and aesthetics is not the topic of discussion in this article.

Whether the spatial biases in conceptualizing thematic roles are brought about by cultural habits (of reading languages written left-to-right) or by properties of a lateralized brain are currently under investigation. I recently proposed that the left hemisphere is more likely to represent schematic spatial information and is likely to encode a left to right spatial vector (Chatterjee, 2001).

PORTRAIT PROFILES AND AGENCY

The relevant observation from the studies of thematic role knowledge is that right-handed subjects tend to locate agent to the left of where they locate patients. A subject on the left of the viewer would display more of their right cheek and a subject on the right would expose more of their left cheek. How well does this notion accord with the observations on portrait profiles?

1. Painters are more likely to portray the left side of cheeks in general, and this bias is accentuated in portraits of women (McManus & Humphrey, 1973). Presumably subjects posing for portraits are in a passive role and consequently artists were biased to paint them with their left cheek exposed. A cultural bias to consider women less as agents then men would result in greater tendency to depict women with their left cheek exposed.

2. The bias to depict the left cheek of women has decreased from the 15th century to the 20th century (Grusser et al., 1988). This change reflects a shift in the view of women over the last 6 centuries as more active agents in the world. Consistent with this view, the bias to depict women's left cheeks was attenuated in portraits of sovereigns and other powerful women.

3. Reversal in self-portraits and social distance. Painters presumably view themselves as agents. In fact, in the process of painting, they are explicitly engaged in their productive social role. Consequently they are biased to conceive of themselves with the right cheek exposed. The agency hypothesis might better explain the biases in Rembrandt's portraits than the social distance hypothesis (Humphrey & McManus, 1973). The fact that he was more likely to depict the right cheek of male non-kin than female kin is arguably better explained by agency than by social distance.

4. Character attributes. The observation that the da Vinci portraits originally drawn with the night cheek exposed were judged as more active and potent (Benjafield & Segalowitz, 1993) follows directly from the notion of agency. It seems natural that agents as doers of actions would be considered more active and potent. The fact that these faces were judged to be more active and potent even when depicted in mirror-reversed versions suggests that da Vinci used (implicitly or explicitly) the fight cheek exposure as one of several features at his disposal to depict individuals as active and potent. The other features would still communicate these characteristics in the mirrored versions. Interestingly, the "active" rating diminished slightly when the same portrait was depicted in the mirrored version with the left cheek exposed.

5. Right cheek preferences. I can only speculate about McLaughlin and Murphy (1994) findings, since the reasons for preferring one over another profile are not clear. If the agency hypothesis is correct, then perhaps the subjects in that study "preferred" images, which convey agency about a person. All things being equal, faces depicting the right cheek would convey a greater sense of agency.

CONCLUSION

The agency hypothesis offers a reasonable account of the biases in the facial orientations of individuals depicted in portrait painting. It has the advantage over other hypotheses in being derived from a completely different set empirical investigations and consequently has more general implications. I suggest that right handed subjects mentally represent thematic roles in the form of simple spatial schemas with agents to the left of patients. These spatial schemas infuse more complex cognitive domains, such as producing and comprehending sentences and perhaps visual aesthetics. Master painters are presumably gifted at conveying psychological intuitions and their own biases about their subjects. Thus, they incorporate (implicitly or explicitly) the notion of agency in their portrayals of people.

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