## The left testicle hangs lower because it is heavier; those who are left-handed suffer from more immune disorders and die younger; Neanderthals were left-handed. Left-handers have a bad time of it. However, left-handers are more creative on average, more intelligent, and include Einstein and Benjamin Franklin among their fold. These are all urban myths about left and right, and each of them

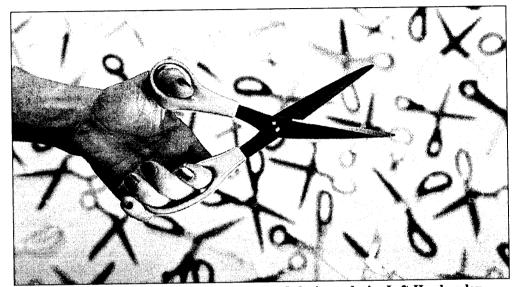
is untrue. In Right Hand, Left Hand, Chris

McManus provides a fascinating study of the

origins of asymmetry in life, culture and myth. The left testicle does lie lower and is larger in many statues (check this at a gallery near you) but in flesh-and-blood men the left testicle is slightly lighter, though it does indeed lie lower. As McManus explains, the origin of this myth lies in the triumph of theory over observation. As the function of the testicles was not at all clear to the Ancient Greeks (Aristotle for example thinking that they acted as weights to keep open the ducts where the seed was discharged) it was hardly surprising that they became convinced that the lower testicle, the one that had pulled down further, had to be the heavier: "simple mechanics but incorrect biology". Their statues then portrayed what they believed rather than the actuality. The true origins of this asymmetry are due to the fact that our apparent left-right symmetry is only skin-deep. In most of us, the heart and stomach are on the left, the liver and appendix on the right. Plumbing the machine of life and packing all the tubes and

## All things sinister

FRANK CLOSE



Shelagh Howe demonstrates a pair of left-handed scissors during Left-Handers day at North Lincolnshire College, 1998

nervous pathways efficiently leads to other asymmetries, such as the low-slung left testicle.

One of the most famous myths is that the Earth's rotation causes water to drain down the plughole in your bath anticlockwise in the northern hemisphere and clockwise in the south. The

## Chris McManus

RIGHT HAND, LEFT HAND
The origin of asymmetry in brains, bodies,
atoms and cultures
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real cause is due to a subtle form of symmetry-breaking called "hidden symmetry" and has nothing to do with rotation. Unfortunately, here McManus confuses the issue by claiming that it is "not controversial" that "ocean currents and tornadoes turn in opposite directions in the two hemispheres . . . [as] can easily be seen on pictures from meteorological satellites". Ocean currents and large-scale circulations in the atmosphere such as hurricanas, west but tornadoes?

ring themes in all discussions of left and right is the way that the left has been vilified throughout history and cultures. Adroit dexterity versus gaucheness and all things sinister; as McManus puts it "the only recorded sinistral success in an essentially one-sided cold war (with the dominant right-handed world) was the introduction in the medical profession of the term rectum for a little regarded part of the human anatomy".

Another sinister example of the bad association of the left is that presented by heraldry, wherein the diagonal bar may run either "\" or "I". The former is referred to as "bend dexter", such as that on the shield held by the knight where the diagonal runs from the knight's top right to bottom left. The latter, known as "bend sinister", is conventionally the sign of a bastard son, whereas bend dexter is for a legitimate son. Intrigued, I did some research of my own. Oxbridge colleges and other organizations with heraldic symbols uniformly choose the bend dexter. Yet, when members of those colleges sport their ties, the diagonals seem uniformly to run in the backward, sinister direction. Checking ties, in the street, in stores and on television, it seems that British club ties are sinister, whereas Ivy League ties from the United States seem to run in the mirror sense, dexter.

We can react emotionally in different ways to pictures and their mirror images. This, according to McManus, is related to the left-right asymmetries in our brain and the way this affects our perception. In a sense we tend to "read" images from left to right. One effect of this may be that the forward-slash, /, seems more natural in contrast to its mirror image, \, which is seen to be falling over. Is the British penchant for ties with sinister patterns due to a profound understanding of the psychology of perception by their designers? If so, why do ties worn in America do the opposite? Or is it símply a random accident of no significance?

Perhaps this question is relevant for the universe at large: is left-right asymmetry significant or not? The deeper one looks, the more does asymmetry become apparent and seem-

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Such experiments have been made, as I outlined in Lucifer's Legacy: The meaning of asymmetry (reviewed in the TLS of April 20, 2001), including my own failed one where en route from London to South Africa I realized just prior to take-off that the washbasin in the toilet was about to be transported all the way from north to south. I quickly locked myself in, with the plan of filling and draining the basin a few times to see if there was any tendency for the water to drain one way more than the other, and then to repeat the exercise on arrival to see if anything had changed. The whole experiment was ruined by the sudden whoosh as the suction extracted the contents so fast that it was impossible to tell whether they rotated at all. More serious experiments have been made and it is the design of the bath, the release of the plug, and which tap was more powerful that swamp the nugatory effects of terrestrial rotation.

Where McManus's book is fascinating is in its exhaustive investigations of manual asymmetry (he has identical twin daughters, one of whom is left- and one right-handed), psychology (are mirror images of pictures as pleasing as the originals?) and culture. One of the recur-

affects our perception. In a sense we tend to "read" images from left to right. One effect of this may be that the forward-slash, /, seems more natural in contrast to its mirror image, \, which is seen to be falling over. Is the British penchant for ties with sinister patterns due to a profound understanding of the psychology of perception by their designers? If so, why do ties worn in America do the opposite? Or is it simply a random accident of no significance?

Perhaps this question is relevant for the universe at large: is left-right asymmetry significant or not? The deeper one looks, the more does asymmetry become apparent and seemingly necessary for anything "useful" to have emerged; without asymmetry and structure the universe would have been bland. Are the multitudes of asymmetries proof that we are the end products of chance, and that philosophers and scientists have created a quasi-religious parable of symmetry that is obscuring the real explanation? Or was there indeed a perfect symmetrical scheme which included some wonderful ingredient, yet to be identified, from which all the asymmetries for life have spontaneously emerged? Towards the end of the book some of the issues about asymmetry in matter and cosmology are discussed, though with a few misconceptions. This should not detract, however, from what overall is a fascinating collection of facts about left-right asymmetry and of the work, much of it done by the author himself, in attempting to unravel some old chestnuts as to why there are more right-handers than left, and why the sentences in this article are all written from the left to the right.

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