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IS FALLING IN LOVE PATHOLOGICAL?

The answer given by the famous nineteenth century German doctor Ludwick Pick is ironically straightforward: "Love is an acute psychosis that may always be given a good prognosis".¹

In the beginning was the Word

The languages used in Western and Eastern cultures also suggest that being in love has been long considered a form of madness: "madly in love", "love fever", "love foolishness", *amoureux fou*, *loco(a) de amor*". "Infatuation" comes from Latin *fatuus*, which means "foolish". The concept of *falling* in love is also widespread in Western and Eastern languages.

There have been countless descriptions of the experience of infatuation, including the famous essay *De l'Amour* by Stendhal. All of them agree that falling in love involves a reduction of the capacity to think clearly and to act rationally.

Recent scientific data also support this interpretation of the infatuation phase as a form of madness. The similarities between being in love and being obsessed prompted Italian researchers to explore the possibility that both conditions might share the same alterations of the serotonin system.² The researchers studied twenty subjects who had recently fallen in love, twenty unmedicated patients with obsessive-compulsive disorders, and twenty normal controls. They found that subjects who were in the early romantic phase of a love relationship were no different from obsessive-compulsive patients, in terms of the density of the platelet serotonin transporter, which proved to be lower than in normal controls. (The serotonin system is known to modulate mood, emotion, sleep, and appetite and thus is implicated in the control of numerous behavioural and physiological functions).

A hard-wired physiological folly

Falling in love as a form of folly should not lead to the hasty conclusion that it is pathological. If the experience of infatuation is cross-cultural, this suggests that it is a human "hard-wired" behavioural pattern with probable evolutionary advantages. In other words, infatuation might be viewed as a period of physiological folly.

Anthropological studies support this point of view: it appears that romantic love is universal and not a product of any particular culture. Researchers from the University of Honolulu compared the 'passionate love scales' and the 'companionate love scales' of college students from an individualist culture (USA) and from a collectivist culture (Korea). No cultural difference was found.³

A survey presented at a session of the American Anthropological Association in 1992 found romantic love described in 147 cultures out of 166. What of the other 19? According to the organisers of the session, it is probable that the anthropologists were simply unable to recognise different variations of romantic behaviour confined to these unfamiliar cultures.

We might argue that anthropologists can only study civilized human groups that have established culturally controlled mating. It is well known that infatuation thrives on frustration and flourishes under difficult circumstances. It is also well known that there is a reinforced appeal for an object of desire considered illegal, immoral or, at least, difficult to obtain. One can therefore hypothesize that the concept of 'forbidden fruit' – a consequence of rules and barriers - provides a breeding ground for the most spectacular aspects of romantic love.

In fact, there are many reasons to believe that romantic love is the sophisticated expression (in our species, and to an extreme degree in some cultures), of universal behavioural patterns: mammals and birds regularly express preferences and choices for a certain mate. Data on such animal behaviour suggest that a behavioural 'attraction system' is associated with dopaminergic reward pathways.

We can consider romantic as a sophisticated form of this attraction system. This has been confirmed by functional magnetic resonance imaging in a study of 17 people who were infatuated.⁴ Activation specific to the beloved occurred in the brainstem right ventral tegmental area and right postero-dorsal body of the caudate nucleus: these results suggest that dopaminergic reward and motivation pathways contribute to the state of infatuation. A previous study with similar brain scanning concluded that a unique network is involved in becoming infatuated.⁵

A hormonal perspective can also conclude that, in spite of similarities with obsessive-compulsive disorders, falling in love remains a complex, specific entity. It is likely that diverse neurotransmitters and hormonal agents are involved in specific ways during the process of infatuation. A naturally-occurring amphetamine substance called phenylethylamine (PEA) seems to play a key role in stimulating romantic love.⁶ After a time, the brain tends to become less sensitive to the effect of PEA, or the level of PEA begins to drop: this signals the end of the period of infatuation.

According to an Italian study, cortisol levels are significantly higher among subjects who have recently fallen in love, compared with those who have not; testosterone levels are lower in men in love, but higher in women in love. It seems that the transient hormonal changes associated with the period of infatuation is sex-specific.⁷

Another Italian study suggests that raised levels of nerve growth factor are associated with early-stage romantic love, and that there is a significant positive correlation between these levels and the intensity of romantic love as assessed with the passionate love scale.⁸ Some behavioural and emotional features associated with falling in love could be related to raised nerve growth factor levels in the bloodstream.

Each species of mammals has distinctive sexual behaviours. For example, where apes are concerned, gibbons are monogamous, orangutangs and gorillas are polygynic, and chimpanzees are promiscuous. What about *Homo sapiens*? In the current scientific context we can claim that falling in love is a significant characteristic of human sexual behaviour. The transient period of infatuation may then lead to a period of attachment.

Today, we can propose a scientific interpretation of attachment between human sexual partners. There are many reasons to suspect that endorphins play a role in the attachment between sexual partners—rather similar to the influence of endorphins in the attachment between mother and baby during the hour after birth. This is a reason why the physiology of birth and the physiology of intercourse should be studied together.

Copulation among humans satisfies all the conditions needed to facilitate a state of dependency between the two partners while they release their natural opiates. There is usually a large area of skin-to-skin contact. Their sexual act usually lasts much longer than among our close cousins, the chimpanzees (whose intromission, thrusting, and ejaculation normally take ten to fifteen seconds). Moreover, human beings have intense orgasmic reactions, probably correlated with the release of high levels of opiates and oxytocin, the characteristic hormone of love.

Multiple orgasms is an interesting human female trait is. The capacity of some women to have this experience suggests that female orgasm plays many roles in human reproduction— not only to facilitate the transport of sperm to the egg by inducing uterine contractions. Primarily, it signals female satisfaction to the gratified male and cements the relationship, thus making him less inclined to seek sex elsewhere.

The evolutionary advantage of pair bonding among humans seems obvious at first. Human beings are born in a stage of exceptional immaturity and if the mother has to obtain her own food, it would be very difficult to rear the child by herself. But most human cultures adapted in a great variety of ways to these specifically human needs within the framework of extended families. Strict monogamy and the nuclear family are quite recent developments in the history of humankind.

Re-reading legends

Finally, it is the process of infatuation that seems to distinguish human sexual behaviours. We might conclude that human beings have been programmed to conceive a baby while in a state of 'physiological folly', when the ability to act rationally is reduced.

What can legends teach us about the circumstances in which human babies are supposed to be conceived? Like all living traditions, legends are transmitted through a process of natural selection. Those that carry valuable messages about human nature are more likely to disseminate and thus survive over millennia. Today, many legends seem to function as a way of keeping old messages alive through the centuries, although the keys to decode them may have been absent.

In a great diversity of cultures, legendary persons whose names are associated with love, as well as divine beings, were often conceived miraculously. Aphrodite was conceived when Cronus severed the testicles of his father Uranus and threw them into the sea. The conception of Buddha was also extraordinary: Maya had a strange dream in which she saw a white elephant entering into her womb through the right side of her chest, and so she became pregnant. The conception of Jesus was as miraculous as the conception of John the Baptist by Elisabeth the Barren after a visit by the Angel Gabriel. The mother of Asklepios (who was destined to express his compassion by finding remedies for all diseases and becoming the God of Medicine) was miraculously impregnated by the God Apollo. As early as the seventeenth century BC, an Egyptian tale engraved on the wall of a temple tells of the wondrous conception of a Queen. Amon, the Magnificent God, took on the appearance of the King (who was pre-pubescent) and so the heiress of the throne was conceived while the Queen was in an ecstatic state. Similar legends were found in ancient China - Pei Han, a supernatural being, appeared as human and gave a luminous object to the wife of a king—and so a son was conceived.

All these conceptions occurred outside rational comprehension. Such legends reinforce our understanding of infatuation as a transient episode of 'physiological folly'.

The future of conscious conception

Considerations about infatuation inspire questions about the future of 'conscious conception'. Today 'conscious conception' has already become a fashionable term. It includes the concepts of rational preparation and planning. If conceiving a baby during a period of transient folly is a hard-wired behaviour in our species, conscious conception and preconceptional preparation are by contrast non-natural.

In fact, the history of preconceptional programmes started very recently, during the last decades of the twentieth century.⁹ Such programmes appeared as adaptations to unprecedented situations. In many societies, young women had generally been advised to increase their level of wellness and to avoid hazardous substances before conceiving. Plutarch wrote that the ancient Spartans: "...ordered the maidens to exercise themselves with wrestling, running, throwing the quoit and casting the dart, to the end that the fruit they conceived might, in strong and healthy bodies, take firmer root and find better growth". However, these general recommendations given to a young female population did not suggest any concept of 'conscious conception'.

I realized the need to formulate appropriate questions about conscious conception when analyzing the results of our pilot study about the 'accordion method'. The objective of our six-month preconceptional programme was to reduce the body burden in fat-soluble synthetic chemicals such as PCBs, dioxins, PBDEs, etc. Thirty-four participants (23 women and 11 men) gave an initial blood sample to evaluate levels of 46 PCBs. A second blood sample was needed at the end of the programme to evaluate

the efficacy of the 'accordion method'. Only 14 participants came for the second blood sample and, among them, only seven (five women and a couple) had completed the whole programme. With such small numbers the results could not reach statistical significance.

The main lesson of our pilot study is that it is difficult to recruit volunteers who are sufficiently motivated to follow a six-month programme that interferes with their lifestyle. It seems that those who were in a state of infatuation when giving the first blood sample either conceived a baby, or split up, soon after. This anecdote reinforces the unnatural aspect of conscious conception. We are not surprised by the results of studies suggesting that in the USA half the pregnancies are unplanned.¹¹

Should we conclude that there is no reason to prepare the conception of a baby? In our society, at a time when 'womb ecology' appears as the most vital form of human ecology, there are many reasons to prepare the intrauterine environment (www.wombecology.com/newreasons.html). An accumulation of warnings suggests that intrauterine pollution by synthetic substances —non-existent a century ago—is one of the major threats for future generations. By contrasting the results of Danish research into the dietary habits of pregnant women¹² and the result of our own studies on the effects of dietary advice in pregnancy^{13,14}, we can conclude that dietary recommendations in antenatal clinics occur (to a certain extent) too late to have detectable significant effects in the perinatal period: ideally, we should address the importance of nutrition before conception.^{15, 16}

Our conclusion is that the 'scientification of love' should encompass the study of the period of infatuation as a characteristic of *Homo sapiens*.¹⁷

Michel Odent

London, February 14, 2007 (St Valentine day).

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