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[Perspective] On the autonomy of mystical perception

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Abstract

While fleeting mystical encounters have been described in the literature, these experiences were hardly considered in the cognitive sciences appropriately once they culminated into a permanent state of consciousness, the mystical mind. In general mystical accounts were either interpreted as impermanent subjective feelings or mystical experiences are discussed within and mixed with religious belief systems rather than external to religion.

In the following I will present evidence that the mystical mind is a genuine, distinct, permanent mental state separate from the well known and more or less well characterized mental states coma, dream, dreamless sleep, athletes "flow", five-sense-perception, deep meditation, normal daytime awareness. The fully transformed mystical mind is not average consciousness plus some features, but another kind of consciousness. Its achievement has deep philosophical ramifications in finding the purpose of life.

I will collect mystical mind characteristics from literature usually not considered within the natural sciences and show that these characteristics have been described again and again with great coincidence over the last 4000 years, in particular in asian cultures. It is a mental state of non-verbal, non-rational awareness, a particular form of permanent intuition.

Compared to five-senses perception and rational thinking, this form of intuition delivers another, but not necessarily inferior, picture about ourselves, our relations with other people and what constitutes reality, therefore representing an autonomous state of perception.

I will argue that the mystical mind can and should be investigated separate from religious belief and ordinary five-senses perception.

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1. Introduction

Religious experiences were in some cases regarded by investigators as a form of perception rather than mere belief, for instance in the form of the "limbic marker hypothesis for religious-mystical experience" (Saver and Rabin 1997) or the "naturalness-of-religion thesis" (Barrett 2000). Still, cognitive scientists either assume *a priori* or try to argue why five-senses perception is superior, namely more convincing and more serious, compared to religious experience. However, this superiority of five-senses perception cannot be claimed with respect to mystical perception. The mystical mind set is a different and yet coequal kind of perception compared with five-sense perception and rational thinking and thus should be investigated independently from religion.

Judgements about the veridicality of everyday perception versus religious or mystical experience are based on two underlying assumptions, which might need closer inspection.

First prior is that what constitutes reality can be and should only be objectively ascertained by our five senses or experimental measurement and described by rational tools. The inferiority of subjective perception versus alleged objective perception is usually taken *a priori*. For instance, religious "capacity" has been defined as "anything from the capacity to be woefully deluded about reality to the capacity to engage some ultimate reality" (Barrett 2010). Yet to label a person as "woefully deluded about reality" presumes in-depth understanding of reality on part of the non-deluded. How deep is this depth? Can we take for granted that the claim of delusion of the others is a not a delusion on ones own part?

Second prior is that in cognitive theories of religion (Atran 2002; Boyer 2001), "information processing" self-evidently is concerned with informations resulting as output from our five senses and logical reasoning, excluding output of processing resulting from inner non-verbal encounters like meditation and mystical awareness. Meditational or mystical experience would be classified by detractors such as its "non-sensory" nature on one hand and, on the other hand, *ad-hoc* definitions of genuine perception such as "common-sense notions of perceptual experience", "vividness of detail", "general reliability rooted in feelings of direct encounter". Clearly 'common sense' and 'general reliability' are vague notions, yet used as priors. These assumptions were, in one case, framed under the label "dynamic engagement theory of direct realism" (Barrett and Wildman 2009) but can be found as more or less general commonality within the field. A hallmark of these views is that "perception is [=has to be] an interactive process" with the environment: "without the active contribution of the subject, the active contribution of the object is lost" (Barrett and Wildman 2009), thus denying that pure inner experiences are perceptions.

In the following I will argue that mystical mental states differ fundamentally from mere religious belief; that mystical convictions, although not derived from interaction with the environment but from inner experience and "given" knowledge,

allow deep insights just as five-sense perception and logical thinking, and that these insights disembogue into a pristine ethical framework representing the best of what the rational mind can deliver.

The term 'mystic' usually confines the European christian mystics of the middle ages. Here mystics are defined as women and men who, according to their writings or biographies written by contemporaries, share a number of common attributes (textbox 1), thus including mystics from all centuries and cultural backgrounds and masters of meditation.

Textbox 1. Characteristics and attributes of people with mystical experience

- Mystics and masters of meditation share several convictions, derived either from a sudden intuitive knowledge gain (called revelation or epiphany in religious context, liberation or awakening according to modern schools) or as the product of extensive, often decade long meditation and exercises of mind development derived from old scriptures such as the Upanishads. These convictions are more or less independent from the respective cultural and religious background (textbox 6) and include the conviction that
 - time does not exist (see textbox 2)
 - there is an underlying reality beyond the reality we can perceive by our five senses or derive by rational deduction (see textbox 3)
 - mystical perception is related to five senses reality as five-senses reality is related to dream, i.e. it is perceived sharper and more profound than five-senses perception (see textbox 4).
 - in principle, everybody has access to mystical perception but ordinary people "ignore" it.
 - mystical perception is intuitive, non-rational and non-verbal, while five-senses perception is entangled with rational verbal discourse (by spoken or thought sequences of words)
 - the mystical mental state and the nature of the underlying reality can hardly be described by words (see textbox 4)
 - everyone is worth the same, i.e. there is no human being superior or inferior to anybody else. On a deeper plane we are all connected.
 - what non-mystics believe to be their personality, their "I", is not their true Self. Rather, the true Self (or soul) is covered by a thick layer of "Ego" (see textbox 5). Purpose of our life is to reduce the amount of Ego and to access the true Self, a process called "liberation" or "awakening".
 - our primeordial state is happiness. Once minimum levels of shelter, nutrition and health are implemented, negative emotions are epiphenomena, belonging to and vanishing with the ego.
- A number of personality traits including humbleness, compassion, altruistic behaviour, lack of death anxiety, lack of violence, lack of wanting, a deep respect with all forms of life, attractive or charismatic demeanour.
- The ability to enter, voluntarily or spontaneously, a particular deep meditational state (called samadhi in hinduism, unio mystica in christianity) which is characterised by completely shunning sensory input and an overwhelming feeling of bliss and connectedness or even unity with a numinous creative power (see textbox 4). This power is experienced as non-restricted by time and space and is labeled, depending on the respective cultural background, non-deistic as 'nirvana' or deistic as 'brahman', 'tao', 'god'. It appears as if there are several levels of depth of samadhi (seven according to Ramana Maharshi). In the deepest state protagonists describe a complete loss of any feeling of personal identity.

Some people with known mystical encounters are listed in table 1.

Table 1. People with known mystical encounters (selection)

Lao-Tse (China, 6.cent.BC)
Gautama Buddha (India, about 560-480 BC)
Zuangzi (China, 3.cent.BC)
Plotin (Italy, about 204-270)
Gregor of Nyssa (Greece, about 335 - 395)
Augustinus (Algeria, 354-430)
Dionysus Aeropagita (Greece, 5.cent.AC)
Ari Sankara (India 788-820)

... ..

Al-Hallaj (Persia 858-922)

Symeon (Turkey, 949-1022)

Bernhard of Clairveaux (France, 1090-1153)

Hildegard of Bingen (Germany, 1098-1179)

Elisabeth of Schönau (Germany, 1129-1164)

Alpais of Cudot (France, 1150-1211)

Franz of Assisi (Italy, 1182-1226)

Dogen (Japan, 1200-1253)

Mevlana Dschelaledin Rumi (Turkey, 1207-1273)

Mechthild of Magdeburg (Germany, 1212-1277)

Angela of Foligno (Italy, 1248-1309)

Mahmud Shabestari (Iran, 1250-1320)

Meister Eckhart (Germany, about 1260-1328)

Johannes Tauler (Germany, about 1300-1361)

Haci Bektas Veli (Turkey, 13.cent. AC)

Heinrich Seuse (Germany, about 1295-1366)

Jan van Ruusbroec (Netherlands, 1293-1381)

Geert Groote (Netherlands, 1340-1384)

Juliana of Norwich (England, about 1342-1416)

Katharina of Geneva (Italy, 1447-1510)

Nanak (Pakistan, 1469-1539)

Chaitanya Mahaprabhu (India, 1484-1536)

Ignatius of Loyola (Spain, 1491-1556)

Teresa of Avila (Spain, 1515-1582)

Johannes vom Kreuz (Germany, 1542-1591)

Francois de Sales (France, 1567-1622)

Jacob Böhme (Germany, 1575-1624)

Angelus Silesius (Germany, 1624-1677)

Jeanne Marie Bouvieres de la Mothe Guyon (France, 1648-1717)

François de Salignac de La Mothe, called Fenelon (France, 1651-1715)

Hakuin (Japan, 1685-1768)

Sri Ramakrishna (India, 1836-1886)

Sri Ramana Maharshi (India, 1879-1950)

Swami Muktananda (India, 1908-1982)

Gopi Krishna (India, 1903-1984)

Byron Katie (USA, born 1943)

Eckhart Tolle (Germany, born 1949)

Jill B. Taylor (USA, born 1959)

The main hypothesis put forward here is that the mental state of mystics and master meditators can be a permanent state rather than fleeting feeling and is distinct from and as worthwhile investigating as other mental states such as dream, dreamless sleep, athletes "flow", five-sense-perception, deep meditation. The mystical mind should be addressed as independent mental state by scientific investigation. Some possibilities how this could be done are suggested. As a first step towards appreciation of the mystical mind, I believe it is imperative to listen carefully to first-hand narratives of mystical experiences, resisting the understandable wish to frame these experiences under common schemata. To support this endeavour I have scanned and filtered a pile of mystical original literature and present some telling citations.

2. Religious belief is different from spirituality

The non-overlap between religiosity and spirituality has been noted early on (Sabatier 1905; Schuon 1953). Saucier and Skrzypinska (Saucier and Skrzypinska 2006) have shown that religiosity (defined as a belief system in a superhuman power plus practises of worship and ritual) and spirituality (defined as a search for final truth, increasing intuitional capacity on the way and sometimes subjective experience of the sacred) have distinct correlates. The degree of individual spirituality obviously may vary; people have different 'spiritual musicality'. Top spiritual musicality here is defined as a particular form of intuitional knowledge, which does not correlate with religious belief (Lindeman et al. 2019), a trait that has been coined 'spiritual but not religious' (SBNR) (Willard and Norenzayan 2017).

Religious people without spiritual musicality would be characterised by their preference for ritual, dogma, strong attachment to a particular church, a feeling of personal and religious superiority over members of other churches or non-believers. People with plenty spiritual musicality would be characterised by the feeling that many religions, when shed off 'irrelevant stuff', have a common core of spiritual truth; the conviction that reality, whatever that is, cannot be fathomed by rational tools alone; and the feeling that every human being is worth the same.

To avoid excluding individuals who share characteristics of both traits, recent research has grouped individuals onto one of four identities: 'more religious than spiritual' (MRTS), 'more spiritual than religious' (MSTR), 'equally religious and spiritual' (ERAS), and 'neither religious nor spiritual' (NRNS) (Chen et al. 2022; Willard and Norenzayan 2017). However, these classes might potentially blur the characteristics of great spiritual musicality. Great spiritual musicality - and finally the mystical mind - seems to be characterized by greater confessional independence (textbox 6), less binding to particular churches, humbleness and - strangely - a core of common traits and a core teaching derived independently from each other (Huxley 1945) (see textbox 1). The greatest spiritual talents of all epochs developed or better bore out these and

other common traits independently. Surprisingly, everyone with great spiritual musicality - mystic or master of meditation - embodies the very same ethical behaviours: act humble and altruistic, be compassionate, respect any form of life, do not harm, forgive, help other people, know thyself to find deepest truth. It is puzzling that our highest ethical values reproducibly spring into existence out of the blue sky in top spiritual musicians. Great spiritual musicality appears to represent a genuine autonomous form of perception (table 2), different from but as profound as the normal wake-state five-senses perception.

Table 2. Common sense vs. mystical perception

Common sense perception	Mystical perception
Derived from rational, logical, emotional, visual, auditory, olfactory, touch and taste informations	Derived from thoughtless, non-rational, inward-looking, intuitive perception
Cannot deliver ethical values	Without exception delivers ethical values like love, mutual respect and altruistic action
Accessible by laboratory experiment (MRI, sociological interview) in everyone	Accessible by laboratory experiment (MRI, sociological interview) only in highly-skilled mystical talents or masters of meditation
High degree of certainty, above belief and intuition	Degree of certainty of mystical perception underestimated by people lacking mystical experience but highest degree of certainty - above five-senses perception - in people with mystical experience (see textbox 3)
Communicatable	Hardly communicatable (see textbox 4)
Unidirectional flow of time from past over present to future	Time does not exist (see textbox 2)
Perceived objects are physically separate and more or less durable	Everything is connected and consists of energy in permanent flow
Genuine meaningful perceptual experiences are sensory inputs, emotions, logical conclusions	Genuine meaningful perceptual experiences are love, unselfishness, connectedness, often, but not always, the feeling of being identical with a numinous creative power
Self definition by wealth, outlook, power, distinctness, importance and a more or less accentuated feeling of superiority or inferiority of the own membership (tribe, sports club, religion, nation, skin colour a.s.o) over other groups	Every human being is worth the same, humbleness, respect for all living creatures. Self-importance is not a category of any relevance.

Textbox 6. Mystical experience often transcended and even contradicted prevailing clerical and cultural dogmas

Al-Hallaj (858-922) claimed that the islamic pilgrimage to Mekka could likewise be suspended by inner contemplation at home and was tortured to death

Rumi (1207-1273), against a rigid islamic cultural background, taught tolerance, charity and the conviction that all religions have a common core of truth, such that muslims, christians and jews should tolerate their respective opinions without any feeling of superiority.

Meister Eckhart (about 1260-1328), former vicar of Thuringia and Bohemia, dominican leader of Saxony, prior in Strassburg-Alsace, was sued for heresy on 28 points by pope John XXII and had to anticipate torture and hangman (he died in 1327 or 1328, before the case was negotiated).

Nanak (1469-1539), the founder of Sikhism, against a dogmatic hinduistic and islamic background, installed a municipality meal, the langar, where everybody, sikh, hindu and mohammedan, rich and poor, woman and man (!) was sitting side by side and sharing the same food - a breathtaking cultural achievement. To this day many sikh-temples have a kitchen offering a free meal to anybody who needs it.

Sri Ramakrishna (1836-1886), born as a brahmanic hindu, accepted food from members of all castes.

3. Mystical encounters often were pathologized and do not resemble the permanent mystical mind

Mystical encounters have been discussed in the scientific literature as illusion (Horton 1974); related with psychiatric disorder (Duguay et al. 1974), neurosis and psychosis (Caird 1987), schizophrenia (Buckley 1981), schizotypy ("personality characteristics found in non-clinical populations that at the pathological end can be related to psychosis and schizophrenia") (Willard and Norenzayan 2017), depression (Vittengl 2018), alcohol abuse (Sorensen and Cutter 1982), hypoxia (Arzy et al. 2005), 'psychic' experiences (Schwartz 2010), temporal lobe (Persinger 1983) or other brain dysfunctions (Fenwick et al. 1985), including epilepsy (Persinger and Makarec 1987).

Lifshitz and co-workers coined the term 'absorption' for a range of spiritual experiences such as moments of awe, experiences of the paranormal, experiences under psychedelic drugs and concluded that such experiences are the result of the ability to blur the boundaries between imagination and perception, again implying that spiritual experiences are 'not real' (Lindeman et al. 2019).

Some of the characteristics of the mystical mind were investigated in form of a "mysticism scale" using a questionnaire with 32 questions handed to students (Hood 1975; Hood et al. 1993). These 32 questions can be grouped to address five feelings which were regarded by the investigators as characteristic for the mystical mind state (Saver and Rabin 1997): a feeling of immense joy, a feeling that all things are somehow alive and united, the feeling that time is non-existent, the feeling that there is an ultimate reality, and the inability to express the experience adequately by words. Although it is correct that mystics often described those feelings, the authors presumed that these feelings can be investigated within the standard five-senses-logical-thinking frame. Yet, the mystical mind set extends beyond those feelings.

Saver and Rabin investigated religious-mystical experience, characterised by Hood's five criteria, in normal individuals and individuals with different neurologic and neuropsychiatric syndromes and derived a widely recognised "limbic marker hypothesis for religious-mystical experience" (Saver and Rabin 1997). According to this hypothesis, numinous experiences are similar to ordinary experiences like strong emotions, but "tagged by the limbic system as of profound importance" and therefore rendered ineffable, united, joyous. Saver and Rabin do not substantiate "therefore". Woollacott and Shumway-Cook developed a questionnaire to find characteristics common to 53 academics who had experienced a "spiritually transformative experience" (STE) (Woollacott and Shumway-Cook 2023). Although it was reported that in many cases a transformation of values and beliefs, for instance from a materialistic world view towards ego-dissolution, was sustained in the long term, it is not clear if these transformations resembled the permanent blissful state of fully transformed saints which can deliberately go in and out of verbal thinking (Tolle 2005).

The investigation of normal individuals or individuals with neurologic disorders certainly cannot substitute the investigation of true mystics and masters of meditation, just as the investigation of untrained individuals cannot substitute the investigation of top athletes or top musicians. Numinous experiences can vary widely with respect to depth, permanence, and profundity. In the following the term 'mystical mind' will be restricted to people with profound experiences outside of those scales.

4. Conjoint mystics attributes

There is a huge pile of literature about the biographies and sayings of mystics and masters of meditation. From this literature, which so far remains largely unexplored in cognitive sciences, some unifying characteristics with respect to convictions, personality traits, capabilities and teachings can be derived. These characteristics can be used to identify and investigate subjects with deep and lasting mystical experience. Some of these attributes are listed in textbox 1. They overlap with but extend attributes from Hood's mysticism scale.

Masterly spiritual musicality, as of today, is hardly investigated and difficult to comprehend. Thus to scrutinize top performer intuition, so far we are left with and have to rely on the core of what mystics and masters of meditation themselves tell us. To review mystical literature extensively is out of scope of the hypothesis presented here. As a derivative, to illustrate some of the attributes of mystical perception, several citations from mystics (plus some related ones from quantum physicists) are collected in textboxes 2-5 with the headers "Time does not exist", "There is a reality underlying the reality perceived by the five senses. This reality cannot be accessed by the rational mind", "Mystical experience is hardly communicatable by verbal description", "Our hidden true nature, the Self, is distinct from, and shielded by, our Ego".

To categorize those narratives as hearsay would be both detrimental and inapposite: collectively they obey one of the central scientific requirements, namely reproducibility - not as usual 'horizontal' at the same time over many test objects but 'vertical' over centuries and many test objects.

Textbox 2. Time does not exist

Johann August Scheffler, called Angelus Silesius (1624-1677, Germany)

"You yourself generate time! Clockwork are the senses. Stall the balance wheel - time is gone." (Silesius 1995)

Jeanne Marie Bouvieres de la Mothe Guyon (1648-1717, France)

"Past, present and future are there in the form of one present and eternal moment, not as prophecy treating future as something still to come but all present in eternal moment." (cited from (Huxley 1945))

Ramana Maharshi (1879-1950, India)

"What is time? We say time is the interval between two events. An event has no existence if it is not reflected in the mind. The mind is generated by the self. If the mind is not in use, no concept of 'time' remains. Time and space are products of the mind, but the true self is beyond the mind. The concept of time has no relevance at all in those who have discerned their true nature [the mystic]." (Maharshi 1955)

Byron Katie (born 1943, Ojai, California, USA)

"And that's time and space and place: an illusion. Like an internal optical illusion. [...] I mean we're so attached to the concept we're in, that we really...it's such a vivid movie that it would imply a past and future with it all in it. It's just a concept now. So it is just in the moment now. There's no division point in it. There's nowhere where you know where it differentiates." (Katie 2000/2001)

Albert Einstein (1879-1955, Germany, Nobel price physics 1921)

"For us physicists the demarkation line between past, present and future merely has the meaning of a permanent illusion" (cited from a letter to a friend one month before his death 1955)

Carlo Rovelli (Quantum physicist, Univ. Marseille)

"It is not reality that has a time flow, but our very approximate knowledge of reality. Time is the effect of our ignorance". (Geffer 2008)

Textbox 3. There is a reality underlying the reality perceived by the five senses. This reality cannot be accessed by the rational mind

Adi Sankara (788-820, India)

"What is other than the eternal [reality] shines insubstantial, like a mirage in the desert." (Sankara 1946)

"In dream, devoid of substance, it emanates a world of experienter and things experienced, which is all mind; so in waking consciousness. There is no difference. It is all the domination of the mind [rationality]" (Sankara 1946)

"By steady effort is gained the knowledge of those who know the eternal [the mystics], the lonely, stainless reality above all illusion; but not by desultory study" (Sankara 1946)

"Looking at the reflection of the sun in the water of a jar, he who is deluded thinks this is the sun. Thus the reflected consciousness appearing under a disguise [our five senses preception] is thought by him who is hopelessly deluded to be 'I'. " ("delusion of the 'I' " is explained in textbox 5) (Sankara 1946)

Meister Eckhard (about 1260-1328, Germany)

"When do you reside in mere rationality? I tell you: If you distinguish one object from the other. And when do you reside above mere rationality? This I tell you: If you recognize all in all, than you reside above mere rationality" (Huxley, 1945)

Al Ghazali (1058-1111, persian polymath and mystic, in his treatise "Deliverance from error"):

"...a mystical "state" which is realized in immediate experience by those who walk in the way leading to it. Those to whom it is not granted to have immediate experience can become assured of it by trial (sc. contact with mystics or observation of them) and by hearsay, if they have sufficiently numerous opportunities of associating with mystics to understand that with certainty by means of what accompanies the "states". Whoever sits in their company derives from them this faith; and none who sits in their company is pained. [...]

Behind the mystics, however, there is a crowd of ignorant people. They deny this fundamentally, they are astonished at this line of thought, they listen and mock. [...]

Man's information about the world is by means of perception; and every perception of perceptibles is created so that thereby man may have some acquaintance with a world (or sphere) from among existents. By "worlds (or spheres)" we simply mean "classes of existents".

The first thing created in man was the sense of touch, and by it he perceives certain classes of existents, such as heat and cold, moisture and dryness, smoothness and roughness. Touch is completely unable to apprehend colours and noises. These might be non-existent so far as concerns touch.

Next there is created in him the sense of sight, and by it he apprehends colours and shapes. This is the most extensive of the worlds of sensibles. Next hearing is implanted in him, so that he hears sounds of various kinds. After that taste is created in him; and so on until he has completed the world of sensibles.

Next, when he is about seven years old, there is created in him discernment (or the power of distinguishing- tamyiz). This is a fresh stage in his development. He now apprehends more than the world of sensibles; and none of these additional factors (sc. relations, etc.) exists in the world of sense.

From this he ascends to another stage, and intellect (or reason) ('aql) is created in him. He apprehends things necessary, possible, impossible, things which do not occur in the previous stages.

Beyond intellect there is yet another stage. In this another eye is opened, by which he beholds [...] things which are beyond the ken of intellect in the same way as the objects of intellect are beyond the ken of the faculty of discernment and the objects of discernment are beyond the ken of sense. Moreover, just as the man at the stage of discernment would reject and disregard the objects of intellect were these to be presented to him, so some intellectuals reject and disregard the objects of prophetic revelation.

That is sheer ignorance. They have no ground for their view except that this is a stage which they have not reached and which for them does not exist; yet they suppose that it is non-existent in itself. When a man blind from birth, who has not learned about colours and shapes by listening to people's talk, is told about these things for the first time, he does not understand them nor admit their existence. [...]

Properties of prophetic [mystical] revelation are apprehended only by immediate experience (dhawq) from the practice of the mystic way."

Rumi (1207-1273, Turkey)

"Rationality is like an officer. If the king [mystical awareness] appears, the officer loses his power and retracts." (Huxley,1945)

"The human [rational] mind recognizes secondary causes, only the prophets [mystics] recognize the impact of the underlying reality" (Huxley 1945)

Ramana Maharshi (1879-1950, India)

Visitor: "Is the visualized world real?"

Ramana Maharshi: "It is real in the same sense as the seer, the subject, the object, [five-senses] perception. There is a reality beyond those." [...] "To those who have not realized the Self as well as to those who have, the world is real. But to the former, truth is adapted to the form of the world, whereas to the latter, truth

"I have not realized the Self as well as to those who have, the world is real. But to the former, truth is adapted to the form of the world, whereas to the latter truth shines as the formless perfection and the substratum of the world. This is the only difference between them." (Maharshi 1955)

"Objects perceived by the senses are spoken of as immediate knowledge. Can anything be as direct as the Self - always experienced [by mystics] without the aid of the senses? Sense-perceptions can only be indirect knowledge, and not direct knowledge." (Maharshi 1955)

"Effortless and choiceless [mystical] awareness is our real nature. If we can attain that state and abide in it, that is all right. But one cannot reach it without effort, the effort of deliberate meditation. [...] Sometimes glimpses or realization [mystical consciousness] are attained before it becomes permanent, and in such cases effort still continues to be necessary." (Maharshi 1955)

"The [rational] mind is maya [veil of delusion]" (cited in (Tolle 2005))

Gopi Krishna (1903-1984, India)

"The universe we see has reality only in the normal human mind. Beyond that, it becomes an illusion, a *fata morgana*." (Krishna 1972)

Eckhart Tolle (born 1949, Germany)

"At the heart of the new [mystical] consciousness lies the transcendence of thought, the newfound ability of rising above thought, of realizing a dimension with yourself that is infinitely more vast than thought. [...] [By restriction to rationality] cleverness may be gained, but wisdom is lost [...] Thinking is no more than a tiny aspect of the totality of consciousness" (Tolle 2005)

Anton Zeilinger (Quantum physicist, Univ.Vienna)

"...for the individual event in quantum physics, not only do we not know the cause, there is no cause. The instant when a radioactive atom decays, or the path taken by a photon behind a half silvered beam-splitter are objectively random..... The discovery that individual events are irreproducibly random is probably one of the most significant findings of the twentieth century.... I suggest that this randomness of the individual event is the strongest indication we have of reality 'out there' existing independently of us.... I think that the concept of reality itself is a stake... the distinction between reality and our knowledge of reality, between reality and information, cannot be made. There is no way to refer to reality without using the information we have about it. Maybe this suggests that reality and information are two sides of the same coin, that they are in a deep sense indistinguishable. If that is true, than what can be said in a given situation must, in some way, define, or at least put serious limitations on what can exist." (Zeilinger 2005)

Textbox 4. Mystical experience is hardly communicatable by verbal description

Mandukya Upanishades (pre-hinduistic scriptures including the rigveda (1400 BC) and the upanishades (1000 - 500 BC))

"The third kind of knowledge is not the knowledge of the senses, is not the knowledge derived from conclusions. Beyond sense, beyond understanding, beyond all expression is the third kind of knowledge. It is pure consciousness where all [rational] knowledge about this world is extinguished. It is ineffable peace. It is the highest wealth. It is the one without second. It is the Self." (Huxley 1945)

Lao Tse (6th cent. BC, China)

"Who knows, does not talk.

Who talks, does not know" (Huxley 1945)

Bible, Joh. 12.16

"I still have much to say, but you can not carry it. But if He, the spirit of truth, will come, He will be leader into the whole truth."

Adi Sankara (788-820, India)

"The purpose of all words is to illustrate the meaning of an object. When they are heard, they should enable the hearer to understand this meaning, and this according to the four categories of substance, of activity, of quality and of relationship. For example 'cow' and 'horse' belong to the category of substance. He 'cooks' or he 'prays' belong to the category of activity. 'White' or 'black' belong to the category of quality. Having money or possessing cows belong to the category of relationship. Now there is no class of substance to which Brahman belongs, no common genus. It cannot therefore be denoted by words which, like 'being' in the ordinary sense, signify a category of things. Nor can it be denoted by quality, for it is without qualities; nor yet by activity because it is without activity - 'at rest, without parts or activity' according to the scriptures. Neither can it be denoted by relationship, for it is 'without a second' and is not the object of anything but its own self. Therefore it cannot be defined by word or idea; as the scripture says, it is the 'One before whom words recoil'. " (Huxley 1945)

Symeon, christian monk (949-1022, Turkey)

"What shall I speak about the unspeakable? What the eye has not seen, the ear not heard, the heart not felt, how could I express that by words? Even if we have acquired this [mystical mind], [...] we neither can comprehend it with our [rational] mind nor express it with our tongue." (Huxley 1945)

Meister Eckhard (about 1260-1328, Germany)

"Thus a scripture [presumably from Origenes (185-254)] says, a gloss, truly right, that none can understand or teach St.Pauls writing [Bible, gospel of Paul] except he is within the same spirit in which St.Paul spoke and taught." (Huxley, 1945)

Johannes Tauler (about 1300-1360, Germany)

"What he [human spirit] sees, feels, experiences there [during unio mystica] no-one can talk about, no-one can understand." (Tauler 1987)

"This darkness [unio mystica] one should understand like this: it is a light where no created thinking power can reach and which cannot be comprehended. It is 'wild' because it has no [easy] access. In this [unio mystica] spirit becomes guided beyond itself, above all comprehension. " (Tauler 1987)

Juliana of Norwich (about 1342-1413, England)

"[Revelations come] By ghostly sight. But the ghostly sight... I may never fully tell it." (Norwich 1373)

Al Ghazali (1058-1111, Iraq):

"Later, a higher [mystic] state is reached; instead of beholding forms and figures, they come to stages in the "way" which it is hard to describe in language; if a man attempts to express these, his words inevitably contain what is clearly erroneous.

In general what they [mystics] manage to achieve is nearness to God; some, however, would conceive of this as "inherence" (hulul), some as "union" (ittihdd), and some as "connection" (wusul). All that is erroneous." (cited from: "Deliverance from error")

Ramakrishna (1836-1886, India)

Talking to a disciple: "Eternal, pure [mystical] consciousness - how may I explain to you? If someone asks you: 'How does ghi [butter oil] taste?', how do you explain to him? You can merely tell: 'Ghi tastes like ghi'. A girl was asked by her young girl friend: 'Your husband came, now, which pleasures can one have once the husband comes?'. The girl replied: 'Once you get a husband, you will know. How could I explain to you now?'" (Ramakrishna 1984)

Gopi Krishna (1903-1984, India)

"I might try to explain it [mystical awareness] this way: it is as if an enlarged picture of the world is seen, but not like through a microscope, but as if the picture of the world now is projected on a larger surface of awareness" [...] The 'I' remained as it was, but now surrounded by a shining sphere of consciousness of immeasurable width." (Krishna 1967)

Textbox 5. Our hidden true nature, the Self, is distinct from, and shielded by, our Ego

Kathaka-Upanishad, Vedas (about 1000-500 BC)

The Self [mystic mind] is not realizable by study nor by intelligence nor learning. The Self reveals its essence only to him who applies himself to the Self. He who has not given up the ways of vice [egoism], who cannot control himself, who is not at peace within, whose mind is distracted, can never realize the Self, even if he is full of the learning of the world.

Meister Eckhard (about 1260-1328, Germany)

"A man has many skins in himself, covering the depths of his heart. Man knows so many things; he does not know himself. Because, thirty or forty skins or hides, just like an ox's or bear's, so thick and hard, cover the soul. Go into your own ground and learn to know yourself there." (Huxley, 1945)

Ramana Maharshi (1879-1950, India)

"In deep sleep you exist; awake, you remain. The same Self is in both states. The difference is only in the awareness and the non-awareness of the world. The world rises with the mind and sets with the mind. That which rises and sets is not The Self. The Self is different, giving rise to the mind, sustaining it and resolving it. So the Self is the underlying principle." (Maharshi 1955)

"The individual localising its existence within the physical body is the ego. The Self, being pure awareness, has no ego-consciousness. Also the physical body has no ego-consciousness. Between these two, between Self and body the ego springs into existence mysteriously, a hybrid, neither Self nor body. This ego is at the heart of anything undesirable in life and bound to fail. Thus it must be destroyed. Our essential nature is happiness, but we have forgotten the Self and imagine that the body or the mind is the Self. The bliss of Self is always yours and you will find it if you seek earnestly. The cause of your misery is not in your outer life; it is in you, as your ego. You impose limitations on yourself and then make a vain struggle to transcend them. All unhappiness is due to the ego. To ask the mind to kill the mind is like making the thief the policeman. He will go with you and pretend to catch the thief, but nothing will be gained. So you must turn inward and see where the [egoic] mind rises from and then it will cease to exist." (Maharshi 1955)

Gopi Krishna (1903-1984, India)

"No attempt of the academics [...] can perforate through the veil [of ignorance towards mystic awareness], because the veil is product of the intellect. Only if you transcend yourself [find the true self], light starts to peek through darkness and solve the problem, like shadows vanish with the morning light." (Krishna 1972)

Eckhart Tolle (born 1949, Germany)

"As a child grows up, [...] it becomes identified with a gender, possessions, the sense-perceived body, a nationality, race, religion, profession. Other things the 'I' identifies with are roles - mother, father, husband, wife, and so on - accumulated knowledge or opinions, likes and dislikes, and also things that happened to 'me' in the past, the memory of which are thoughts that further define my sense of self as 'me and my story'. These are only some of the things people derive their sense of identity from. They are ultimately no more than thoughts held together precariously by the fact that they are all invested with a sense of self. This mental construct is what you normally refer to when you say 'I'. To be more precise: most of the time it is not you who speaks when you say or think 'I' but some aspect of that mental construct, the egoic self. Once you awaken [to the mystical state], you will still see the word 'I' but it will come from a much deeper place within yourself." (Tolle 2005)

"Being must be felt. It can't be thought. The Ego does not know about it because thought is what it consists of." (Tolle 2005)

"The Ego is not who you are." (Tolle 2005)

"The thought forms of 'me/mine', of 'more than', of 'I want', 'I need' and of 'not enough' pertain not to content but to the structure of the Ego. The content is interchangeable. [...] No content will satisfy, as long as the egoic structure remains in place." (Tolle 2005)

5. The mystical mind can be acquired after decades of intense meditation or by a sudden revelation

It should be noted that mystical vocabulary is not standardized. For instance, masters of meditation and mystics often distinguish between our illusionary personality and an alleged true, hidden personality. Labels for the illusionary personality include 'ego', 'I', 'self', 'nafs' in sufism (Schimmel 2003), while the hidden true self was named 'soul', 'heart', 'self', 'stillness', among others. Note, for instance, the ambiguous usage of 'self' depending on author. 'Intellect' today is largely overlapping with 'rationality' while in Meister Eckhard's time, to the opposite, it meant perception of inner truth not

accessible by the five senses. Thus, the interpretation of the convictions of a particular mystic requires knowledge about her or his vocabulary.

While it appears that it may take a "seeker of truth" decades of intense meditation to reach top performance or "spiritual musicality", mystical insight can occasionally happen in non-meditators following a sudden revelation, a stroke of intuition, in some cases after long periods of depression or agony. Revelations have been described by protagonists in detailed personal accounts (for instance by Jakob Böhme (Wehr 1971), Angelus Silesius (Wehr 2011), Heinrich Seuse (Buber 2007), Sri Ramakrishna (Rolland 1929), Gopi Krishna (Krishna 1989), Sri Ramana Maharshi (Maharshi 2000), Eckhart Tolle (Tolle 2004), Byron Katie (Mitchell and Katie 2003), Jill B. Taylor (Taylor 2008)). At this point we can only speculate how a sudden revelation, often entailing a dramatic personality shift towards humbleness and altruistic love, can resemble the effects of decades of intense meditation and produce similar convictions over millenia (textbox 1, table 2).

A sudden deep transformation leading to permanent personality change as experienced by the great saints including, for instance, the Buddha; Nanak, the founder of Sikhism; Ramana Maharshi (Maharshi 2000); Sri Ramakrishna (Rolland 1929) appears to be rare. Yet, strong spiritual musicality can also be the product of an intense practise of mind-shaping, involving everyday meditation, careful self-introspection, altruistic work and learning true humility. This practise is subject of a curriculum of mental self-education developed to sophistication and described in the scriptures of mind-schools such as taoism, buddhism, hinduism. Their exercises (partially described below), contrary to common understanding, can be practised independently from the respective religious or cultural background and without the need to believe in any deity.

Shorter and shallower periods of "enlightenment" have been reported by surprisingly many people and occur either spontaneously (James 1902) or are triggered by near-death experiences (Saver and Rabin 1997), seizures (Saver and Rabin 1997), drugs (MacLean et al. 2011; Saver and Rabin 1997), or brain strokes (Taylor 2008). Gopi Krishna admitted that drugs can open channels into mystical experience, however, these experiences never allow the 'full picture' and are of no help towards true mystical encounters (Krishna 1972).

6. The question of reality

The term "scientism" was coined to denote the claim that "the methods of natural science, or the categories and things recognized in natural science, form the only proper elements in any philosophical or other inquiry" (wikipedia). Yet it is admitted that "scientismic" cognitive theories such as dynamic engagement theory (Barrett and Wildman 2009) face scepticism from formal philosophy, starting with Humes rejection of induction and not ending with Hanson's thesis (Hanson 1958) that "the determination of what is real for the scientist rests on paradigms that the scientist cannot see beyond" (Williams 1986). The mathematician and philosopher Laslo Merö stated: "With this concept [to understand the human mind as rational automaton] science perhaps is deaf at a point where it could learn much interesting stuff, but science cannot do otherwise." (Merö 2002). One example for this claim are near death experiences, where patient in deep coma (EEG baseline) can sometimes report, after awakening, in vivid detail what has happened during coma (van Lommel et al. 2001). The attempts to explain those experiences so far (e.g. "quantum entanglement") appear helpless,

because the most convincing hypothesis, namely that human consciousness is non-physical, might endanger a scientific career. Fortunately, a tiny fraction of scientists begins to turn attention towards a less restrictive material paradigm (Cardena 2014; Walach 2019).

Even stronger evidence against orthodox scientism comes from the physical sciences chewing on some fundamental questions since hundred years and still not delivering an in-depth understanding of what constitutes reality.

Heisenberg's indeterminacy principle states that "reality" can never be seen as it is because the act of observation is invariably an act of changing.

Individual quantum particles can be at two different places at the same time (Mermin 1990). This quantum entanglement has been measured over several kilometers but is believed to exist, in principle, across the universe (Moehring et al. 2007). Electrons behave as particles in one experiment and as waves smeared over space in another experiment. Meanwhile physicists abandon any common-sense notion of reality in molecular dimensions (Zeilinger 2005).

Similar problems exist with the very large: a one-directional arrow of time as felt by humans as one of the fundamental constants of nature is rejected by Einstein's curved space-time. The puzzle of time is not restricted to the world of the ultra-tiny or the ultra-large: the so-called double-slit experiment tells us that a photon can recognize what will happen to it in the future some fractions of a second ahead, an observation completely overstretching common-sense understanding.

Common agreement is that our universe big-banged out of the Nothing, from a state of highest entropy. The Nothing, by definition, was an absolute Nothing, lacking even an imprint of physical laws. From where did physical laws, than, spring into existence?

Several physical constants (e.g. charge and weight of subatomic particles) precisely - up to many digits after the decimal point - match a value which allows the existence of our universe, in other words, if digits would be changed far behind the decimal point, our universe would not exist. These constants appear to be fine-tuned.

During big bang, the entropy changed from utmost high to utmost low in an instant. From where was this high order generated? (Weinberg 1985).

Radioactive elements decay according to a precise physical law, the half-life period. But we cannot predict at which timepoint an individual radioactive atom decays. It may decay after a few seconds or tenthousand years. We do not have a readout for the property 'decay' of an individual atom, yet the property exists. More puzzling, the law of half-life period emerges as a group phenomenon - decay is not chaotic -, indicating that the individual atom must somehow sample its peers. Again, since more than hundred years, we have no clue about this sampling process (see also Zeilingers comment at the bottom of textbox 3).

Even the discipline of mathematics, which can at least help design and interpret experimental outcomes, is not a closed self-explanatory system. The mathematician Kurt Gödel, in his seminal theorem (Gödel 1931), proved in 1931 that within any set of trustable rules statements exist which must be accepted because they obey these rules, but cannot be derived from those rules, thereby destroying, as Roger Penrose argued, "any hope that formal Reason [capital R] could be

universal" (Penrose 2008).

Penrose distinguishes three different kinds of reality: the physical, the mental and the mathematical reality, "with something (as yet) profoundly mysterious in the relations between the three" (Penrose 2006).

We simply do not understand what is out there.

While these examples do not bluntly disprove scientism - perhaps we need only another hundred years to understand the big bang or time or light or quantum entanglement or radioactive decay - they demonstrate that adding a grain of sceptics with respect to the dogma of scientism is a scientifically sound attitude. When many mystics describe a reality completely different from the reality our five senses deliver (textboxes 2-4), that must not be outright declinable and even be worth listening.

7. The question of correct perception

Even if we admit that we cannot yet bring Penrose's three realities (mental, physical, mathematical) in overlapping agreement, can we comply at least within one submodel of reality, mental reality? Apparently not, since mystical experience contrasts with five-senses perception in many aspects((Huxley 1945), table 2).

Formally, we cannot value one kind of perception over the other: if we cannot define the environment (=reality in a narrower sense, chapter 7), we will fall short to value five-senses perception interacting with the environment versus sixth's-sense mystical or skilled meditation perception not interacting with the environment.

Practically, another yardstick to value either form of perception might be outcome oriented: how we perform and proliferate in a given environment over evolutionary time scales. Could we have done better with a mystical mind as common trait or would a mystical mind result in reduced fitness? I would rather leave that discussion open by guessing that a highly intuitional attitude might serve our planet perhaps favourably compared to the rational-egocentric paradigm.

To label meditation-master perception or mystical perception as non-sensory, does not necessarily disqualify it as genuine perception: five-senses perception is processed either, before it becomes conscious.

Mysticism has often been regarded as kind of religious belief. In the following I will try to inject a third dimension into the so far dichotomic discussion of five-senses perception versus religious belief, namely intuition, and try to argue why mysticism is not a belief but a particular form of intuition.

8. Degrees of intuition

From psychological research it is becoming increasingly evident that our minds are guided to a large extent by non-verbal sub-conscious processing, by intuition. The famous Libet experiment (Libet 1985) and its follow-up experiments (Brasil-Neto et al. 1992), where some neural activity correlated with action can be measured before this acting becomes

conscious, initially were interpreted deterministic: we are pre-programmed organisms without free will (Burns and Bechara 2007; Roth 2003). Another, perhaps more plausible interpretation, less contrasting with our dense feeling of free will, might be that our acting starts in sub-conscious brain regions (Segalowitz 2007) before it reaches consciousness. Under this assumption free will derives from unconscious intuition, such that intuition precedes, wraps and influences (Ariely 2008) subsequent rational decisions. Eminent scientists were aware that our minds use tools yonder mere verbal and logic thinking. Einstein was a deeply intuitional scientist, who said in a letter: "The words or the language, as they are written or spoken, do not seem to play any role in my mechanism of thought. The psychical entities which seem to serve as elements in thought are certain signs and more or less clear images which can be 'voluntarily' reproduced and combined." (Hadamard 1954). Francesco Varela wrote: "It is important to note that those subtle [intuitive] mind-levels are not theoretical, rather they are narratives of real experience and deserve respectful acknowledgement by anyone affirming to stick with empirical facts.... I believe that in order to understand subtle mental levels a permanent, disciplined and austere praxis of meditation is required. In a certain sense these [intuitive] phenomena unbar themselves only to those willing to undertake this experiment personally.... Though, in traditional science these phenomena usually remain hidden because most scientists will avoid accurate self- introspection" (Varela 1998).

Intuitional power obviously varies. For one, there is our normal, more or less untalented everyday intuition, the belly-feeling whom I can trust, the reason why we feel attracted or repelled by a painting or face or car design. Everyday intuition can err or hit. On the intensity scale of convictions (figure 1) it is located somewhere between belief and learned rational knowledge.

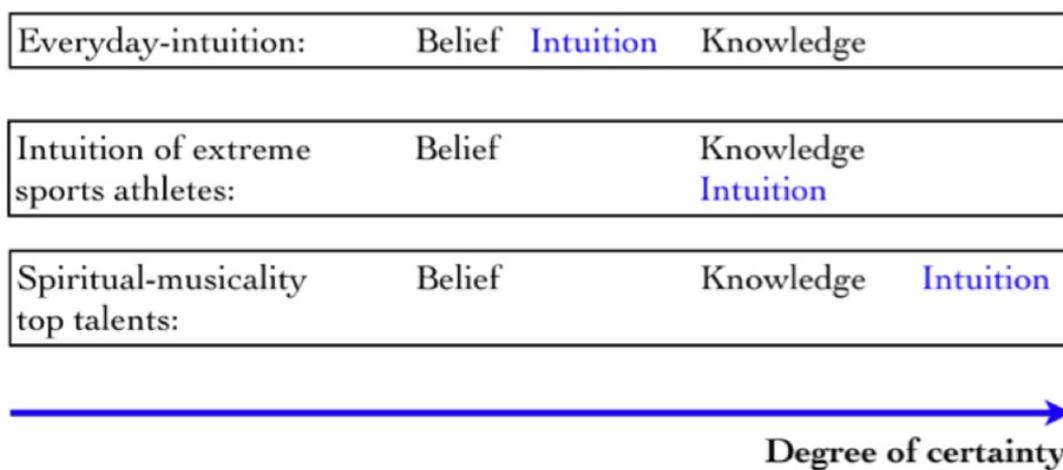


Figure 1. Degree of certainty gained from different forms of intuition

In non-mystics, the degree of certainty obtained from religious belief and opinion can not reach the level of certainty we get from five-senses perception and rational processing. Yet, the level of intuitional certainty reached in highly skilled masters of meditation and mystics can exceed learned and derived rational knowledge.

A more advanced form of intuition is the intuition of extreme sports athletes. Some extreme sports athletes - surfers on gigantic hawaian waves, mountaineers, water fall paddlers, steep descent skiers - by purpose enter life threatening

situations to enter a mental state lacking inner verbal monologs that overtakes their action completely (Coffey 2008), where they become “one with themselves”, a sparsely investigated (Wulf et al. 2010) state sometimes called “flow” in athlete lingo.

This intuition requires years of training and accomplishment of a mastership. It allows the ice waterfall climber to construe an inaudible noise of crunch, a tiny change of ice color as sign of danger, it allows the huge wave surfer to determine the moment of tunnel exit late, but not too late, both not knowing what they reacted upon. The extreme sport intuition is placed on the scale of convictions besides rational knowledge and hardly errs in master grade performers - if it does, it may mean death. This intuition is not permanent. If the extreme situation has passed, intuition steps aside and rational thinking takes over again, perhaps leaving the person without a clue why and how she did what she had done (Coffey 2008).

Eventually, there is the intuition of mystics and masters of meditation.

In fully transformed mystics this intuition is not restricted to a situation of endangerment, but permanently active, wrapping rational thinking and allowing to view the ‘reality behind the things’. It is not a Santa-Claus kind of belief. For mystics their intuition is the safest insight, way more solid than learned and acquired knowledge, beyond any residual doubt. On the safety scale of knowledge it seems to be located beyond rational five-senses perception (figure 1, textbox 3).

The existence of a form of conviction leaving factual knowledge behind with regard to certainty is probably unsettling or even point-blank unacceptable for people with intuitional atrophy, yet evident from the respective literature. Mystical intuition is ‘brighter than thousand suns’, any rational comprehension appears to pale against mystical intuition down to mere illusion (Maharshi 2000). Sir Arthur Eddington, astronomer, physicist and mathematician wrote: “There are people to whom the instant feeling about the presence of a holy being penetrating the soul means a far more evident experience than all other experiences. They regard the lack of this sense as sort of a mental deficiency, just as we would regard the complete lack of humour” (cited in (Huxley 1945)).

9. Does mystical sense impact on everyday life?

If the mystical mind, characterised by respect, humbleness and altruistic behaviour, were propagated into everyone, our world would be presumably a better world with less violence and less environmental toll. On the other hand, one could speculate that egoistic behaviour might be a driver for curiosity and scientific and technical advance, potentially leading to improved shelter, less starvation and better health on average, among other positive ramifications.

Although the underlying assumption that mystical sense is associated with a less active attitude and less curiosity, might not withstand closer inspection (for instance, Nanak, the founder of sikhism, was a talented organizer and assiduous teacher; Francois de la Salles, as bishop of Geneva, had a working schedule similar to modern managers), the discussion of a less versus a more egoistic attitude, and the overall consequences of either behaviour, is again outside the scope of this hypothesis.

The mind model of the mystics is overly simplistic: a hidden true self covered by a thick crust of Ego, the latter which has nothing to do with our true "Self" and hence is dispensable. This model is certainly swashbuckling for the western trained psychologist, but has to be considered if Ockham's razor applies and if it allows predictions, that is, if it has psychological and hence testable therapeutic sequels. As an illustrating example, I will briefly discuss Tolle's concept of the pain body.

Traces of the pain-body concept can be found in the teachings of earlier spiritual masters (for instance Francois de la Salle), however, it has been developed in greater detail by Eckhart Tolle (Tolle 2005), a contemporary mystic. The pain body, according to his concept, is a particular nasty part of the ego. In contrast to other parts of the ego (ego of possession, ego of importance, ego of beauty a.s.o.) the pain body cannot be resolved by rational insight, because blocking the pain body would make it stronger. The pain body "nourishes on negative emotions" and feelings of superiority or inferiority, among them blockage. The only way to resolve the pain body would be observation, a permanent exercise meaning a conscious inner stepping aside and observing ones own negative emotions as if they were independent happenings. For a short description of the pain body concept by Tolle see textbox 7.

Textbox 7. Tolle's concept of the pain body (Tolle, 2005)

"Any negative emotion that is not fully faced and seen for what it is in the moment it arises does not completely dissolve. It leaves behind a remnant of pain."

"For the pain-body pain is fun. This leads to a vicious circle. Any negative thought feeds the pain-body, henceforth the pain-body generates other thoughts contributing more to the incessant stream of thoughts which we want to get rid of in the first place. After a while, hours or days, the pain-body has filled up and retires into a kind of dormancy, during which the body often feels weak and is more prone to disease. If this sounds like a psychic parasite, than that is correct, it is exactly that. [...]. Some people carry dense pain-bodies that are never completely dormant. They may be smiling and making polite conversation, but you do not need to be psychic to sense that seething ball of unhappy emotion in them just underneath the surface, waiting for the next event to react to, the next person to blame or confront, the next thing to be unhappy about."

"Why do violent films attract such large audiences? [...] Pain-bodies write and produce these films, and pain-bodies pay to watch them."

"The popular tabloid press does not primarily sell news but negative emotion - food for the pain-body. 'Outrage' screams the three-inch headline, or 'Bastards'. The British tabloid press excels at this. They know that negative emotion sells far more papers than news does. There is a tendency in the news media in general, including television, to thrive on negative news. [...] Pain-bodies just love it"

"The pain-body needs to be unwitnessed. He cannot stand the light. [...] Every time you are present [aware, looking inside] when the pain-body arises, some of the pain-body's negative emotional energy will burn up. [...] The pain-body needs your unconsciousness"

Upon first impression the pain-body might resemble Freud's concept of the urge of aggressivity, however, it is a different concept. First, as part of the ego, which according to the mystics is not part of our true self but can and should be extinguished, the pain-body is not part of our true human nature, unlike Freud's aggression. Second, while the urge of aggressivity, according to Freud, builds up over time even without the experience of negative emotions and has to be released or sublimed, the pain-body is dependent on negative emotions, ones own or induced in others, and would starve and die without them.

The concept of the pain-body is accessible to scientific investigation. For instance, to this day there is no satisfactory explanation for cruelty, which was defined by Victor Nell as "deliberate infliction of physical or psychological pain on a living creature", often accompanied by sadistic pleasure (Nell 2006). Although Nell tries to argue that cruelty "has fitness

benefits in solving problems of survival and reproduction", he admits that cruelty can hardly be found in animals, if at all, and thus fails to demonstrate such evolutionary advantage in general. He also fails to explain why cruelty should have an advantage over emotionless killing, and why cruelty exists despite empathy usually triggers the reward system. Tolle's explanation would simply be an extraordinary big pain-body in those people exerting cruel behaviour. People who have resolved their ego, including their pain-bodies - mystics and masters of meditation - should not be cruel or aggressive, which they indeed never are. People with some but less than masterly spiritual musicality, for instance long performers on ego reducing mind exercises would exert significantly reduced aggressive affects, a testable prediction. Since the rise of the ego, according to the mystics, is invariably bound to the acquisition of language, cruelty should not exist in animals or young children before they learn to speak, which is indeed the case. A test of the pain-body concept would be self observation therapy for people with cruel or violent behaviour, which is described in detail by Tolle (Tolle 2005). This therapy could be studied and evaluated just as meditation or any other psychological intervention. As the pain-body concept would predict, ego-dissipating techniques such as vipassana and other forms of meditation have been shown to reduce drug abuse, enhance subjective well-being and result in decreased recidivism in prisoners (Bowen et al. 2006; Himelstein 2011).

10. Can self-experience be a valid scientific tool?

Gopi Krishna (1903-1984, indian mystic) wrote: "To scrutinize the phenomenon [of mystical awareness] a team of scientists would be required, including both sceptics and believers, who, for a sufficient time period, in a spirit of devotion, should undergo some [spiritual] educational coarse." (Krishna 1972). Francesco Varela, who was a meditator himself, in his erudite book "The embodied mind" suggested that in order to arrive at a concept integrating meditational and all-day perception it would be crucial to bring together laboratory measurement with "experience", the latter embracing both questionnaires filled by objects and self-investigation of the subject, the investigator himself. He described this process as "back-and-forth communication between cognitive science and experience...of the cognitive scientist" (Varela et al. 1993). Varela realized that in order to investigate intuition, at least a tad spiritual musicality, at least some practical familiarity with meditation would be beneficial on part of the investigator. As of today, this iconoclastic approach suffered from neglect.

Mystics and masters of meditation of all centuries have collected numerous descriptions how to gain spiritual musicality and enter mystical perception which, allegedly, is accessible in principle by everyone. These descriptions represent a curriculum of mind-shaping and can be condensed to four main tools of self-experience (my distillation). These four pillars are meditation, non-selfish acting, self-observation, development of true humility. The belief in a deity is not required upon exercising spiritual musicality. To the contrary, it can be detrimental if this belief is demarcated by clerical dogma.

Meditation or stillness-prayer and altruism were more or less emphasized by all mystics and many religions, self-observation was particularly emphasized by eastern mystics. The following gist of these tools towards spiritual musicality is derived from a bulk of mystic literature, both original and secondary, including (Aurobindo 1990; Buber 2007; Dumoulin 1976; Griffiths 1994; Hartmann 2002; Huxley 1945; Jäger 2008; James 1902; Reiter 1994; Rinpoche 2001; Vivekananda 1983; Wehr 1971).

Meditation

Meditation should be done on a strictly regular daily regimen. Its goal is to interrupt the incessant stream of rational thinking and enter thoughtless awareness (see e.g. (Gunaratana 1992; Ricard 2010), among many other tutorials on meditation). Since egoism is bound to wording, any non-verbal state is a non-egoistic state, and as such meditation is a way to unbound from the ego, at least temporarily. Because the final goal of the non-thought state is too difficult to achieve for beginners, most meditation schools teach to go from the normal wakeful state with its current of thoughts to an intermediate state of one-thought, usually the concentration on the breath or the image of a candle or a mantra, a meaningless syllable like "Om". From there, after some month of practise, it is recommended to leave the one-thought state more and more behind and try to enter a state of thoughtless awareness, with all senses fully active but disentangled from wording and labelling.

Altruism

Non-selfish acting, culminated in Jesus of Nazareth's (0-33) dictum "thou shalt love thy neighbour as thyself", means to help other people without any attempt to increase his own credit or to gather the fruits of action whatsoever. A general attitude of non-selfish acting is seen as an non-egoistic exercise, since giving is the opposite of taking, with taking almost inevitably involving the ego.

Self-observation

Self-observation is the exercise to observe his own negative emotions, including tiny emotions like uncomfortableness and inferiority, and pseudo-positive emotions like superiority feelings or schadenfreude. These emotions should be treated as if they were not part of the personality, but rather happen within kind of a parasite rather than within oneself. This exercise can be performed without any belief in the existence of an ego, just as training to throw a basketball into the ring does not require the belief that one will finally improve his score (although this belief certainly would help). A related example is induction of lucid dreaming. By asking oneself several times a day whether one is dreaming or not, despite the answer is clear from the outset, this exercise can lead to induction of lucid dreams (Stumbrys et al. 2012). Thus, the exercise of self-observing the pain body can be tested both with a trusting or sceptic attitude, because the test result is purely outcome oriented: does my practise of self-observation feel good? Do I recognize a positive change within myself after a while?

True humility

Meditation, altruism and self-observation will be fruitful only if the 'searcher for truth' again and again controls himself for true humility, because the idea of spiritual superiority again nourishes the ego, which to extinguish is the goal of the whole endeavour.

11. Meditational and mystical perception can be investigated

The outcome of the emotional self-observation exercise, which should be done as often as possible, can be investigated after some weeks or month: did the frequency or strength of my negative emotions decrease? Do I feel offended less often? Do I perceive negative emotions in others less dense? Has my personal feeling of well-being improved? Effects such as these are predicted by the mystical mind model of ego-reduction. These effects can, allegedly (Tolle 2005), extend to clinical parameters like improved health. Self-observation exercise is open to scientific investigation both by traditional group tests and lab tests and could be augmented by investigator self-experience.

Meditation can induce morphological, physiological and cognitive changes. During alert visual and auditory attention gamma-waves of 40-60 Hz can be measured in the visual and auditory cortex, resp. In meditators strong gamma-waves can be found in an unusual area, the central-frontal part of the cortex (Berkovich-Ohana et al. 2011). This area is not responsible for the processing of sensory input but higher-level processing of concepts and symbols. The strength of the gamma-waves correlates with depth of meditation. The meditator apparently works with signals coming from inside rather than from the outer world. The volume of central-frontal parts of the cortex increases in some people with extensive meditation practice (Lazar et al. 2005; Vestergaard-Poulsen et al. 2009). The amygdala is less active in expert meditators (Brefczynski-Lewis et al. 2007) while the insula and the anterior cingulate cortex - both linked to empathy - are more active compared to novices (Lutz et al. 2009). Both experienced meditators (MacLean et al. 2010) and novices (Zeidan et al. 2010) perform much better in tasks involving long periods of concentration. Regular meditation increases attentional capacities (Lutz et al. 2008; Prakash et al. 2010) and can reduce age-related attentional deficits to the point that elder meditators can outperform younger non-meditators (van Leeuwen et al. 2009). Masters of meditation need less sleep - often four to five hours are enough - and they hardly move during sleep (Ricard and Thuan 2004). Many express a feeling that their immune system is stable and strong (Ricard and Thuan 2004; Tolle 2005). Meditation has been found to be associated with less negative and more positive moods (Jain et al. 2007; Jha et al. 2010). However, while these and other observations are interesting, to merely pile up psychological and neurophysiological changes does not represent a conceptual framework, despite opposing claim (Hoelzel et al. 2011).

Investigations on meditation were, with few exceptions (Beauregard and Paquette 2008; Carter et al. 2005; Lutz et al. 2004), so far restricted to beginners or practitioners without decades of experience. The criteria in textbox 1 and table 2 might serve as a handle to distinguish skilled protagonists from beginners, from mere religious believers or pseudo-saints (gurus), allowing to separate religious delusion from genuine spiritual perception and to investigate the latter. Beauregard and Paquette, in a seminal paper, demonstrated EEG studies in Carmelite nuns who had reported occasional mystical encounters, though, apparently not a permanent blissful wake state as the great saints. These nuns likely represented experienced but not top spiritual performers. The results were comparable with EEG pattern during yoga meditation (Beauregard and Paquette 2008). Similarly, it should be possible to design studies where participants are trained to combine the cornerstones towards mystical perception, namely meditation, altruism and self-observation, and monitor by questionnaires, EEG and fMRI, resp., whether inner changes in perception, clinical changes in fMRI scans and outer changes in behaviour happen.

To achieve highly skilled spiritual musicality, including mystical perception permanently turned on, however, requires decade long intense practise, according to masters of meditation, and success is not guaranteed. Thus, to investigate mystical perception in its fully mature form, masters of meditation and contemporary mystics must be approached. Yet, people with great spiritual musicality certainly are rare. One way to identify them is to ask authorities in the field to arrange contacts, for instance the biologist and meditation master Matthieu Ricard (Lutz et al. 2004) or Tenzin Gyatso (entitled Dalai Lama), who has helped before (Carter et al. 2005).

12. The mind set of fully transformed masters

Over the last 10 years, transformative experiences have gained quite some attention in cognitive science (Cristofori et al. 2016; Sleight et al. 2023; Woollacott and Shumway-Cook 2023). Yet, I propose that fleeting transformative experiences can hardly be extrapolated to characterize its ultimate form, the intuitive mind set of fully transformed masters (Muktananda 1971; Tolle 2005). These, on the other hand, can hardly be investigated due to a scarcity of living masters. Yet, over time a plethora of authentic descriptions of mystical masters of both sexes has piled up (table 1, textbox 2-5), which can be investigated.

In addition to the characteristics of time or intensity restricted transformative experiences (oneness, interconnectedness, compassion, altruistic attitude, belief in immortality of the soul, lessening of materialistic goals, less aggression, kindness, the feeling that a veil has been lifted), in fully transformed masters we can observe no aggressivity at all, no interest in materialism, bliss, the feeling of permanent connectedness or even identity with a numinous creative power, the conviction that no place in the universe exists where this power is absent, the ability to seamlessly switch back and forth between a wordless non-thinking state and verbal thinking, respect with all living creatures, the recognition of a reality behind our five-sense-reality, often healing or psychic capabilities which are only rarely applied, the emanation of a strong energy field which can be sensed by others but as yet not measured, the ability to transform other "seekers of truth", among other characteristics. These female and male masters, according to asian religions, have fulfilled the purpose of life, namely to destroy the ego and find liberation. They deserve more of our attention.

13. Summary

Mystical experiences and long-trained meditational experiences are related and based on a particular form of intuition. Highly skilled mystical perception is a mind state rather than a feeling, distinct from other mind states such as dream or rational awareness. Mystical-meditational intuition lead to similar convictions in many protagonists over the millenia independently; thus represents a kind of "given" conviction. Religious belief is not the same as spiritual musicality, the strength of both is even inversely correlated. Neither the mystical mind nor its investigation is bound to the belief in any deity. Highly skilled mystical-meditational perception of reality differs from five-senses perception of reality. Some details of this perception are, by happenstance or not, in agreement with quantum physics (time does not exist; everything is connected; there is an underlying reality hardly accessible by our five senses) and shared over the millenia. Mystical-

meditational perception leads to a simple concept of "Self" fundamentally contrasting with western-psychological understanding of what constitutes personality, yet detailed enough to be predictive and rich enough to be tested and exploited therapeutically. The three main tools towards spiritual musicality, namely meditation, altruism and self-observation, could be investigated with respect to inner and outer change using usual cognitive testing. Highly skilled spiritual musicality - the mind state of a fully and permanently transformed individual - has to be acknowledged to be as serious, as valid, as profound as five-senses perception, and as such to be a subject of earnest scientific investigation.

Competing interests

None to declare.

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