

Lord of the dance

The dance moves that make men attractive to women.

THE need to identify a suitable mate is such a strong biological urge that the animal kingdom has spawned a bewildering array of courtship rituals. Hippo males fling their faeces; flatworms have penis-jousting contests; and humpback whales sing and leap above the ocean surface. Such competitive displays depend on the speed, strength and size of an animal, which is why they convey a measure of reproductive fitness.

Dancing is popular among animals for similar reasons. Scorpions and sandhill cranes, for instance, dance to impress. Humans also use dance as part of courtship, but it has been difficult for scientists to pin down exactly what it is about a dance that appeals to members of the opposite sex. This is because factors such as facial attractiveness, height and even social status tend to confound any attempt to judge the relative merits of a person's gyrations.

Nick Neave of Northumbria University in Britain decided to try to answer the question using motion-capture technology, as used to make films like "Avatar". Thirty students were recruited, none of whom was a professional dancer. They were covered in reflective markers, which allowed cameras to capture their dancing moves. A constant drum beat was provided and the students were asked to dance, but not told how.

The motion-capture data were used to animate a humanoid avatar that was featureless and gender-neutral. Heterosexual women were then asked to judge the quality of the dancing. The results, published in *Biology Letters*, were intriguing: the most attractive movements were those that had "variability and amplitude" in the head, neck and trunk.

Dr Neave explains that humans move in three planes. You can nod your head backwards and forwards, side to side or twist your neck to look over a shoulder. The women rated big movements in these three planes for both the head and the trunk as the most attractive. However, there was an additional factor, says Dr Neave. Head-banging (sorry, Motörhead fans) was simply not attractive: although it would show a large amplitude of movement in one plane it would not show the variability of movement that seems to appeal to women. Choreographers have told Dr Neave that movements in these three planes comes from strength and suppleness, so they would help to indicate a genetically fit male.

One curiosity was that, statistically, the speed of movement of the right knee also appeared to be important in signalling dance quality. Dr Neave, however, believes this may simply result from 80% of men being right footed, and so tending to place more weight on their left foot in order to demonstrate leg-wagging prowess with the right one.

Kristofor McCarty, a scientist who was also involved in the study, believes the work is the first scientific step towards understanding the biology and culture of dance. The scientists think that the core moves of an attractive dance may be universal, but that many cultures will have variations. For instance, in places where folk dances require the torso to be rigid, one would expect to find more emphasis put on the movement of the feet or head.

As for Dr Neave, he says that at 46 his dancing days are over. Nonetheless he remains interested enough to suspect that physically attractive males are better dancers and also wonders whether it is possible to detect a person's age from the quality of their dancing. If he can recruit enough gay men, he would also like to see if they make better dancers.

And then there are the sexual signals from female dancers to explore. Dr Neave has started to look at women in high heels (in the scientific sense) and ask whether high-heeled avatars are more attractive to men. Some have speculated that the attractiveness of high heels is down to

the youthful gait it gives women; others reckon it simply makes a woman's bum wobble. Avatars, having no wobbly bits, should therefore be able to solve that perpetual male mystery: why do women buy shoes that they cannot walk in?

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