European Journal of Science and Theology, February 2015, Vol.11, No.1, 17-26

M&M'S OR MYSTICAL MINDSCAPES
THE AWKWARD PROBLEM

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(Received 2 July 2014, revised 28 August 2014)

Abstract

About 100 years ago, Freud lashed out with the claim that spirituality – mystical experiences included – is nothing but a recanalization of suppressed sexuality. This provoked fury, sarcasm and denial despite the fact that ascetics and mystics have always been aware of a link between spiritual practices and sex. As a matter of fact, well known and respected religious figures (e.g. Bonaventure in Christianity) have reported that spiritual ecstasies sometimes produce real sexual fluids. It is this somewhat awkward link that I explore in this presentation. I connect what is known of the underlying neurophysiology of ecstatic (mystical and orgasmic) states with the phenomenological insights gained from Psychology and literary criticism. My conclusion is that far from being neurotic, mystical ecstasy is a part of the most healthy and transforming mystery on the planet – the truly divine and truly sexual mystery of conceiving new life.

Keywords: mysticism, altered states of consciousness, sexuality, orgasm, cognitive neuroscience of religion

1. Introduction

I would first like to sincerely thank the organizing committee of this symposium, and Prof. Anne Runehov personally, for the opportunity to present my ideas here. For the past seven years or so my field of research has been the study of mystical states of consciousness (MSCs). Since most audiences are not familiar with the technical meaning of the word *mystical*, most of my presentations on the subject matter have begun with a disclaimer that *mysticism* does not equal magic, sorcery, esoterics or the like. So it is a privilege to be addressing an audience which does not need this type of introduction.

To now come to the title of my paper, one may first ask why on Earth the allusion to the M&M's chocolate drops. The reason for this choice is twofold. On the one hand, the two M-s are simply an alliteration-based vignette to emphasize the phrase *Mystical Mindscapes*. On the other hand, though, the allusion has a more specific point. Think of the two M-s in M&M's as referring to mind and matter. Naturally, in what follows I shall not be trying to offer a solution to the mind-body problem. What I *shall* be doing is looking at MSCs

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(the M of the mind) in terms of how they might be bodily constrained and conditioned (the M of matter). This involves bridging concepts from Cognitive neuroscience, Psychology, Religious studies and several other fields.

The issue of how mind states are bodily constrained and conditioned is, of course, an intriguing topic by itself. Think, for example, of the Freudian idea that throwing up can, under certain circumstances, be a *psychological* statement (e.g., throwing up may be the primary process psyche's 'message' to the conscious mind, carrying the meaning of disgust - roughly, the concept of primary process psyche correlates to that of subconscious mind). But in the study of mysticism this issue has a much more specific and somewhat awkward aspect. It is the suspected neurobiological link between MSCs and human sexual response (for an example of relevant argumentation see [1]). In essence, what some authors are saying is that when it comes to the bodily conditioning and constraints in the case of mysticism, MSCs are a modification of orgasm. This is the awkward problem I shall be addressing in the following pages.

2. Of spiritual affections and orgasms

When Freud lashed out a hundred years ago with the claim that spirituality (and, in fact, human culture at large) is nothing but an alternate channel for releasing sexual energy, many religious scholars and clerics met it with sarcasm and denial. However, that there is a link between mystical experiences and sexual ecstasy has been known and accepted by practitioners of mystical techniques of all times.

Let us ask, for example, why it is that in many cases mystics are advised to remain abstinent. How could such "conservation of semen" – as Jeffrey Kripal calls it in his magnificent book 'Roads of Excess, Palaces of Wisdom' [2] – be useful for attaining to spiritual insights unless there were a physiological link between sexual and spiritual processes? Or think of tantric sexual practices. These are aimed at attaining to the spiritual, using sexual intercourse as a *means* to that end. Paradoxically, both 'conservation of semen' and the ritual sexuality of tantrism witness to an intimate bond between sexuality and MSCs.

It is quite important to emphasize the *physiological* nature of this link here because more often than not the discussions about mysticism and sexuality remain on the level of uncovering phallic and other sexual symbols in the descriptions of MSCs. One of the routinely quoted passages in this connection is the following excerpt from Saint Teresa of Avila's autobiography: "It was our Lord's will that in this vision I should see the angel in this wise. He was not large, but small of stature, and most beautiful – his face burning, as if he were one of the highest angels, who seem to be all of fire [---]. I saw in his hand a long spear of gold, and at the iron's point there seemed to be a little fire. He appeared to me to be thrusting it at times into my heart, and to pierce my very entrails; when he drew it out, he seemed to draw them out also, and to leave me all on fire with a great love of God. The pain was so great, that it made me moan; and yet so surpassing was the sweetness of this excessive pain, that I

could not wish to be rid of it. The soul is satisfied now with nothing less than God. The pain is not bodily, but spiritual; though the body has its share in it, even a large one. It is a caressing of love so sweet which now takes place between the soul and God, that I pray God of His goodness to make him experience it who may think that I am lying." [3]

Departing from a Freudian viewpoint one would tend to see the above as a highly erotic description. Since spears (as all weapons) are recognized as phallic symbols and since Teresa is a woman, the thrusting of the fiery dart into her heart becomes a parable for sexual intercourse. This impression is deepened as one reflects on the sentiments embedded in Teresa's confessions. That these metaphors truly *are* sexual becomes clear if one compares – as Kripal has done – the sexual symbolism in Teresa's description above to similar ones by *male* mystics such as Saint John of the Cross [4]. Consider the following stanzas from his famous *Living Flame of Love* (Llama de amor viva):

"O living flame of love
that tenderly wounds my soul
in its deepest centre! Since
now you are not oppressive,
now consummate! if it be your will:
tear through the veil of this sweet encounter"

Just as in the case of Teresa, what one has here is the concept of a wounding weapon tearing through the religious mystic. And the fact that all of this is highly sexual becomes clear – as Kripal correctly notes – from the fact that there is an awkward and clearly recognizable homoerotic tone to this stanza. (I am **not** suggesting there is something inherently awkward about homoeroticism. I **am** saying that while in Teresa's case the erotic 'undercurrent' of the description may easily go unnoticed, it is quite clear in John's reflections on his MSCs.)

Now, as I pointed out above, it is important to keep in mind that the link between mystical and orgasmic states is of a *physiological* nature. It is only too easy to get carried away uncovering and analyzing sexual symbolism in mystical texts in the above manner. But the real question is *why* these texts seem to have sexual connotations. And here, I think, the problem goes much deeper than the level of linguistic metaphor.

It is instructive in this respect to recall the work of Georges Bataille whose 'Erotism: Death and Sensuality' is often referred to when discussing the sexual metaphors in Teresa's descriptions of her MSCs. Quoting other investigators, Bataille says that there is nothing to prove that Teresa's experiences were not really simply violent venereal orgasms. Hence, one might be led to the conclusion that MSCs are nothing but transposed sexuality and hence neurotic [5]. Now, this would indeed be a truly awkward problem for scholars of mysticism! In order to 'save' the integrity of MSCs, Bataille then argues that even though there definitely are deep sexual aspects to MSCs, they are by and large *extrinsic*. Mystics are perfectly aware of the physical sexual sensations accompanying their experiences, so when these occur they ignore

them, regarding them without dread or fear [5]. In other words, even though sexuality admittedly plays a part in MSCs, it is secondary to them, i.e., not their constituent (intrinsic) element.

This is an elegant argument and quite useful in sorting out the further details of the MSC-orgasm link. However, I tend to think Bataille dismisses the possibility that sexual responses might be *intrinsic* to MSCs too hastily. That this might be so is immediately clear from a comment attributed to Saint Bonaventure on what is sometimes experienced by male mystics during intense spiritual ecstasy. He writes of those who *carnalis delectationis pruritu foedantur et in spiritualibus affectionibus carnalis fluxus liquore maculantur* [6]. Roughly, then, what is said is that during spiritual affections the *itching of bodily desire is aroused* and the mystics are *stained with the liquid of the carnal flow*.

While it is indeed possible to argue that these 'stains of the carnal flow' are simply an extrinsic side effect of states that are otherwise functionally completely independent of the sexual response, I find such an interpretation to be unsatisfactory. The Freudian model of seeing physiological reactions (such as throwing up) as at least potentially carrying cognitive or affective content seems to provide a better analogy here. (It could be argued, for example, that if throwing up can be the primary process psyche's 'message' of disgust, then orgasms coinciding with MSCs may also signal something psychological – in this case positive. This would make an interesting argument with respect to the question of how states of consciousness are bodily conditioned and constrained.) But even so one would still only have analogies and similes. In order to really decide on the extrinsic-intrinsic issue one needs to: (a) assess how far the parallels go between the neurophysiological substrates of MSCs and orgasm, and (b) investigate how and under what circumstances these parallels might have evolutionarily arisen.

3. Correlating MSCs and orgasm neurologically

Before going into the neurological parallels between MSCs and orgasm, a note is needed with respect to the term 'orgasm'. It may at first seem that comparing MSCs to orgasm means comparing the uncomparable. It is therefore essential to keep in mind that *orgasm is a state of consciousness* – it 'happens' in the brain, not in the genitalia. As Francesca Bianchi-Demicheli and Stephanie Ortigue put it, too often investigators study only the physiological *signs* of orgasm leaving aside the issue of what the experience *itself* is [7]. To avoid this pitfall and to bring MSCs and orgasm under a common denominator, I have found Cindy Meston and colleagues' definition immensely useful. Stripped of technical details, their point is that orgasm is a variable transient peak sensation of intense pleasure, creating an *altered state of consciousness* that resolves the sexually-induced vasocongestion, usually with an induction of well-being and contentment [8]. From this perspective, MSCs and orgasms are simply two varieties of altered states of consciousness. Hence, if one wants to know about how far the parallels go between MSCs and orgasm it makes sense to compare

their neural correlates, i.e., compare which areas of the brain 'light up' in each case. This is precisely what I did in my study 'Eros & Mysticism: Are Mystical States of Consciousness Evolutionary Byproducts of Sexual Response?' [9]. The following paragraphs provide a rough summary of my 2009 analysis.

It may feel irritating at first but one of the handiest ways to start charting the parallels between MSCs and the altered state called orgasm is via epilepsy research. In the case of MSCs and other spiritual states the allusion to epilepsy should not be surprising. Epilepsy has occasionally been referred to as 'the sacred disease' and throughout the 20th century one of the most influential approaches to the neuropsychology of MSCs was based upon relating MSCs to epileptiform discharges in the brain (for a representative overview, see [10]). Intriguingly, however, the same allusion also comes up in sex research. Barry Komisaruk and colleagues note that there are numerous men and women who describe orgasmic feelings just before the onset of epileptic seizures. In fact, there are several documented cases of patients refusing medical treatment for their epilepsy because they liked these orgasmic feelings [11].

To understand how these three – MSCs, orgasm and epilepsy – go together it is fruitful to start from the notion of rhythm. The human brain is basically a community of interacting neurons and functions like a large city. If one installed a network of microphones all over a city and listened to all of them at once, a steady hum of unstructured noise would be heard, even though every particular event composing the noise was structured and purposeful. Likewise, except for large scale effects such as brain-wave rhythms, normal brain activity creates unstructured electrochemical 'noise'. It would be highly unexpected if the microphones over the city suddenly all started to transmit the same structured signal. One would probably think something must be wrong. Likewise, in the case of the human brain, it would be unexpected to see large numbers of neurons to start firing in the same looping rhythm. There would most likely be something wrong if it happened.

Well, it *does* happen. And usually it *does* signal that something is wrong: synchronous firing of large groups of neurons is the hallmark of epilepsy. Epilepsy is a chronic nervous disease which is characterized by the occurrence of fits – stereotypical disorders in motor or behavioural reactions, consciousness, sensitivity, etc. Fits are the result of excessive *hypersynchronous kindling* of neurons. In other words, a fit occurs when large numbers of neurons start firing synchronously and uncontrollably in the same rhythm.

Now, while synchronous neural firing is usually discussed within the context of pathology, *the process itself is not necessarily pathological*. As with many diseases, the epileptic disorder represents, so to speak, a perfectly healthy process gone wild. This becomes clear if one takes a look at what happens in the brain during orgasm. The orgasmic process is typologically similar to the epileptic in that the rhythmical genital stimulation during sexual activities leads to synchronous discharges (microseizures) in the brain. As Komisaruk and colleagues put it, epileptic seizures are characterized by abnormal, cyclical and synchronous activation and deactivation of large numbers of neurons. It is likely

that the rhythmical and voluntary timing of genital stimulation also produces synchronous activation of large numbers of brain neurons. A consequence (and probably the function) of this regulated synchronous activity in orgasm is the *activation of high-threshold systems* such as the one that controls ejaculation [11, p. 216].

The idea that the original (not pathological!) function of rhythmical, synchronous neuronal discharges is the activation of unusual, high-threshold systems is centrally important in understanding the truly extraordinary MSCs as well. As early as the beginning of the 1970s Ernst Gellhorn and William Kiely proposed a physiological model in which they viewed MSCs as also representing a high-threshold system which is characterized by the simultaneous activation of the two basic branches of the Autonomic Nervous System (ANS) – sympathetic and parasympathetic [12]. While this model is old, its basic elements are still viable and the model is extremely helpful in understanding the MSC-orgasm-epilepsy link. The basic logic of the argument is as follows.

Generally, the main branches of the ANS function 'antagonistically': activation of one leads to inhibition in the other. Sympathetic reactions are associated with fight-or-flight responses and arousal, parasympathetic reactions with maintaining homeostasis and well-being. But given prolonged and sufficiently intensive stimulation, so-called 3rd stage autonomic states are possible during which both of these systems fire at once [13]. The best known such state is orgasm [14, 15]. Phenomenologically, such states would involve one's being *simultaneously highly aroused and profoundly relaxed* – a paradoxical union of opposites.

At this point it should be recalled that Rudolf Otto's famous explanation of the numinous experience is also based upon the union of opposites – the numinous experience is a *mysterium tremendum et fascinans*: a mixture of startling fear and ecstatic exaltation. As the paradoxical coincidence of opposites is also one of the most frequently reported aspects of MSCs (e.g. the sense of a mystical union of the individual I and God), it seems reasonable to conclude that the autonomic coactivation states represent a physiological correlate of MSCs as well.

Now, such coactivation states are generated by driving either of the ANS subsystems to extreme levels of activity (e.g. by rhythmical stimulation resulting in powerful synchronous neural firing). In such cases activity can 'spill over' to the opposite branch of the ANS. As the occurrence of such an unusual state by chance would be potentially dangerous, it makes sense that there are specific high-threshold sequences to enable it.

In the case of orgasms, continuous and rhythmical physical stimulation serves as such a sequence. Of the ones used for eliciting MSCs, shamanic drumming and meditation are probably best known. In shamanic drumming, the aim is to 'tune' the nervous system to the right 'frequency'. In mantra meditation, the rhythm of stimulation is formed by one's constant mental repetition of the mantra. The rhythmicity of the stimulation leads in all cases to synchronous neural discharges typologically similar to those during epilepsy.

However, differently from the epileptic disorder, these discharges do not generalize (i.e. spread uncontrollably) since they are stimulus-specific.

For an example of how the above discussed elements can be used to explain MSCs, let me now take a brief detour via the mental rhythms involved in mantra meditation. Basically, meditation is a concentration task. Concentration is a cyclical process; without continuous conscious effort it quickly vanishes. The meditative process starts in the prefrontal cortex (PFC) as one begins concentrating on, say, a mantra. Now this concentration must be deepened. To accomplish that, one needs effective motivation.

Motivatory states (such as sexual and emotional drives) are mediated by the brain's limbic system (especially the hypothalamus, amygdala and hippocampus. For instance, the functions of the hypothalamus have sometimes been defined in terms of three capital F's – Feeling, Fighting, Fleeing and Reproductive behaviour). So what happens during successful meditation by one's effort to concentrate on a mantra is that a motivatory feedback loop is formed between the PFC and the limbic structures; the deeper the concentration gets, the stronger the motivational feedback.

This cycle represents a *process quite similar to that at work in the generation of orgasms;* with each subsequent cycle the intensity of the synchronous neural discharges grows since synchronous firing tends to 'recruit' neighbouring neurons to 'join in' in the activity (this is sometimes called the staircase phenomenon). Importantly, the activity in the ANS is regulated by the limbic system. In fact, the hypothalamus may be thought of as a 'master switch' of the ANS subsystems. Since the hypothalamus is a relatively small structure, it would not be surprising if the strong activation in response to prolonged meditation 'spilled' from its sympathetic to parasympathetic section or vice versa [16]. This scenario is supported by the work of Sara Lazar and colleagues [17].

The simultaneous activation of both of the ANS subsystems leads to a curious effect in another part of the brain – the posterior superior parietal area. Namely, the extremely strong emotional and bodily (limbic and autonomic) feedback is enough to 'overwhelm' the brain's normal processing capacity. So part of the neural signals are simply gated out. This way, the posterior superior parietal area is deprived of neural input. It is this seemingly irrelevant side effect that is likely responsible for some of the most extraordinary qualities of MSCs. This particular brain area monitors the position of one's body in relation to the surrounding space and objects. In essence, it helps 'sorting one's individual self out from the rest of the world' by creating a clear distinction between the categories 'me' and 'external world'. Hence, if it were deprived of incoming stimuli, one would have a clear bodily perception that there is no such thing as an individual 'me' or 'outside world' – it would feel as if I were everything and nothing at once. This is something mystics have said for centuries [16]. And it provides additional insight (compared with the above discussed ANS-based model) into what exactly the experiential content of mystical union might be.

To summarize what I have said so far: there are clear similarities between the neural dynamics involved in the generation of orgasms and MSCs. A handy way to model these similarities is to refer to epileptiform activity. As to the specific brain structures involved in the generation of *both* orgasms and MSCs, the hypothalamus, amygdala and hippocampus ought to be specifically pointed out. The role of the hypothalamus should be quite clear from the above – as it is the main pathway between the brain and the ANS and as it mediates the most fundamental motivatory drives. That the amygdala – the 'nucleus of nuanced emotion' – and hippocampus are involved in the generation of MSCs was directly shown by Lazar and colleagues in an imaging study already mentioned [17]. The role of the same structures in enabling sexual response is clear from the data on the so-called Klüver-Bucy syndrome [18]; lesions in the amygdalar-hippocampal complex can lead to either hypo- or hypersexuality (depending on the particular locus of damage). Moreover, epileptic activity originating in the medial parts of the temporal lobe (especially in the amygdala and hippocampus) has been shown to sometimes result in intense orgasmic and mystical experiences [7, 10, 11].

On the cortical level the parallels between the neural correlates of orgasm and MSCs largely vanish. This, of course, is exactly what one might expect because after all orgasms and MSCs are not the same thing. Moreover, even the neural correlates of MSCs attained by using different techniques differ widely on the cortical level. It seems, therefore, that the main parallels between MSCs and orgasms are traceable in the dynamics of how these states are generated (rhythmical stimulation that gathers intensity with every subsequent cycle and the consequent synchronous neural discharges which lead to 3rd stage ANS states) and, perhaps even more importantly, how they are motivated (recall the four F's of the hypothalamus I mentioned in a footnote above).

Now, coming back to the question of whether sexuality is extrinsic or intrinsic with respect to MSCs, the above suggests that while *extrinsic* is an understatement, *intrinsic* might be an overstatement. The overlaps in neural dynamics and parallels in motivatory sequences suggest that the human capacity for MSCs may evolutionarily have arisen as a side branch of the sexual response [1, 9]. This means that no matter how hard a mystic might try to 'do away' with anything even remotely sexual, complete success will never be achieved. Hence, sexuality is more than extrinsic to MSCs. However, this does not mean that MSCs are *nothing but* twisted orgasms. That the capacity to experience them may have originated in the sexual response does not rule out the possibility that MSCs truly *are* a genuine way to communicate with the Ultimate – under whatever name one should know Him/Her/It.

4. Conclusion

From the Christian theological perspective, the discussed links between MSCs and the sexual teach a lesson of humility and appreciation. That the most sublime spiritual ecstasies of human beings are fundamentally continuous with

the humble sexual responses of quite unpretentious species makes it clear how deeply creaturely we are as human beings. That MSCs – religious ecstasy – is directly related to sexuality ought to be *celebrated*, not resented. Far from 'staining' the spiritual in any way, this link provides evidence that religious ecstasy is a part of the most healthy and transforming mystery on the planet – the truly divine mystery of conceiving new life.

Acknowledgement

This research was supported by the European Union through the European Regional Development Fund (Centre of Excellence in Cultural Theory).

A version of the essay was presented at the symposium 'Mystic Consciousness or Conscious Mystics? Perspectives from Theology, Psychology, Philosophy and Neuroscience' held in Fyn, Denmark 27-29.05.2011.

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