

Mindfulness meditation: deconditioning & changing view

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Abstract Mindfulness interventions and meditation form a mental training towards deconditioning. This paper outlines the mental development during long term mindfulness meditation (*vipassanā*). It is intended to give researchers in the neurosciences and practitioners of mindfulness based interventions an idea of the phenomenological side of this form of meditation. Mindfulness acts as a dissociator between the perceived actor in us and the things we cognize and act upon. This makes us more flexible. At the same time our view of self will change: no longer is our 'agency' seen as a fixed 'thing' or 'being' that acts in the world, but as a process of sensory input, appraisal, thinking, acting, depending on various mental states.

The human condition

We are conditioned, our behavior is pushed in certain directions. Already in some unicellular organisms this is the case. If there is food nearby, then the propeller of the organism starts running in order to move towards the source; in case there is a poison, then movement goes in the opposite direction. In multicellular species and finally in mammals, primates, and homo sapiens the conditioning forces are much more sophisticated, making use of tools like neurons, hormones and long-term memory. Usually the 'possessor' has an evolutionary advantage: a better survival mechanism. For example, the feeling of 'self' of a human being, also called 'agency', with all of its planning and possessing up to egocentricity, forms a powerful way to survive. Thus nature has provided organisms, from the unicellular ones to humans, with the mechanism of greed and aversion. Humans suffer, when they cannot get what they want (and also when they cannot avoid what they resent¹). This means that we have a strong tendency to arrange things in order to fulfill our desires. Driven by desire humans have constructed cities and cultures. The same drive, however, is also the cause of madness and war. Considerable human misery has resulted.

How is it possible that desire, which is there for our increased chance of survival, sometimes are against us? A first reason why this happens is that circumstances may change. Take for example insects that during flight orient themselves on the moon. They keep a fixed angle to the 'infinitely distant' source of light and then they fly in a straight line. After humans had invented fires and lamps, this form of conditioning caused the insects to spiral towards the light source and then they burn their feet or worse. But there are 'higher' insects that are able to learn from the heat of fires and lamps and avoid them. Another example of conditioning, that is initially increasing survival chances, but that under some circumstances works against the animal, can be seen in certain monkeys. They like bananas so much that after grabbing one they cannot let go of it, until they eat the fruit. If the banana is behind a hole just large enough to pass through their hand, they will grab it. But with the banana in the monkey's fist it cannot get out of the hole. As it is impossible for the monkey to let go of the banana it is stuck. If

¹ Desire and aversion can be considered as the same force: in case of desire we want something, and having aversion we want to avoid something. The point is having a strong urge in a certain direction. Therefore we will usually mention only 'desire'.

men come with a cage in order to catch it, then the monkey cannot avoid this. Here we see that a seemingly useful conditioning turns into a monkey-trap. We all have friends that do similar things: holding on to things or situations in such a way that it becomes a hindrance. And if we dare to be honest, we may have to admit that sometimes we also do this ourselves. A final reason for conditioning becoming a cause of suffering is that what we want may simply be impossible.

Science

People have developed science: insight in the phenomena around ourselves. This means that we can explain a great many of these from a small subset of them using a predictive model. This insight can lead to technology, by which we are capable to obtain partial control over some of the phenomena. This makes it possible to fulfill needs in ways that are easier than before. Against the cold we construct a heater, against heat an air-conditioner. Science is an impressive human endeavor towards understanding nature. If applied with wisdom, it can diminish human suffering and bring us a higher standard of living. But it is good to realize that not everything can be controlled. What we want may be expensive, illegitimate, immoral, unecological or sheer impossible. Therefore, in spite of science and technology, there will remain suffering, namely in those cases that control is beyond the possible or that control causes conflicts. People may fight for the same scarce natural resources. Human conditioning is even so strong that one may fight about cherished ideas.

Phenomenology

We may understand that conditioning causes conflicts with ourselves, with others and with our living environment the earth. Even then this does not set us free from mentioned conditioning. There is another type of investigation that may be useful towards this end. It is the research directed inwards, towards consciousness as it is presented to us. This investigation is called 'phenomenology'.

A highly successful example of phenomenology is the following. Around 1800 the physicists knew after Newton that colored light forms a one-dimensional (1D) phenomenon. Light comes in various wavelengths and one of these determines the color of the light. In 1810 the poet Goethe, who was interested also in perception, came with another theory. He claimed that colors form a 3D phenomenon for the following reason. When we have, say, 125 cubes, each one colored evenly in a different color, then it is not possible to put them in a linear row such that the colors change 'smoothly'; also it is not possible to do this in a plane. But in a cube $5 \times 5 \times 5$ of it is possible to arrange the colors such that in all directions they change smoothly. This observation is phenomenological: it is based on direct perception, independent of rational considerations.

At first the physicists maintained their position that colors form a 1D phenomenon. But then the physician Young (1773-1829) and later the physicist Helmholtz (1821-1894) tried to reconcile the observations of Goethe with those from physics. They coined the hypothesis that the human eye has three different receptors for color vision. If this is the case, then a single wavelength induces a triple of reactions in the retina and in the rest of the brain. This implies that colors are 1D at their physical formation, but 3D at their perception. The Young-Helmholtz hypothesis was finally proved as late as 1960, that is 150 years after Goethe's observation. In the meantime the multibillion industry of color photography and color TV-monitors had started, all based on the fact that we have three receptors for color perception. Today in 2009 the idea is still going strong in digital cameras, flat-screens, and video-projectors. Politicians should be happy: fundamental research does lead to economic growth. But in this case one had to wait about 150 years for the spin-off. This is longer than the re-election term, so politicians do not notice it.

Religion

What is the goal of religion? My answer is this: to find three-fold peace, within ourselves, with others and with the world. Sometimes we may think: “*finding peace within ourselves is easy, the others are being nasty; and as to peace with the world, ..., well we are mortal, but I'm not yet concerned with that.*” But the problem of death is just a particular case of a more general problem. We are not the absolute boss, neither of the circumstances, nor of our body, nor of our minds. This last fact has been expressed well by St. Augustin (Confessiones VIII, 9.21.): “*If my mind orders my body to do something, then that body obeys so well, that one can hardly distinguish the order from its execution. But if my mind orders my mind to do something, then it does not listen, even if it is the same mind. Why this monstrous phenomenon and for what purpose?*” Although the body does not always listen so well as in this example, for example we can get ill at moments that are inconvenient, the meaning of the statement of St. Augustine is well-known. We are not always doing what we think we should be doing; we do not really want to.

Through a religious view, for example that of the three monotheistic systems (Judaism, Christianity and Islam), one can find a purpose in life, an ethical code and mentioned three-fold peace. A religion gives faith, hope, and love. If the assumptions of a religion are formulated carefully, then they do not need to be in contradiction with a scientific worldview. They are, however, metaphysical: assumptions about life after death cannot be verified. In some visions on faith (*fides quae*), this is not necessary. One can accept the religious dogmas as a collection of mathematical axioms that provide a mental hold. Sometimes it is even claimed that this form of faith is more stable than the one in which one interprets the dogmas as being really true (*fides qua*): indeed, in that case one can be contradicted.

Meditation

My personal preference is to base peace not on one faith, but on mental development. Insight (or mindfulness) meditation (*vipassanā*) coming from classical Buddhism is a prime example showing the possibility of transforming the mind.

Meditation can be divided into two main classes. In order to describe these we need to introduce some terminology concerning consciousness. Even if consciousness cannot be properly defined, we have an idea of what is meant by it: an awareness of the things around and within us. Of course, the transition ('consciousness' → 'awareness') does not help very much. But the following description of aspects of consciousness delineates it, just like an axiom system explains the meaning of the primitive (undefined) terms occurring in it. Consciousness has two aspects. First there is the *object* (or content) of consciousness: it is what one sees, hears, smells, tastes, touches or thinks. Next to the object there is the '*coloring*' of consciousness, resulting in mental '*states*'. One can observe the same object together with e.g. joy or with boredom or with anger. Other colorings are for example sleepiness, restlessness, equanimity, and compassion. Buddhist psychology, the Abhidhamma (Bodhi 2000), distinguishes 51 such colorings. These 51 are called *cetasikas*, 'mental factors', and form ingredients of the mental states, called *cetas*, by combining several of them. There are 89 states, obtained as various mixtures. It is mentioned that there are more mental factors and states, but the listed ones are particularly important for the mental development towards deconditioning. Some of the mental factors are called unwholesome (like e.g. hatred, restlessness, and jealousy), some are called beautiful (like e.g. mindfulness, flexibility, and compassion), and finally some are called neutral (like e.g. concentration and joy: these states can be combined with both compassion and hatred).

Now we are ready to describe the two classes of meditation. 1. Concentration (or *samādhi*) meditation is aimed at increasing positive states of consciousness. 2. Insight (also called mindfulness or *vipassanā*) meditation is aimed at decreasing and eventually eliminating the negative states of consciousness.

The highpoint of concentration meditation consists of various mystical experiences, including

rapture and bliss. Mystical states are described in many cultures. The theoretical explanation may differ in the various traditions (Staal 1975). The Buddhist mystical states are called *jhānas* (Pali: absorptions). Thus these states are explained in a language that are understandable in cognitive psychology. The word *jhāna* has come to the English language as follows: *jhāna* > *dhyana* (Sanskrit) > *chan* (Chinese) > *sun* (Korean) > *zen* (Japanese and English). The *jhānas* form an increasing chain of mystical states, ordered linearly. According to the Abhidhamma *jhāna* 3, 4 and 5 are distinguished as follows: in *jhāna* 3 one has rapture, bliss or compassion and equanimity; in *jhāna* 4 one has bliss or compassion and equanimity; and in *jhāna* 5 one just has equanimity. State 4 is said to be higher than 3, as rapture gives some restlessness; state 5 is higher than 4 as bliss or compassion give some attachment. It is tempting to relate the states 3 and the two variants of 4 to respectively the neuromodulators dopamine, opioids, and oxytocin (said to correspond to libido, postorgastic bliss and inter-human binding). In that case the *jhāna* state 5 corresponds to a brain state in which there is calm, without the need of the suppressing neuromodulators mentioned above.

Because these mystical experiences are very pleasant, there is a tendency to get attached to them, for example in Christianity they are described as the "unity with God". From a Buddhist point of view, but also from that of several Christian mystics, this attachment is to be avoided.

The highpoint of insight meditation is purification or enlightenment, that eliminates some or all of the negative states. When these do no longer occur, consciousness has a tendency towards neutral and beautiful states. As metaphor one can state that concentration meditation aims at nice weather, while insight meditation aims at a nice climate. The last thing is more difficult to reach, notably because one has to proceed along unpleasant states called 'dark night of the soul' by St. John of the Cross. In the tradition of insight meditation they are called the '*three characteristics*' of consciousness: *anicca*, *dukkha*, *anatta*, best translated as 'non-permanence, disgust and loss of control'. This passing along negative states is necessary for the domestication of them. As a pretty high degree of concentration meditation is needed for successful insight meditation, it takes most people more work to reach enlightenment than to reach mystical states. But the effect of purification is lasting and therefore worthwhile to be pursued.

The Buddhist tradition distinguishes several types of deconditioned mind: liberated by suppression (*vikkhambhana-vimutti*), a temporary state, and by insight (*paññā-vimutti*), which is permanent. The *jhānas* all belong to the first type, whereas the purified state is permanent.

Mindfulness

One of the beautiful mental factors is *mindfulness*². During mindfulness one observes the input from the senses in a non-reactive way. This sometimes may happens to us while window-shopping: when we look at nice merchandise that is too expensive to be bought, we may look in a manner that is 'observing', but not 'reacting'. Then we may observe 'there is beauty'. Or if desire comes up, then we even may observe 'there is desire' and still not buy the objects. Another way of explaining mindfulness is the classical metaphor of the money-changer. A child sees money bills as colored pieces of paper. An adult can look at the same money with desire, especially to the higher notes. But a money-changer observes the money with attention and, if all is well, doesn't develop desire, as the money is not his. This is looking with mindfulness. It is something that happens naturally every now and then, but it also can be trained to make its occurrence intentionally more frequent.

² Mindfulness training consists of exercises to train the mind in a way that mindfulness occurs more often than usual. This training is part of the *vipassanā* meditation. It has been successfully tailored for patients suffering from depression and some psychosomatic symptoms (Kabat- Zinn 2003). *Vipassanā* meditation goes beyond mindfulness based interventions. One could say that

mindfulness intervention : vipassanā meditation = learning to swim : learning to dive.

Using developed mindfulness one can work towards detachment from the conditioning mechanisms that nature has put us in. We already have explained why this is beneficial. In some cases the conditioning brings suffering, like to the insects that fly in the candle or to the monkeys that are being caught while grabbing a banana. In cases there is a free banana, there is no problem to pick and eat it. If a human grabs the banana in the 'monkey-trap', then mindfulness would enable him to observe the object and his desire and then to let go of it. Whether monkeys can learn this I do not know, but humans can.

By systematic training mindfulness can become our second nature and this deconditions our negative traits, like entering ruminations of negative thoughts. To decondition the full mechanism of desire, more work is needed: mindfulness should become our first nature.

Vipassanā

During *vipassanā* meditation one trains to apply mindfulness to all phenomena in consciousness. If one sees something, then one observes 'seeing, seeing'. If there are notable sounds, then one observes 'hearing, hearing'. This constitutes the so called first foundation of mindfulness directed to the input of the senses. Next to this is the foundation of immediate appraisal: something can be pleasant, unpleasant or neutral. The third foundation consists mindfulness directed to the mental phenomena, like thinking and mental factors and states. Finally the fourth foundation consists of the observations of conditioning, like holding onto something without our really wanting to do this. Increased mindfulness can separate³ the four foundations. In this dissociated form of consciousness the mechanisms of conditioning are much more loose. This brings freedom.

This separation of the composed consciousness is comparable to a dissociation, known from psychiatry. In *vipassanā* one prefers to call this a *disidentification*. Our phenomenological world consists of fluctuating patterns of consciousness. These patterns are being reified, by imagining them as being a fixed thing. Think of a wave in sea that we perceive as an object that moves towards the shore. Note that there is no particle of water that moves from the sea towards the land. It is only the relative height of the particles of water that is being transmitted as a wave from the sea towards the coast. Our mind is used to turn moving patterns into things. During *vipassanā* training one learns to be aware of the act of reifying. This frees us from the manipulating effects of our perception and cognition.

One remarkable pseudo-paradoxical aspect of the deconditioning is that in order to be mindful, one has to accept without judgement what happens. Initially one is able to do this. But then our mechanism of desire tries to employ 'mindfulness', making it no longer true mindfulness: there is the hidden agenda to become better by using it. Strong suffering results, as one is doing something seemingly without success. If one has enough discipline to continue the training, then after a while one gives up any hope to become better by the training. At that moment one regains the right mindfulness and then the method works again and one feels fine. Following an intensive *vipassanā* retreat this mechanism causes several up and down phases.

Domesticating existential fear

Some people may observe dissociations as a result of genetic tendencies or traumatic events; this without training mindfulness and without proper guidance. Then anxiety may result, as one seems to lose the hold of oneself (depersonalization), of the body (desomatization) or of the world

³ Children sometimes play the game to repeat a certain word. They say: Yellow, yellow, After having done this often enough, the meaning of the word seems to fall away (a semantic fatigue). In terms of *vipassanā* meditation this phenomenon is interpreted as follows. A word has a sound and a meaning. These two are closely intertwined. By repeating the word many times the sound and the meaning are being dissociated.

(derealization). If this has happened for a longer period, notably during growing up, then one's personality is often unstable and proper therapeutic aid is advisable, in particular before starting insight meditation.

Usually the meditator will also develop temporary fear after the experience of disidentification. If one works in the safe environment of a meditation center and in the proximity of a skillful and compassionate meditation teacher, this fear will at first be diluted and then one can restart the process of reification in a mindful way. This is the core mechanism of deconditioning. Although mentioned fear of falling apart is temporary, it may be very strong. In fact it is the mother of all fears and the very cause of suffering. During the process of falling apart one clearly sees that consciousness is in a constant fluctuation; moreover it is unbearable as one goes beyond meaning (see mentioned children's game in footnote 3 and arrives in a kind of 'emptiness'; and finally it is beyond our control, also called selflessness. These fundamental qualities of consciousness---it is fluctuating, unbearable and selfless---are called the *three characteristics*. The original text about uncovering the three characteristics states is the following (Buddhagosa 430, Ch XXI, 3-4), with some parenthetical remarks by me.

“The characteristic of impermanence does not become apparent because, when rise and fall are not given attention, it is concealed by continuity [due to reification]. The characteristic of suffering does not become apparent because, when continuous oppression [to sitting still; i.e. there is desire to move, scratch one's nose, etcetera] is not given attention, it is concealed by the [holding on to the meditation] postures. The characteristic of not-self does not become apparent, because when resolution [dissolution] into the various elements is not given attention, it is concealed by compactness [the feeling of 'agency']. However, when continuity gets disrupted by discerning rise and fall, impermanence becomes apparent in its true nature. When the postures are exposed by attention to continuous oppression, the characteristic of pain becomes apparent in its true nature. When the resolution of the compact is effected by resolution into elements, the characteristic of not-self becomes apparent in its true nature.”

By focusing systematically on input of the physical senses as a mental hold, and by constantly observing the negative aspects of the fear and the corresponding effects on behavior, one can learn to diminish the strong phenomena of the three characteristics and eventually to eliminate them. This can happen by applying mindfulness to the four foundations as they come and go. Mindfulness should be developed such that it is fixed for a while on one of the foundations. After that one develops the mental states of equanimity, calmness and joy. At a certain moment the meditation development is mature for a 'surrender'. One sees that the phenomena continue, even if one is disidentified and subject to the three characteristics of consciousness. In case the meditation is not yet mature, then one of the states of mind will 'glue together' the broken consciousness. And because that state hides the three characteristics, the unbearable feeling disappears. But there will be side-effects of this 'emotion' acting as symptomatic medicine. If the hiding factor is, say, desire, then one becomes greedy. If it is fear, then one becomes phobic (J. T. Barendregt 1982). It is far better to reconstruct consciousness using mindfulness, than to glue using emotions. Mindfulness domesticates the three characteristics and sets us free. It should be emphasized that this domestication work can be done only if one is willing to invest the right effort under the right conditions. This happens in so called intensive meditation retreats. One needs to meditate for an uninterrupted period, for example during a 10 day intensive *vipassanā* retreat. It happens at a place in which one is not disturbed by others, where there is an experienced meditator to help and where the living conditions are appropriate. In short: one goes to a meditation center for an intensive *vipassanā* retreat under the guidance of a skillful teacher.

Cover-up and purification

During the path of insight meditation one discovers sooner or later the three characteristics. It is a

powerful dissociation. The feeling of self (*agency* or however you want to call it) is lost. One then notices that this phenomenal experience of the three characteristics is always nearby, but usually we hide it by our feeling, thinking and acting. This is called the '*cover-up*' of the characteristics, including selflessness⁴ (Barendregt 1996). Initially insight meditation has to penetrate the mind, so that the three become visible. This is like dismantling the motor of a car piece by piece. After that the pieces may be purified by mindfulness, i.e. be released from the occurring fear. Usually one is not yet ready for this and the three characteristics are covered-up again: a feeling of agency is created in such a way that one takes it for real, having certain side-effects. At this stage the meditator feels discouraged to continue the training: a problem that he did not know before has resulted, without there being a known solution. A compassionate meditation teacher encourages the meditator to continue to work by mindfulness and not to cover-up the phenomena. If the meditator works hard and collects the discipline to continue the work, eventually an equanimous, calm and joyful mind is developed. At that moment the meditator becomes ready to surrender. Mindfulness that has become a reliable second nature of the meditator now has to become our first nature. This cannot be done at will, but it helps (and it seems to be essential) if the trainee has the patient intention that this will happen. And then it may happen indeed, but unexpectedly: negative mental factors get eliminated. This means that the negative side-effects of the cover-up like fear or depression to give us agency are no longer necessary for being in balance.

According to tradition the negative states of mind will not all be eliminated at the same time. There are four milestones. At first one stops believing in 'self' or 'agency' as a fixed kernel of consciousness. After that greed and hatred are being diluted. Then at the third milestone these two 'poisons' will be eliminated completely. At the fourth and last milestone it is said that one eliminates (i) restlessness, (ii) sleepiness, (iii) pride, (iv) desire for certain forms of existence and (v) ignorance about unconscious processes that nevertheless do influence us in major ways. In order to be able to do the work of deconditioning, one needs to embrace insight meditation as a life-style: knowing that it is useful to meditate often and then actually doing it! The training to domesticate the three characteristics may be compared to a training for a parachutist or astronaut. An inexperienced person is afraid to fall and gets nauseated by it. But one can domesticate the mental fear and physical disgust for weightlessness by a systematic training. This changes one's view on agency and liberates us from a heavy burden: ego does no longer need to be defended.

Meditation and research

The claims above are being taught in the living oral tradition of insight meditation, backed by ancient texts, and has been partly verified by the author as a trainee (Barendregt 1988 and 1996). Buddha (Kamala Sutta) mentioned about such theories the following: *“Do not believe in anything simply because you have heard it. Do not believe in anything simply because it is spoken and rumored by many. Do not believe in anything because it is found written in your religious books. Do not believe in anything merely on the authority of your teachers and elders. Do not believe in traditions because they have been handed down for many generations. But after observation and analysis, when you find anything that agrees with reason and is conducive to the good and benefit of one and all, then accept it and live up to it.”* This witnesses a scientific attitude. Nevertheless it seems worthwhile to verify the claims made by the tradition of insight meditation, not only by personal experience of meditators, but also by a scientific evaluation. It may bring the method of deconditioning known to a wider audience, and thus bring more peace to the world. A second reason is that it may help science to progress, as the

4 Another way of saying this: agency has to be constructed, and during the experience of the three characteristics one temporarily does not know how to do this. This is because before the experience one thought that this agency was real, while afterwards one is not yet used to its status of being constructed.

mentioned mechanisms of conditioning and deconditioning are plausible and highly relevant. In the author's opinion the following questions are important.

1. Is the experience of the three characteristics measurable?
2. Is the symptomatic cover-up with side-effects of the three characteristics measurable?
3. Is purification by means of mindfulness measurable?

By 'measurable' I mean physiologically and/or behaviorally observable. During data-collection for this research it will be relevant to receive feedback from the meditators about the mental state in which they reside. To start with question 3, the Abhidhamma claims that mindfulness is correlated with equanimity, flexibility, good memory, and attention. For more common psychological factors there are validated tests. One could investigate these in meditators before and after a retreat and analyze whether they are increased in similar ways. Also one can compare meditators with non-meditators. Research has reported that years of practicing insight meditation correlates with cortex thickness (Hölzel et al. 2008). Moreover, attention is increased by a different neuronal strategy (Slagter et al. 2007). Thus one may conjecture that mindfulness changes neural pathways, moving them from the limbic system to the cortex. In question 1 it is asked whether the disidentification is measurable. A possible hypothesis is that the phenomenon has to do with desynchronized firing of distant neurons. The reason for this is that disidentification is related to unbinding and that there is the hypothesis (Singer 1999), that binding is related with long-distance synchronization. Question 2 may be addressed by researching the influence of neuromodulators on disidentification.

The number of scientific papers on mindfulness training and meditation is growing considerably: presently there are several hundreds. It is beyond the scope of this paper to review the present literature. But it seems fair to say that typical aspects of insight meditation, like the experience of the three characteristics, have been neglected in past research. This is understandable, as not all meditators reach this state within a limited period of time. The fundamental fear hampers progress in that right direction: people try to avoid the three characteristics. But in *vipassanā* intensive retreats of ten days and longer experiencing them does occur relatively often. There should be a collaboration between the researchers and the teacher for the selection of the subjects having reached certain stages. The methodology of this proposal is the following: in this early stage of research one does not yet study the effectiveness of insight meditation as a cure, but one investigates the mechanism of a universal human problem. This consists of existential suffering as caused by conditioning. If the neurophysiology of the problem is better understood, this will probably contribute to understanding the solution as presented by insight meditation.

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