Mihály Csíkszentmihályi

19 Wikipedia Articles

Contents

Articles

References

Article Licenses

Mihaly Csikszentmihalyi

Mihaly Csikszentmihalyi (/ˈmiːhaɪˌtʃiːksɛntməˈhaɪiː/ ***mee**-hy **cheek**-sent-mə-**hy**-ee*; Hungarian: *Csíkszentmihályi Mihály* Hungarian pronunciation: [ˈtʃiːksɛntmihaːji ˈmihaːj]; born September 29, 1934, in Fiume, Italy – now Rijeka, Croatia) is a Hungarian psychology professor, who emigrated to the United States at the age of 22. Now at Claremont Graduate University, he is the former head of the department of psychology at the University of Chicago and of the department of sociology and anthropology at Lake Forest College.

He is noted for both his work in the study of happiness and creativity and also for his notoriously difficult name, in terms of pronunciation for non-native speakers of the Hungarian language, but is best known as the architect of the notion of *flow* and for his years of research and writing on the topic. He is the author of many books and over 120 articles or book chapters. Martin Seligman, former president of the American Psychological Association, described Csikszentmihalyi as the world's leading researcher on positive psychology.[1] Csikszentmihalyi once said "Repression is not the way to virtue. When people restrain themselves out of fear, their lives are by necessity diminished. Only through freely chosen discipline can life be enjoyed and still kept within the bounds of reason."[2] His works are influential and are widely cited.[3]

Personal background

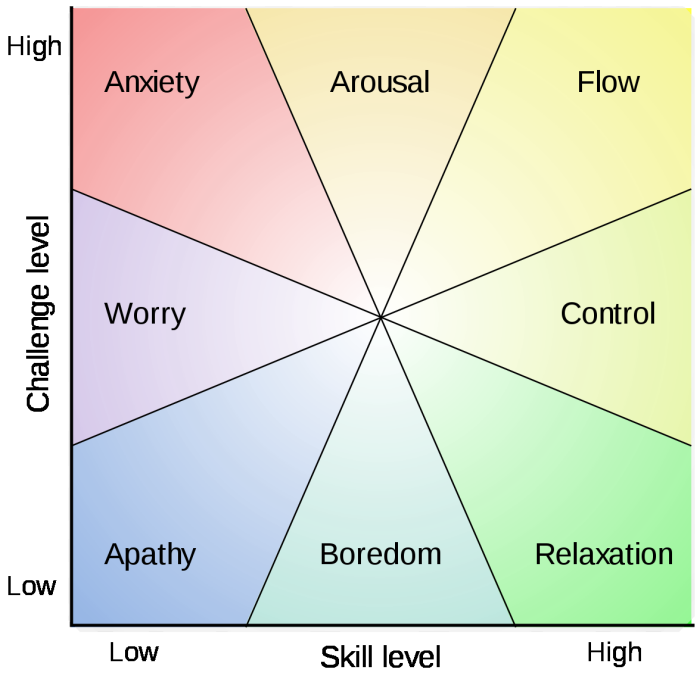
He received his B.A. in 1960 and his Ph.D. in 1965, both from the University of Chicago.

He is the father of MIT Media Lab researcher Christopher Csikszentmihalyi and University of California - Berkeley[4] professor of philosophical and religious traditions of China and East Asia, Mark Csikszentmihalyi.

In 2009, he was awarded the Clifton Strengths Prize [5] and received the Széchenyi Prize at a ceremony in Budapest in 2011.[6]

Flow

In his seminal work, *Flow: The Psychology of Optimal Experience*, Csíkszentmihályi outlines his theory that people are most happy when they are in a state of *flow*— a state of concentration or complete absorption with the activity at hand and the situation. It is a state in which people are so involved in an activity that nothing else seems to matter (Csikszentmihalyi,1990). The idea of flow is identical to the feeling of being *in the zone* or *in the groove*. The flow state is an optimal state of *intrinsic motivation,* where the person is fully immersed in what he or she is doing. This is a feeling everyone has at times, characterized by a feeling of great absorption, engagement, fulfillment, and skill—and during which temporal concerns (time, food, ego-self, etc.) are typically ignored.[7]



Mental state in terms of challenge level and skill level, according to Csikszentmihalyi.<ref name="Finding Flow">Csikszentmihalyi, M., Finding Flow, 1997.</ref> (Click on a fragment of the image to go to the appropriate article)

In an interview with *Wired* magazine, Csíkszentmihályi described flow as "being completely involved in an activity for its own sake. The ego falls away. Time flies. Every action, movement, and thought follows inevitably from the previous one, like playing jazz. Your whole being is involved, and you're using your skills to the utmost."[8]

To achieve a flow state, a balance must be struck between the challenge of the task and the skill of the performer. If the task is too easy or too difficult, flow cannot occur. Both skill level and challenge level must be matched and high; if skill and challenge are low and matched, then apathy results.[]

The flow state also implies a kind of *focused attention,* and indeed, it has been noted that mindfulness, meditation, yoga, the Alexander Technique, and martial arts seem to improve a person's capacity for flow. Among other benefits, all of these activities train and improve attention.

In short, flow could be described as a state where attention, motivation, and the situation meet, resulting in a kind of productive harmony or feedback.

Publications

- Csikszentmihalyi, Mihaly (1975). *Beyond Boredom and Anxiety: Experiencing Flow in Work and Play*, San Francisco: Jossey-Bass. ISBN 0-87589-261-2
- Csikszentmihalyi, Mihaly (1978) Intrinsic Rewards and Emergent Motivation in The Hidden Costs of Reward : New Perspectives on the Psychology of Human Motivation eds Lepper, Mark R;Greene, David, Erlbaum: Hillsdale: NY 205-216
- Csikszentmihalyi, Mihaly and Csikszentmihalyi, Isabella Selega, eds. (1988). *Optimal Experience: Psychological studies of flow in consciousness*, Cambridge: Cambridge University Press. ISBN 0-521-34288-0
- Csikszentmihalyi, Mihaly (1990). *Flow: The Psychology of Optimal Experience*. New York: Harper and Row. ISBN 0-06-092043-2
- Csikszentmihalyi, Mihaly (1994). "The Evolving Self", New York: Harper Perennial . ISBN 0060921927

- Csikszentmihalyi, Mihaly (1996). *Creativity : Flow and the Psychology of Discovery and Invention*. New York: Harper Perennial. ISBN 0-06-092820-4
- Csikszentmihalyi, Mihaly (1998). *Finding Flow: The Psychology of Engagement With Everyday Life*. Basic Books. ISBN 0-465-02411-4 (a popular exposition emphasizing technique)
- Gardner, Howard, Csikszentmihalyi, Mihaly, and Damon, William (2002). *Good Work: When Excellence and Ethics Meet*. New York, Basic Books.
- Gardner, Howard, Csikszentmihalyi, Mihaly, and Damon, William (2002). *Good Business: Leadership, Flow, and the Making of Meaning*. Basic Books. ISBN 0465026087

References

[1] Thinker of the Year Award (http://www.brainchannels.com/thinker/mihaly.html)

[2] http://www.focusdep.com/quotes/topics/virtue/start/0/

[3] Nigel King & Neil Anderson (2002). *Managing Innovation and Change*. Cengage Learning EMEA. p. 82. (ISBN 1861527837)

[4] http://eall.wisc.edu/?q=node/28 East Asian Languages and Literature

[5] http://strengths.org/prize.shtml

[6] http://www.cgu.edu/pages/4546.asp?item=5242

[7] Csikszentmihalyi, M. (1990). *Flow: The Psychology of Optimal Experience*. New York: Harper and Row. ISBN 0-06-092043-2

[8] Geirland, John (1996). "Go With The Flow". *Wired* magazine, September, Issue 4.09. (http://www.wired.com/wired/archive/4.09/czik_pr.html)

External links

- Faculty page (http://www.cgu.edu/pages/4751.asp) at Claremont Graduate University
- Brain Channels Thinker of the Year - 2000 (http://www.brainchannels.com/thinker/mihaly.html)
- Interview with Mihaly Csikszentmihalyi, 2006 (http://video.google.com/videoplay?docid=-2868591389059000099&q=csikszentmihalyi&total=14&start=0&num=10&so=0&type=search&plindex=0)
- TED Talks: Mihaly Csikszentmihalyi on flow (http://www.ted.com/talks/view/id/366) at TED in 2004
- Video Interview on the Flow of Goodness (http://blip.tv/file/71230/)

Flow (psychology)

Flow is the mental state of operation in which a person in an activity is fully immersed in a feeling of energized focus, full involvement, and success in the process of the activity. Proposed by Mihály Csíkszentmihályi, the positive psychology concept has been widely referenced across a variety of fields.[1]


Concentrating upon a task is one aspect of flow.

According to Csíkszentmihályi, flow is completely focused motivation. It is a single-minded immersion and represents perhaps the ultimate in harnessing the emotions in the service of performing and learning. In flow, the emotions are not just contained and channeled, but positive, energized, and aligned with the task at hand. To be caught in the ennui of depression or the agitation of anxiety is to be barred from flow. The hallmark of flow is a feeling of spontaneous joy, even rapture, while performing a task[2] although flow is also described (below) as a deep focus on nothing but the activity – not even oneself or one's emotions.

Colloquial terms for this or similar mental states include: to be *on the ball*, *in the moment*, *present*, *in the zone*, *wired in*, *in the groove*, or *owning*.

Components of flow

Csíkszentmihályi identifies the following ten factors as accompanying an experience of flow [3] [4]

1. *Clear goals* (expectations and rules are discernible and goals are attainable and align appropriately with one's skill set and abilities). Moreover, the challenge level and skill level should both be high.[5]
2. *Concentrating*, a high degree of concentration on a limited field of attention (a person engaged in the activity will have the opportunity to focus and to delve deeply into it).
3. A *loss of the feeling of self-consciousness,* the merging of action and awareness.
4. *Distorted sense of time*, one's subjective experience of time is altered.
5. Direct and immediate *feedback* (successes and failures in the course of the activity are apparent, so that behavior can be adjusted as needed).
6. *Balance between ability level and challenge* (the activity is neither too easy nor too difficult).
7. A sense of personal *control* over the situation or activity.
8. The activity is *intrinsically rewarding*, so there is an effortlessness of action.
9. A lack of awareness of bodily needs (to the extent that one can reach a point of great hunger or fatigue without realizing it)
10. Absorption into the activity, narrowing of the focus of awareness down to the activity itself, *action awareness merging*.

Not all are needed for flow to be experienced.

Etymology

Flow is so named because during Csíkszentmihályi's 1975 interviews several people described their "flow" experiences using the metaphor of a water current carrying them along.[4] The psychological concept of *flow* as becoming absorbed in an activity is thus unrelated to the older phrase *go with the flow*.

History/background

The study of the concept of flow came about in the 1960s. Mihaly Csikszentmihalyi, who is considered to be the founder of flow, and his fellow researchers began researching flow after Csikszentmihalyi became fascinated by artists who would essentially get lost in their work. Artists, especially painters, got so immersed in their work that they would disregard their need for food, water and even sleep. Thus, the origin of research on the theory of flow came about when Csikszentmihalyi tried to understand this phenomenon experienced by these artists. Flow research became prevalent in the 1980s and 1990s, still with Csikszentmihalyi and his colleagues in Italy at the forefront. Researchers interested in optimal experiences and emphasizing positive experiences, especially in places such as schools and the business world, also began studying the theory of flow in this time period. The theory of flow was greatly used in the theories of Maslow and Rogers in their development of the humanistic tradition of psychology. [6]

Flow has been experienced throughout history and across cultures. The teachings of Buddhism and Taoism speak of a state of mind known as the "action of inaction" or "doing without doing" that greatly resembles the idea of flow. Also, Indian texts on Advaita philosophy such as Ashtavakra Gita and the Yoga of Knowledge such as Bhagavad-Gita refer to this similar state.

Historical sources hint that Michelangelo may have painted the ceiling of the Vatican's Sistine Chapel while in a flow state. It is reported that he painted for days at a time, and he was so absorbed in his work that he did not stop for food or sleep until he reached the point of passing out. He would wake up refreshed and, upon starting to paint again, re-entered a state of complete absorption.

Bruce Lee also spoke of a psychological state similar to flow in his book the *Tao of Jeet Kune Do*.

Mechanism of flow

In every given moment, there is a great deal of information made available to each individual. Psychologists have found that one's mind can attend to only a certain amount of information at a time. According to Miller's 1956 study, that number is about 126 bits of information per second. That may seem like a large number (and a lot of information), but simple daily tasks take quite a lot of information. Just having a conversation takes about 40 bits of information per second; that's 1/3 of one's capacity.[7] That is why when one is having a conversation he or she cannot focus as much of his or her attention on other things.

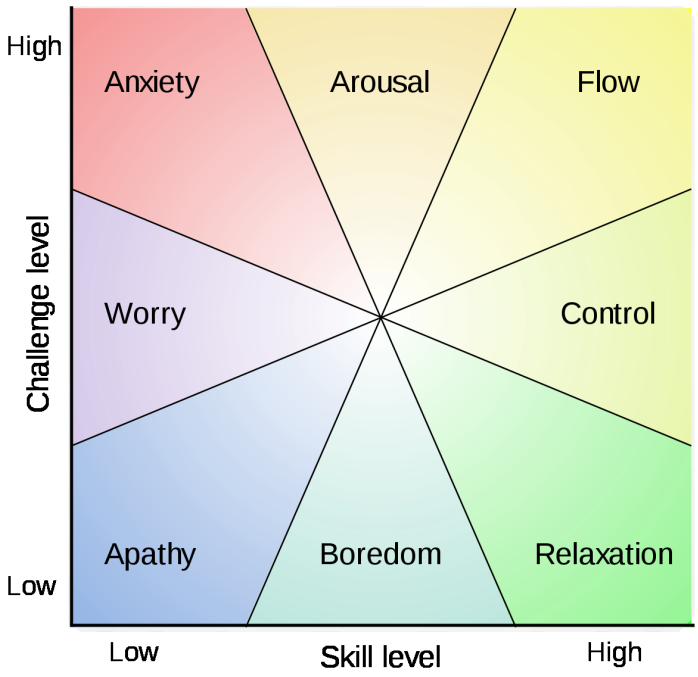
For the most part (except for basic bodily feelings like hunger and pain, which are innate), people are able to decide what they want to focus their attention on. However, when one is in the flow state, he or she is completely engrossed with the one task at hand and, without making the conscious decision to do so, loses awareness of all other things: time, people, distractions, and even basic bodily needs. This occurs because all of the attention of the person in the flow state is on the task at hand; there is no more attention to be allocated.[7]

Conditions for flow

One cannot force oneself to enter flow. It just happens. A flow state can be entered while performing any activity, although it is most likely to occur when one is wholeheartedly performing a task or activity for intrinsic purposes.[7] [8]

There are three conditions that are necessary to achieve the flow state:

1. One must be involved in an activity with a clear set of goals. This adds direction and structure to the task.[9]
2. One must have a good balance between the *perceived* challenges of the task at hand and his or her own *perceived* skills. One must have confidence that he or she is capable to do the task at hand.[9]
3. The task at hand must have clear and immediate feedback. This helps the person negotiate any changing demands and allows him or her to adjust his or her performance to maintain the flow state.[9]



Mental state in terms of challenge level and skill level, according to Csikszentmihalyi.<ref name="Finding Flow">Csikszentmihalyi, M., Finding Flow, 1997.</ref> (Click on a fragment of the image to go to the appropriate article)

In 1997, Csíkszentmihályi published the graph to the right. This graph depicts the relationship between the perceived challenges of a task and one's perceived skills. This graph illustrates one further aspect of flow: it can only occur when the activity at hand is a higher-than-average challenge (above the center point) and requires above-average skills (to the right of the center point).[7] The center of this graph (where the sectors meet) represents one's average levels of challenge and skill. The further from the center an experience is, the greater the intensity of that state of being (whether it is flow or anxiety or boredom or relaxation).[8]

The autotelic personality

Csíkszentmihályi hypothesized that people with several very specific personality traits may be better able to achieve flow more often than the average person. These personality traits include curiosity, persistence, low self-centeredness, and a high rate of performing activities for intrinsic reasons only. People with most of these personality traits are said to have an *autotelic personality*.[8]

It has not yet been documented whether people with an autotelic personality are truly more likely to achieve a flow state. One researcher (Abuhamdeh, 2000) did find that people with an autotelic personality have a greater preference for "high-action-opportunity, high-skills situations that stimulate them and encourage growth" than those without an autotelic personality.[8] It is in such high-challenge, high-skills situations that people are most likely to enter the flow state.

Group flow

Csíkszentmihályi suggests several ways a group can work together so that each individual member achieves flow. The characteristics of such a group include:

- Creative spatial arrangements: Chairs, pin walls, charts, but no tables; thus work primarily standing and moving
- Playground design: Charts for information inputs, flow graphs, project summary, craziness (here also craziness has a place), safe place (here all may say what is otherwise only thought), result wall, open topics
- Parallel, organized working
- Target group focus
- Advancement of existing one (prototyping)
- Increase in efficiency through visualization
- Using differences among participants as an opportunity, rather than an obstacle

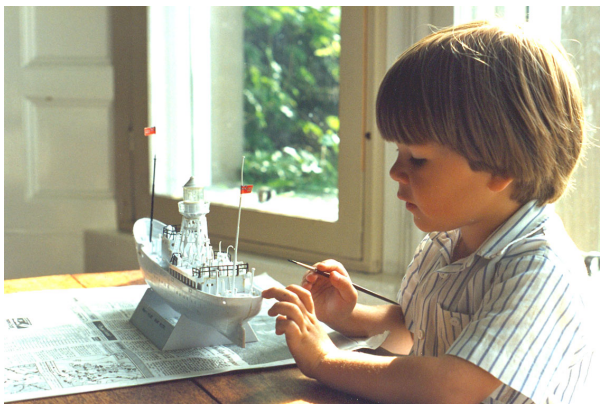
Applications

Applications suggested by Csíkszentmihályi versus other practitioners

Only Csíkszentmihályi seems to have published suggestions for extrinsic applications of the flow concept, such as design methods for playgrounds to elicit the flow experience. Other practitioners of Csíkszentmihályi's flow concept focus on intrinsic applications, such as spirituality, performance improvement, or self-help. Reinterpretations of Csíkszentmihályi's flow process exist to improve performance in areas as diverse as business, piano improvisation, sport psychology, computer programming, and standup comedy.

Education

In education, there is the concept of overlearning, which seems to be an important factor in this technique, in that Csíkszentmihályi[10] states that overlearning enables the mind to concentrate on visualizing the desired performance as a singular, integrated action instead of a set of actions. Challenging assignments that (slightly) stretch one's skills lead to flow.[11]



Young boy, painting a model

Around 2000, it came to the attention of Csíkszentmihályi that the principles and practices of the Montessori Method of education seemed to purposefully set up continuous flow opportunities and experiences for students. Csíkszentmihályi and psychologist Kevin Rathunde embarked on a multi-year study of student experiences in Montessori settings and traditional educational settings. The research supported observations that students achieved flow experiences more frequently in Montessori settings.[12] [13] [14]

Music

Musicians, especially improvisational soloists may experience a similar state of mind while playing their instrument.[15] Research has shown that performers in a flow state have a heightened quality of performance as opposed to when they are not in a flow state. In a study performed with professional classical pianists who played piano pieces several times to induce a flow state, a significant relationship was found between the flow state of the pianist and the pianist's heart rate, blood pressure, and major facial muscles. As the pianist entered the flow state, heart rate and blood pressure decreased and the major facial muscles relaxed. This study further emphasized that

flow is a state of effortless attention. In spite of the effortless attention and overall relaxation of the body, the performance of the pianist during the flow state improved. [16]

Groups of drummers experience a state of flow when they sense a collective energy that drives the beat, something they refer to as *getting into the groove*. Bass guitarists often describe a state of flow when properly playing between the percussion and melody as being *in the pocket*.

Sports

Flow may occur in challenging sports such as Eventing.

The concept of *being in the zone* during an athletic performance fits within Csíkszentmihályi's description of the flow experience, and theories and applications of *being in the zone* and its relationship with athletic competitive advantage are topics studied in the field of sport psychology.[17]

Timothy Gallwey's influential works on the "inner game" of sports such as golf and tennis described the mental coaching and attitudes required to "get in the zone" and fully internalize mastery of the sport.[18]

Roy Palmer suggests that "being in the zone" may also influence movement patterns as better integration of the conscious and subconscious reflex functions improves coordination. Many athletes describe the effortless nature of their performance while achieving personal bests – see references.

MMA champion and Karate master Lyoto Machida uses meditation techniques before fights to attain mushin, a concept that, by his description, is in all respects equal to flow.

The Formula One driver Ayrton Senna, who during qualifying for the 1988 Monaco Grand Prix explained: "I was already on pole, [...] and I just kept going. Suddenly I was nearly two seconds faster than anybody else, including my team mate with the same car. And suddenly I realised that I was no longer driving the car consciously. I was driving it by a kind of instinct, only I was in a different dimension. It was like I was in a tunnel."

When challenges and skills are simultaneously above average, a broadly positive experience emerges.[19] Also vital to the flow state is a sense of control, which nevertheless seems simultaneously effortless and masterful. Control and concentration manifest with a transcendence of normal awareness; one aspect of this transcendence is the loss of self-consciousness.[20]

Religion and spirituality

Csíkszentmihályi may have been the first to describe this concept in Western psychology, but as he himself readily acknowledges he was most certainly not the first to quantify the concept of flow or develop applications based on the concept.

For millennia, practitioners of Eastern religions such as Hinduism, Buddhism and Taoism have honed the discipline of overcoming the duality of self and object as a central feature of spiritual development. Eastern spiritual practitioners have developed a very thorough and holistic set of theories around overcoming duality of self and object, tested and refined through spiritual practice instead of the systematic rigor and controls of modern science.

The phrase *being at one with things* is a metaphor of Csíkszentmihályi's flow concept. Practitioners of the varied schools of Zen Buddhism apply concepts similar to flow to aid their mastery of art forms, including, in the case of Japanese Zen Buddhism, Aikido, Cheng Hsin, Judo, Honkyoku, Kendo and Ikebana. In yogic traditions such as Raja Yoga reference is made to a state of *flow*[21] in the practice of Samyama, a psychological absorption in the object of meditation.[22] Theravada Buddhism refers to "access concentration," which is a state of flow achieved through meditation and used to further strengthen concentration into jhana, and/or to develop insight.

In Islam the first mental state that precedes human action is known as al-khatir. In this state an image or thought is born in the mind. When in this mental state and contemplating upon an ayat or an imprint of God, one may experience a profound state of Oneness or flow whereby the phenomena of nature, the macrocosmic world and the souls of people are understood as a sign of God. Also, the teaching in the Qu'ran of different nations of people existing so that they may come to know each other is an example of Oneness. All members of society and the world are considered to be in flow of Oneness, one family, one body.

Gaming

Flow is one of the fundamental reasons that people play video games.[23] This is especially true since the primary goal of games is to create entertainment through intrinsic motivation. The use of flow in games helps foster an enjoyable experience which increases motivation and draws players to continue playing. Game designers, in particular, benefit from integration of flow principles into game design.[24] Games facilitate flow as either an individual or group activity.

Flow in games has been linked to the Laws of Learning as part of the explanation for why learning games (the use of games to introduce material, improve understanding, or increase retention) can show such incredible results.[23] In particular, flow is intrinsically motivating, which is part of the Law of Readiness. The condition of feedback, required for flow, is associated with the feedback aspects of the Law of Exercise. The positive emotions associated with flow are associated with the Law of Effect. The intense experiences of being in a state of flow are directly associated with the Law of Intensity.

Using the Web

Researchers suggest that using the internet can cause a flow state for users. If individuals are going through a flow state, which is a pleasurable experience, web users eventually improve their subjective well-being through accumulated ephemeral moments. Many web users report certain descriptions of flow when using the web, for example, absorbed interest, a feeling of discovery, immersed pleasure, and time going very fast. [25]

Flow Activities on the Web

Web users state that activities in the web atmosphere lead to a flow state. There are four common activities that promote flow, searching, surfing, reading and writing, and chatting. [25]

Searching

The first and the most common activity to reach the flow state on the web is searching on the web. An example of searching is solving a problem such as the following responses from participants in a study of web flow:

"I was very involved in several projects and used the net resources to look up items to supplement/back-up/provide information on those projects." [25]

"Doing research into emotional intelligence theory ± following links and leads to more information." [25]

"Trying to find some scientific references for my research." [25]

"Anytime I get involved in a new research project on the Web, I get so excited and into it, I can have someone talking to me right next to my desk . . . and I won't even hear them talking." [25]

Surfing or Navigating

The second activity to reach flow state on the web is surfing or navigating. An example of surfing or navigating is going through hyperlinks such as the following responses from participants in a study of web flow:

"Going from site to site, following links that were related." [25]

"Doing some Web searches for information on a hobby of mine." [25]

"I was going to a Web site which had a new song by my favorite punk band. I was surprised and enmeshed in it." [25]

"Looking for information on a specific book, and got off on some links that were interesting and related [sort of] to what I started out looking for." [25]

Reading and Writing

The third activity to reach flow state on the web are reading and writing. Reading consists of reading incoming emails, news, articles, etc. on web pages. In addition, writing consists of composing letters, articles, speeches, etc. on web pages. The activity of reading e-mail and articles is one of the routes to experience flow because the text usually contains some new or relatively unfamiliar aspects, providing the challenges to sustain flow, which in turn usually caused growth and perceived benefits from increased knowledge and/or personal development. [25] Furthermore, writing articles, speeches, or emails corresponds with the flow model due to the fact that an individual is arranging his or her thoughts positively.

Chatting online

The fourth activity to reach flow state on the web is chatting online. An example of chatting online is communicating with other individuals such as the following responses from participants in a study of web flow:

"I was simply engaged in a running series of conversations with friends . . ." [25]

"Chatroom outside normal business hours." [25]

"Involved in a nine-way chat session with some friends I've made on the alt.fan.sailor-moon newsgroup." [25]

Other Activities

There are many other activities people can partake in while using the web. Some individuals state that they achieve flow by coding a program, hacking into a small business, building their own web page, watching a movie preview, troubleshooting computer problems, and many more.

Components/Symptoms of flow on the Web

Merging of action and awareness

When an individual is in flow, they are concentrating and narrowing down their activity. Therefore, an individual's inner experience may reveal the phenomenon of merging action and awareness. The mind and action merge when individuals experience high concentration in the flow state. An example of high concentration in the flow state is a tennis player focusing only on his or her opponent and tennis ball, disregarding all external and internal activities, such as losing or yelling from an audience. In the web environment, the merging of action and awareness is realized when a user becomes the issue he or she is debating, the words he or she is typing, the sentences he or she is reading, or the machine he or she is working on. As a result, people "just sit here and keep clicking and reading away". [25] Examples of merging action and awareness are responses from participants in a study of web flow:

"Connected to the material, like I had several books open at the same time and was moving between them without pause." [25]

"I feel [am!] totally concentrated on my task. There is nothing but the keyboard, the screen and my thought. If someone talks to me I will answer and I am still on ``stand by *awareness with* my environment, but I wouldn't think of doing or saying anything." [25]

"When I was unemployed and desperately searching for work, a task that seemed increasingly worthless, I began reading newsgroups and involving myself in discussions and disagreements there. The more involved I became in the *issues* that I was discussing and arguing, the less important my own petty problems became." [25]

"Just that my whole concentration is focused in what I'm doing ± I become the words I'm typing or reading. It's not that the outside world doesn't exist ± if one of my roommates knocks on my door, I notice them and it's not a shock to return to the outside world. But until that happens I'm totally engrossed." [25]

"In chat sessions ± I chat often enough that ``talking *through the keyboard has become second* nature." [25]

"Relaxed . . . I guess just . . . well . . . nothing. I wasn't feeling anything until I'd sit back and relax my eyes a bit . . . then I'd realize that I had more stuff that I should be doing, but I'd just sit here and keep clicking and reading away." [25]

"I was in a heated discussion on a chat network for the better part of two hours. I cannot remember what the subject was about, but all I knew was I was totally blind to the world." [25]

A Loss of Self-Consciousness

People tend to lose awareness of self, due to the experiencing of flow state. In addition, people tend to lose the function of defending and protecting themselves because of flow. This is a common experience from web users, such as the following responses below from participants in a study of web flow:

"Whether it is reading newsgroups or doing a search for a particular thing I tend to concentrate and ``lose myself.'' [25]

"I become the persona I present in the newsgroup, not my ``real *self. It's my other identity.''* [25]

"I am a smoker, I can't smoke in my office, and sometimes I won't even want a cigarette for several hours [when in the flow state]." [25]

"How do I feel? I tend to shut out my feelings too ± if I'm reading/interacting with good content, I put off my feeling that I need to go to the bathroom, that I am hungry, etc." [25]

"I feel like there is no ``Me*; I feel there has been a merging of man and machine.''* [25]

"I feel agitated and compelled to get the job done to the point of ignoring hunger, thirst or the need to go to the bathroom." [25]

"I get so disconnected from the world that someone else has to pull me out. Like they were there with me to keep my mind off of the ``real *world.* Oblivious. The physical world and its demands cease to exist. My own mind and intelligence are the only limitations I encounter." [25]

"I heard the radio, drank beer, and smoked cigarettes. I was aware of my surroundings, but yes I was less aware of my problems." [25]

"I don't know. I was working not looking at me working . . ." [25]

Sense of Time Distortion

When a person is experiencing flow, their internal clock slows down or speeds up, but the external clock is constant. Furthermore, people state that hours seem to change into minutes and vice versa. The sense of time distortion is frequent in the web environment, such as the following responses from web users:

"Even though I have a program that audibly announces the time in a female voice every 15 minutes on my computer, I don't hear it . . . When I leave my computer from the newsgroup I have a slightly dazed, disassociated feeling. While in the newsgroup I have lost all sense of time. What subjectively seems like 20 minutes turns out to have actually been 2 and 1/2 hours."

"Time went by extremely fast. Two hours had passed before I had ever realized it. I was quite shocked that so much time had passed without me being aware of it." [25]

"Just that feeling of being totally absorbed in what you're doing, looking at the clock and saying ``Dang, how can it be 4 a.m., I just started this project! [25]

"I felt involved and like the time was a half-hour but it was more like three hours." [25]

"Finding content material for a series of class presentations. I began putting the material together at 10 a.m. and floundered for a few minutes, when I began finding detailed information I kept working of what seemed like an hour ± it was actually 3 p.m." [25]

"I don't remember specifics, but I have several memories of *head jerking* (as in when you fall asleep and your head falls forward and jerks back) that caused me to realize that my perception of what time it should be was several hours behind the time it actually was." [25]

Professions and work

Developers of computer software reference getting into a flow state, sometimes referred to as *The Zone*[26] [27] [28] or *hack mode*,[29] when developing in an undistracted state. Stock market operators often use the term "in the pipe" to describe the psychological state of flow when trading during high volume days and market corrections. Professional poker players use the term "playing the A-game" when referring to the state of highest concentration and strategical awareness.

Flow in the Workplace

Conditions of flow, defined as a state in which challenges and skills are equally matched, play an extremely important role in the workplace. Because flow is associated with achievement, its development could have concrete implications in increasing workplace satisfaction and accomplishment. Flow researchers, such as Csikszentmihalyi, believe that certain interventions may be performed to enhance and increase flow in the workplace, through which people would gain ‘intrinsic rewards that encourage persistence” and provide benefits. In his consultation work, Csikszentmihalyi emphasizes finding activities and environments that are conducive to flow, and then identifying and developing personal characteristics to increase experiences of flow. Applying these methods in the workplace, such as Csikszentmihalyi did with Swedish police officers, can improve morale by fostering a sense of greater happiness and accomplishment, and in correlated to increased performance. In his review of Mihaly Csikszentmihalyi’s book “Good Business: Leadership, Flow, and the Making of Meaning,” Coert Vissar introduces the ideas presented by Csikszentmihalyi, including “good work” in which one “enjoys doing your best while at the same time contributing to something beyond yourself.” He then provides tools by which managers and employees can create an atmosphere that encourages good work. First, Csikszentmihalyi explains that experiencing flow, in which a task requires full involvement, and the challenge of a task matches one’s ability.

In order to achieve flow, Csikszentmihalyi lays out the following eight conditions:

1. goals are clear

2. feedback is immediate

3. a balance between opportunity and capacity

4. concentration deepens

5. the present is what matters

6. control is no problem

7. the sense of time is altered

8. the loss of ego

Csikszentmihalyi argues that with increased experiences of flow, people experience “growth towards complexity,” in which people flourish as their achievements grow and with that comes development of increasing “emotional, cognitive, and social complexity” (Vissar). By creating a workplace atmosphere that allows for flow and growth,

Csikszentmihalyi argues, can increase the happiness and achievement of employees. There are, however, barriers to achieving flow in the workplace. In his chapter “Why Flow Doesn’t Happen on the Job,” Csikszentmihalyi argues the first reason that flow does not occur is that the goals of one’s job are not clear. He explains that while some tasks at work may fit into a larger, organization plan, the individual worker may not see where their individual task fits it. Second, limited feedback about one’s work can reduce motivation and leaves the employee unaware of whether or not they did a good job. When there is little communication of feedback, an employee may not be assigned tasks that challenge them or seem important, which could potentially prevent an opportunity for flow. In the study “Predicting flow at work: Investigating the activities and job characteristics that predict flow states at work” Karina Nielsen and Bryan Clean used a 9- item flow scale to examine predictors of flow at two levels: activity level (such as brainstorming, problem solving, and evaluation) and at a more stable level (such as role clarity, influence, and cognitive demands). They found that activities such as planning, problem solving, and evaluation predicted transient flow states, but that more stable job characteristics were not found to predict flow at work. This study can help us identify which task at work can be cultivated and emphasized in order to help employees experience flow on the job. In her article in Positive Psychology News Daily, Kathryn Britton examines the importance of experiencing flow in the workplace beyond the individual benefits it creates. She writes, “Flow isn’t just valuable to individuals; it also contributes to organizational goals. For example, frequent experiences of flow at work lead to higher productivity, innovation, and employee development (Csikszentmihalyi, 1991, 2004). So finding ways to increase the frequency of flow experiences can be one way for people to work together to increase the effectiveness of their workplaces.”

Benefits of flow

Flow is an innately positive experience; it is known to "produce intense feelings of enjoyment[7] and its improvement of performance results in satisfying achievement.[30]

Flow has a strong, documented correlation with performance enhancement. Researchers have found that achieving a flow state is positively correlated with optimal performance in the fields of artistic and scientific creativity (Perry, 1999; Sawyer, 1992), teaching (Csíkszentmihályi, 1996), learning (Csíkszentmihályi et al., 1993), and sports (Jackson, Thomas, Marsh, & Smethurst, 2002; Stein, Kimiecik, Daniels, & Jackson, 1995).[9]

Flow also has a strong correlation with the further development of skills and personal growth. When one is in a flow state, he or she is working to master the activity at hand. To maintain that flow state, one must seek increasingly greater challenges. Attempting these new, difficult challenges stretches one's skills. One emerges from such a flow experience with a bit of personal growth and great "feelings of competence and efficacy".[9]

Further, flow is positively correlated with a higher subsequent motivation to perform and to perform well.[9]

References

Footnotes

[1] Citations of Csíkszentmihályi's 1990 book (http://scholar.google.com/scholar?hl=en&lr=&cites=12334528761431366038) about flow on Google Scholar.

[2] Goleman, Daniel, *Emotional Intelligence*, p. 91, ISBN 055380491X

[3] Csikszentmihalyi, M & Rathunde, K (1993). "The measurement of flow in everyday life: Towards a theory of emergent motivation". In Jacobs, JE. *Developmental perspectives on motivation*. Nebraska symposium on motivation. Lincoln: University of Nebraska Press. p. 60. ISBN 0803292104.

[4] Csíkszentmihályi, Mihály (1975), *Beyond Boredom and Anxiety*, San Francisco, CA: Jossey-Bass, ISBN 0875892612

[5] Csikszentmihalyi, M. (1997), *Finding Flow*

[6] Csikszentmihalyi & Nakamura, Mihaly & Jeanne (2002), *The Concept of Flow* (http://books.google.com/?id=2Cr5rP8jOnsC&pg=PA89&dq=flow+(psychology)#v=onepage&q=flow (psychology)&f=false), The Handbook of Positive Psychology: Oxford University Press, pp. 89–92, ISBN 9780195135336,

[7] Csikszentmihalyi, M. (1988), "The flow experience and its significance for human psychology" (http://books.google.com/?id=lNt6bdfoyxQC&lpg=PA15&dq=The flow experience and its significance for human psychology&pg=PA15#v=onepage&q&f=false), in Csikszentmihalyi, M., *Optimal experience: psychological studies of flow in consciousness*, Cambridge, UK: Cambridge University Press,

pp. 15–35, ISBN 9780521438094,
[8] Snyder, C.R. & Lopez, S.J. (2007), *Positive psychology: The scientific and practical explorations of human strengths*, London, UK: Sage Publications
[9] Csikszentmihalyi, M.; Abuhamdeh, S. & Nakamura, J. (2005), "Flow", in Elliot, A., *Handbook of Competence and Motivation*, New York: The Guilford Press, pp. 598–698
[10] Csíkszentmihályi, Mihály (1990), *Flow: The Psychology of Optimal Experience*, New York: Harper and Row, ISBN 0-06-092043-2
[11] Snyder, C.R. & Lopez, Shane J. (2007), "11", *Positive Psychology*, Sage Publications, Inc., ISBN 076192633X
[12] Rathunde, K. & Csikszetnmihalyi, M. (2005), "Middle school students' motivation and quality of experience: A comparison of Montessori and traditional school environments", *American Journal of Education* **111** (3): 341–371, doi:10.1086/428885
[13] Rathunde, K. & Csikszentmihalyi, M. (2005), "The social context of middle school: Teachers, friends, and activities in Montessori and traditional school environments", *Elementary School Journal* **106** (1): 59–79, doi:10.1086/496907
[14] Rathunde, K.; Csikszentmihalyi, M. (2006). "The developing person: An experiential perspective". In Lerner (ed.), R.M.; Damon (series ed.), W.. *Theoretical models of human development*. Handbook of Child Psychology (6 ed.). New York: Wiley.
[15] Parncutt, Richard & McPherson, Gary E. (2002), *The Science & Psychology of Music Performance: Creative Strategies for Teaching and Learning Book* (http://books.google.com/?id=NCySp2NzAm8C&pg=PA119&lpg=PA119&dq=improvisation+flow+CsÃkszentmihÃ¡lyi), Oxford University Press US, p. 119, ISBN 9780195138108, , retrieved 2009-02-07
[16] de Manzano, Orjan, Theorell, Harmat, Laszlo, Ullen & Fredrik. "The psychophysiology of flow during piano playing". *psycARTICLES*.
[17] Young, Janet A.; Pain, Michelle D.. "The Zone: Evidence of a Universal Phenomenon for Athletes Across Sports" (http://www.athleticinsight.com/Vol1Iss3/Empirical_Zone.htm). *Athletic Insight*. . Retrieved 2008-05-08.
[18] Timothy Galwey (1976), *Inner Tennis - Playing the Game*
[19] Csikszentmihalyi, Mihaly (1988), *Optimal Experience: Psychological Studies of Flow in Consciousness*, Cambridge, NY: Cambridge University Press, p. 323
[20] Hunter, Jeremy & Csikszentmihalyi, M. (2000), "The Phenomenology of Body-Mind: The Contrasting Cases of Flow in Sports and Contemplation", *Anthropology of Consciousness* **11** (3–4): 15
[21] "Yoga Sutras 3.9-3.16: Witnessing Subtle Transitions with Samyama" (http://www.swamij.com/yoga-sutras-30916.htm). .
[22] Sansonese, J. Nigro (1994), *The Body of Myth: Mythology, Shamanic Trance, and the Sacred Geography of the Body* (http://books.google.com/?id=aUZBqTKTAfIC&pg=PA26&lpg=PA26&dq=samyama+japan+koan), Inner Traditions, p. 26, ISBN 9780892814091, , retrieved 2009-03-06
[23] Murphy, Curtiss (2011). "Why Games Work and the Science of Learning" (http://www.goodgamesbydesign.com/?p=59). . Retrieved 2011-07-25.
[24] Chen, J. (2008). "Flow in Games" (http://www.jenovachen.com/flowingames/introduction.htm). . Retrieved 2008-05-16.
[25] Chen, Hsiang; Rolf T. Wigand and Michael Nilan (2000), "Exploring Web users' optimal flow experiences", *Information Technology* **13** (4): 263–281.
[26] Michael Lopp (12 June 2007), "Chapter 25: A Nerd in a Cave" (http://www.randsinrepose.com/archives/2006/07/10/a_nerd_in_a_cave.html), *Managing Humans: Biting and Humorous Tales of a Software Engineering Manager*, Apress, p. 143, ISBN 978-1590598443, , "[The Zone] is a deeply creative space where inspiration is built. Anything which you perceive as beautiful, useful, or fun comes from someone stumbling through The Zone."
[27] Joel Spolsky (9 August 2000), *The Joel Test: 12 Steps to Better Code* (http://www.joelonsoftware.com/articles/fog0000000043.html), , "We all know that knowledge workers work best by getting into 'flow', also known as being 'in the zone' (...) Writers, programmers, scientists, and even basketball players will tell you about being in the zone."
[28] Timothy Trimble (1 September 2005). "In "The Zone"" (http://ezinearticles.com/?In-The-Zone&id=65850). EzineArticles. .
[29] "hack mode" (http://catb.org/jargon/html/H/hack-mode.html). Jargon File. .
[30] "Positive Psychology", *Psychology Applied to Modern Life*, 2011, p. 520, ISBN 9781111186630

25. Chen H., Wigand Rolf T., Nilan M., "Exploring Web Users' Optimal flow experiences". Information Technology &People, Vol 13 No. 4, 2000, pp. 263-281

Notations

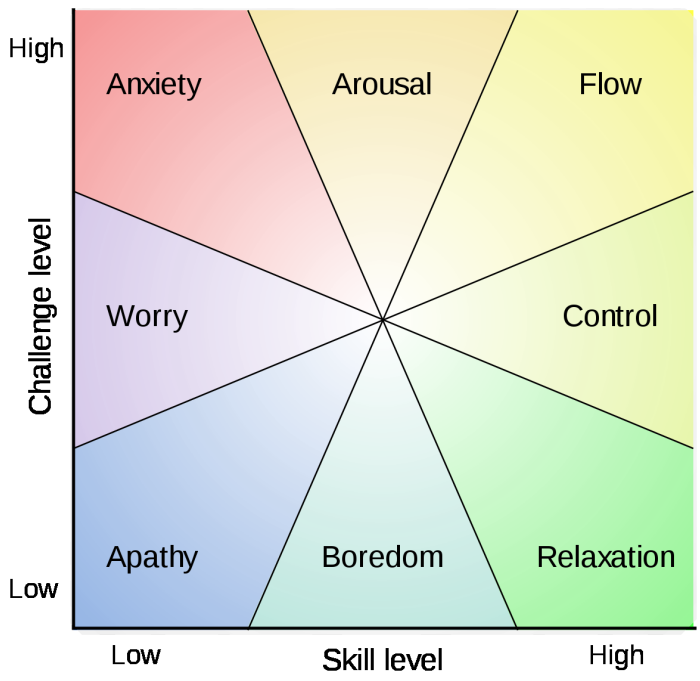
- Csíkszentmihályi, Mihály (1996), *Creativity: Flow and the Psychology of Discovery and Invention*, New York: Harper Perennial, ISBN 0-06-092820-4
- Csíkszentmihályi, Mihály (1996), *Finding Flow: The Psychology of Engagement With Everyday Life*, Basic Books, ISBN 0-465-02411-4 (a popular exposition emphasizing technique)
- Csíkszentmihályi, Mihály (2003), *Good Business: Leadership, Flow, and the Making of Meaning*, New York: Penguin Books, ISBN 0-14-200409-X
- Egbert, Joy (2003), "A Study of Flow Theory in the Foreign Language Classroom", *The Modern Language Journal* **87** (4): 499–518, doi:10.1111/1540-4781.00204
- Jackson, Susan A. & Csíkszentmihályi, Mihály (1999), *Flow in Sports: The Keys to Optimal Experiences and Performances*, Champaign, Illinois: Human Kinetics Publishers, ISBN 0-88011-876-8
- Mainemelis, Charalampos (2001), "When the Muse Takes It All: A Model for the Experience of Timelessness in Organizations", *The Academy of Management Review* (The Academy of Management Review, Vol. 26, No. 4) **26** (4): 548–565, doi:10.2307/3560241, JSTOR 3560241
- Shainberg, Lawrence (1989-04-09), "FINDING 'THE ZONE'" (http://query.nytimes.com/gst/fullpage.html?res=950DE0DD1E3FF93AA35757C0A96F948260&scp=1&sq=pele+"felt+a+strange+calmness"&st=nyt), *New York Times Magazine*

External links

- Mihaly Csikszentmihalyi: Creativity, fulfillment and flow (https://www.youtube.com/watch?v=fXIeFJCqsPs) on YouTube; presentation at the February, 2004 TED conference
- "In the zone": enjoyment, creativity, and the nine elements of "flow" (http://www.meaningandhappiness.com/zone-enjoyment-creativity-elements-flow/26/)
- Finding Flow in Writing (http://www.abdsurvivalguide.com/News/030404.htm) by Tracy Steen, Ph.D.
- Archetype Writing (http://www.archetypewriting.com/articles/articles_ck/muse_block_ckFlowArticle.htm) The Right-Brain/Left-Brain Myth and Flow looks at the neurology behind flow
- *Flow* (http://www.butler-bowdon.com/flow.html) - A commentary on Mihaly Csikszentmihalyi's classic work by Tom Butler-Bowdon
- The Principle of Relevance (http://www.stefanialucchetti.com/), Stefania Lucchetti, RT Publishing, Hong Kong 2010, which discusses the concept of "Flow" and the importance of attention in the context of digital information overload
- (http://vimeo.com/17465894) "Flow" (2010) — A short film made by Halcyon Nights in which flow theory is explored through a new exhilarating activity that takes place on the streets of London.

Overlearning

Overlearning is a pedagogical concept according to which newly acquired skills should be practiced well beyond the point of initial mastery, leading to automaticity. Once one has overlearned a task, one's skill level is higher than the challenge level for that task (see *Control* region in the graph).[1] The Yerkes–Dodson law predicts that overlearning can improve performance in states of high arousal.[2]



Mental state in terms of challenge level and skill level, according to Csikszentmihalyi.<ref name="Finding Flow">Csikszentmihalyi, M., Finding Flow, 1997.</ref> (Click on a fragment of the image to go to the appropriate article)

References

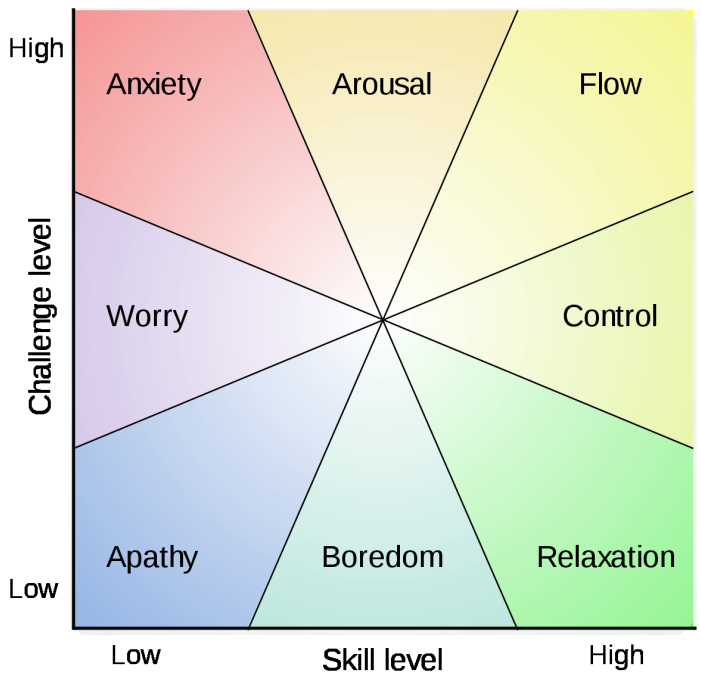
- Mandler, G. (1962). From association to structure. Psychological Review, 69, 415-427.

[1] Csikszentmihalyi, M., *Finding Flow,* 1997

[2] Long, Martyn (2000). *The Psychology of Education*. Routledge. ISBN 0415239060.

Relaxation (psychology)

In psychology, **relaxation** is the emotional state of low tension, in which there is an absence of arousal that could come from sources such as anger, anxiety, or fear. Relaxation is a form of mild ecstasy coming from the frontal lobe of the brain in which the backward cortex sends signals, or prions, to the frontal cortex via a mild sedative.



Mental state in terms of challenge level and skill level, according to Csikszentmihalyi.<ref name="Finding Flow">Csikszentmihalyi, M., Finding Flow, 1997.</ref> (Click on a fragment of the image to go to the appropriate article)

References

External Links

- Meditation and Relaxation (http://www.hoffmancounseling.com/)

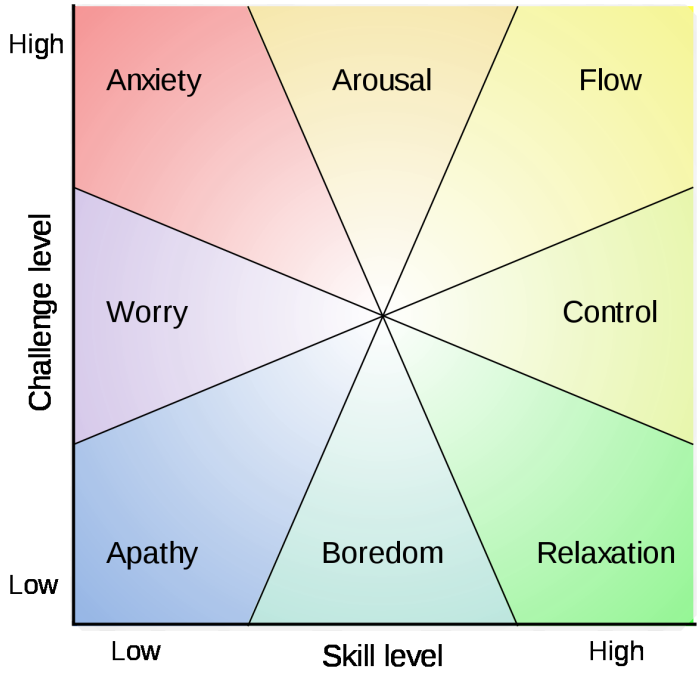
Boredom

Boredom is an emotional state experienced when an individual is left without anything in particular to do, and is not interested in their surroundings. The first recorded use of the word *boredom* is in the novel Bleak House by Charles Dickens, written in 1852,[1] in which it appears six times, although the expression *to be a bore* had been used in the sense of "to be tiresome or dull" since 1768.[2] The French term for boredom, **ennui**, is sometimes used in English as well.

A souvenir seller appears to be bored as she waits for customers.

Psychology

Boredom has been defined by C. D. Fisher in terms of its central psychological processes: “an unpleasant, transient affective state in which the individual feels a pervasive lack of interest in and difficulty concentrating on the current activity.”[3] M. R. Leary and others describe boredom as “an affective experience associated with cognitive attentional processes.”[4] In positive psychology, boredom is described as a response to a moderate challenge for which the subject has more than enough skill.[5]



Mental state in terms of challenge level and skill level, according to Csikszentmihalyi.<ref name="Finding Flow">Csikszentmihalyi, M., Finding Flow, 1997.</ref> (Click on a fragment of the image to go to the appropriate article)

There are three types of boredom, all of which involve problems of engagement of attention. These include times when we are prevented from engaging in some wanted activity, when we are forced to engage in some unwanted activity, or when we are simply unable, for no apparent reason, to maintain engagement in any activity or spectacle.[6] Boredom proneness is a tendency to experience boredom of all types. This is typically assessed by the Boredom Proneness Scale.[7] Consistent with the definition provided above, recent research has found that boredom proneness is clearly and consistently associated with failures of attention.[8] Boredom and boredom proneness are both theoretically and empirically linked to depression and depressive symptoms.[9] [10] [11] Nonetheless, boredom

proneness has been found to be as strongly correlated with attentional lapses as with depression.[9] Although boredom is often viewed as a trivial and mild irritant, proneness to boredom has been linked to a very diverse range of possible psychological, physical, educational, and social problems.

Philosophy

Boredom is a condition characterized by perception of one's environment as dull, tedious, and lacking in stimulation. This can result from leisure and a lack of aesthetic interests. Labor, however, and even art may be alienated and passive, or immersed in tedium. There is an inherent anxiety in boredom; people will expend considerable effort to prevent or remedy it, yet in many circumstances, it is accepted as suffering to be endured. Common passive ways to escape boredom are to sleep or to think creative thoughts (daydream). Typical active solutions consist in an intentional activity of some sort, often something new, as familiarity and repetition lead to the tedious.

1916 Rea Irvin illustration depicting a bore putting her audience to sleep

Boredom also plays a role in existentialist thought. In contexts where one is confined, spatially or otherwise, boredom may be met with various religious activities, not because religion would want to associate itself with tedium, but rather, partly because boredom may be taken as the essential human condition, to which God, wisdom, or morality are the ultimate answers. Boredom is in fact taken in this sense by virtually all existentialist philosophers as well as by Schopenhauer.

Heidegger wrote about boredom in two texts available in English, in the 1929/30 semester lecture course *The Fundamental Concepts of Metaphysics*, and again in the essay *What is Metaphysics?* published in the same year. In the lecture, Heidegger included about 100 pages on boredom, probably the most extensive philosophical treatment ever of the subject. He focused on waiting at train stations in particular as a major context of boredom.[12] In Kierkegaard's remark in *Either/Or*, that "patience cannot be depicted" visually, there is a sense that any immediate moment of life may be fundamentally tedious.

Blaise Pascal in the Pensées discusses the human condition in saying "we seek rest in a struggle against some obstacles. And when we have overcome these, rest proves unbearable because of the boredom it produces", and later states that "only an infinite and immutable object – that is, God himself – can fill this infinite abyss."[13]

Without stimulus or focus, the individual is confronted with nothingness, the meaninglessness of existence, and experiences existential anxiety. Heidegger states this idea nicely: "Profound boredom, drifting here and there in the abysses of our existence like a muffling fog, removes all things and men and oneself along with it into a remarkable indifference. This boredom reveals being as a whole."[14] Arthur Schopenhauer used the existence of boredom in an attempt to prove the vanity of human existence, stating, "...for if life, in the desire for which our essence and existence consists, possessed in itself a positive value and real content, there would be no such thing as boredom: mere existence would fulfil and satisfy us."[15]

Erich Fromm and other thinkers of critical theory speak of boredom as a common psychological response to industrial society, where people are required to engage in alienated labor. According to Fromm, boredom is "perhaps the most important source of aggression and destructiveness today." For Fromm, the search for thrills and novelty that characterizes consumer culture are not solutions to boredom, but mere distractions from boredom which, he argues, continues unconsciously.[16] Above and beyond taste and character, the universal case of boredom consists in any instance of *waiting*, as Heidegger noted, such as in line, for someone else to arrive or finish a task, or while one is travelling somewhere. The automobile requires fast reflexes, making its operator busy and hence, perhaps for other

reasons as well, making the ride more tedious despite being over sooner.

Indian thinker, Domenic Marbaniang, defines boredom as "the metaphysical turbulent emotion that arises out of the paradox of the rational sense of immutability and the empirical sense of mutation." He explains "Reason anticipates permanence, changelessness, and immutability as the quality of ultimate reality; however, for experience immutability is an impossibility. Nothing immutable is empirically conceivable; for if something doesn't move in space, it at least moves in time. The tension between the immutable and the mutable produces the emotion of ennui, the sense of tediousness and vexation associated with the absence of immutable or lasting purpose in the cosmic phenomena of change."[17]

Causes and effects

The Princess Who Never Smiled by Viktor Vasnetsov

Although it has not been widely studied, research on boredom suggests that boredom is a major factor impacting diverse areas of a person's life. People ranked low on a boredom-proneness scale were found to have better performance in a wide variety of aspects of their lives, including career, education, and autonomy.[18] Boredom can be a symptom of clinical depression. Boredom can be a form of learned helplessness, a phenomenon closely related to depression. Some philosophies of parenting propose that if children are raised in an environment devoid of stimuli, and are not allowed or encouraged to interact with their environment, they will fail to develop the mental capacities to do so.

In a learning environment, a common cause of boredom is lack of understanding; for instance, if one is not following or connecting to the material in a class or lecture, it will usually seem boring. However, the opposite can also be true; something that is too easily understood, simple or transparent, can also be boring. Boredom is often inversely related to learning, and in school it may be a sign that a student is not challenged enough, or too challenged. An activity that is predictable to the students is likely to bore them.[19]

A study of 1989 indicated that an individual's impression of boredom may be influenced by the individual's degree of attention, as a higher acoustic level of distraction from the environment correlated with higher reportings of boredom.[20]

Boredom has been studied as being related to drug abuse among teens.[21] Boredom has been proposed as a cause of pathological gambling behavior. A study found results consistent with the hypothesis that pathological gamblers seek stimulation to avoid states of boredom and depression.[22]

Popular culture

In Chapter 18 of the novel *The Picture of Dorian Gray* by Oscar Wilde (1854–1900), the character Lord Henry Wotton says to a young Dorian Gray: "The only horrible thing in the world is ennui, Dorian. That is the one sin for which there is no forgiveness." John Sebastian, Iggy Pop, the Deftones, Buzzcocks, and Blink-182 have all written songs with boredom mentioned in the title. Other songs about boredom and activities people turn to when bored include Green Day's song "Longview", System of a Down's "Lonely Day", and Bloodhound Gang's "Mope". Douglas Adams depicted a robot named Marvin the Paranoid Android whose boredom appeared to be the defining trait of his existence in *The Hitchhiker's Guide to the Galaxy*.

The 1969 Vocational Guidance Counsellor sketch on *Monty Python's Flying Circus* established a lasting stereotype of accountants as boring.[23] The Yellow Pages used to carry an entry under Boring, "See civil engineers" (referring to the "tunnelling" meaning), but this was changed in 1996 to "See sites exploration."[24]

References

[1] Oxford Old English Dictionary

[2] Online Etymology Dictionary (http://www.etymonline.com/index.php?l=b&p=27)

[3] Fisher 1993, p. 396

[4] Leary, M. R., Rogers, P. A., Canfield, R. W., Coe, C. (1986). "Boredom in interpersonal encounters: Antecedents and social implications". *Journal of Personality and Social Psychology* **51** (5): 968–975, p. 968. doi:10.1037/0022-3514.51.5.968.

[5] Csikszentmihalyi, M., *Finding Flow,* 1997

[6] Cheyne, J. A., Carriere, J. S. A., Smilek, D. (2006). "Absent-mindedness: Lapses in conscious awareness and everyday cognitive failures" (http://www.arts.uwaterloo.ca/~oops/article.php?src=yccog798). *Consciousness and Cognition* **15** (3): 578–592. doi:10.1016/j.concog.2005.11.009. PMID 16427318. .

[7] Farmer, R., Sundberg, N. D. (1986). "Boredom proneness: The development and correlates of a new scale". *Journal of Personality Assessment* **50** (1): 4–17. doi:10.1207/s15327752jpa5001_2. PMID 3723312.

[8] Fisher, C.D. (1993). "Boredom at work: A neglected concept". *Human Relations* **46** (3): 395–417. doi:10.1177/001872679304600305.

[9] Carriere, J. S. A., Cheyne, J. A., Smilek, D. (September 2008). "Everyday Attention Lapses and Memory Failures: The Affective Consequences of Mindlessness" (http://arts.uwaterloo.ca/~oops/publish/yccog-06-149.pdf) (PDF). *Consciousness and Cognition* **17** (3): 835–847. doi:10.1016/j.concog.2007.04.008. PMID 17574866. .

[10] Sawin, D. A., Scerbo, M. W. (1995). "Effects of instruction type and boredom proneness in vigilance: Implications for boredom and workload". *Human Factors* **37** (4): 752–765. doi:10.1518/001872095778995616. PMID 8851777.

[11] Vodanovich, S. J., Verner, K. M., Gilbride, T. V. (1991). "Boredom proneness: Its relationship to positive and negative affect". *Psychological Reports* **69** (3 Pt 2): 1139–46. doi:10.2466/PR0.69.8.1139-1146. PMID 1792282.

[12] Martin Heidegger. *The Fundamental Concepts of Metaphysics*, pp. 78–164.

[13] Pascal, Blaise; Ariew, Roger (2005). *Pensées* (http://books.google.com/?id=DdlNuvGMPisC&printsec=frontcover&dq=inauthor:"Blaise+Pascal"). Indianapolis, IN: Hackett Pub. Co.. ISBN 9780872207172. . Retrieved 2009-07-27.

[14] Martin Heidegger, *What is Metaphysics?* (1929)

[15] Arthur Schopenhauer, Essays and Aphorisms, Penguin Classics, ISBN 0140442278 (2004), p53 Full text available online: Google Books Search (http://books.google.co.uk/books?vid=ISBN0140442278&id=AZUe_0tOZIUC&pg=PP1&lpg=PP1&ots=e-esU4GaO5&dq=arthur+schopenhauer+books&sig=Jze2WQysljLWFYQKTr_Oh-UHsE0)

[16] Erich Fromm, "Theory of Aggression" (http://www.erich-fromm.de/data/pdf/1972c-e.pdf) pg.7

[17] Domenic Marbaniang, Epistemics of Divine Reality, ISBN 9781105160776, p211

[18] Watt, J. D., Vodanovich, S. J. (1999). "Boredom Proneness and Psychosocial Development". *Journal of Psychology* **133** (1): 149–155. doi:10.1002/(SICI)1097-4679(200001)56:1<149::AID-JCLP14>3.0.CO;2-Y.

[19] Ed.gov (http://www.eric.ed.gov/ERICWebPortal/contentdelivery/servlet/ERICServlet?accno=ED397840) – R.V. Small et al. *Dimensions of Interest and Boredom in Instructional Situations*, Proceedings of Selected Research and Development Presentations at the 1996 National Convention of the Association for Educational Communications and Technology (18th, Indianapolis, IN), (1996)

[20] Damrad-Frye, R; Laird JD (1989). "The experience of boredom: the role of the self-perception of attention". *J Personality Social Psych* **57** (2): 315–20. doi:10.1037/0022-3514.57.2.315.

[21] Iso-Ahola, Seppo E.; Crowley, Edward D. (1991). "Adolescent Substance Abuse and Leisure Boredom" (http://eric.ed.gov/ERICWebPortal/detail?accno=EJ429375). *Journal of Leisure Research* **23** (3): 260–71. .

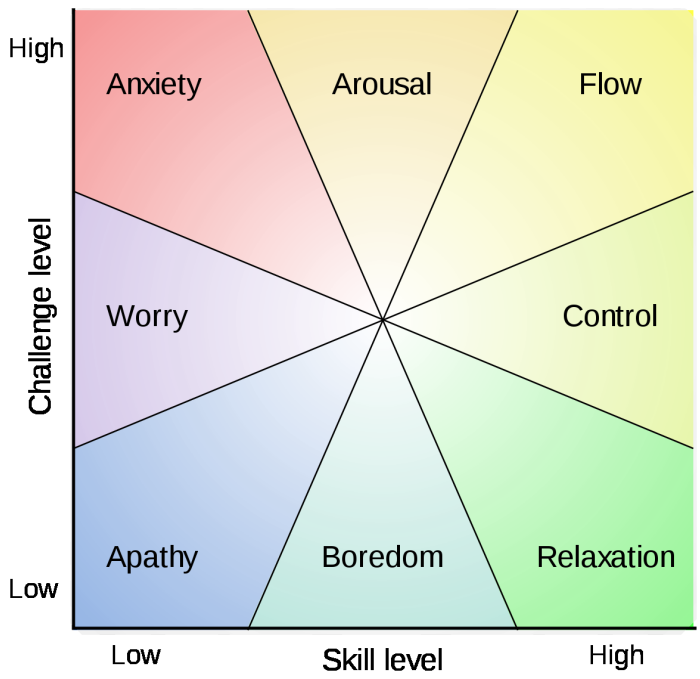
[22] Blaszczynski A, McConaghy N, Frankova A (August 1990). "Boredom proneness in pathological gambling". *Psychol Rep* **67** (1): 35–42. doi:10.2466/PR0.67.5.35-42. PMID 2236416.

[23] Learn the elementary bits about business (http://www.ft.com/cms/s/0/35419f24-9989-11dd-9d48-000077b07658.html), Financial Times, 14 October 2008

[24] Exciting times for London civil engineers (http://www.highbeam.com/doc/1P2-4353305.html), Chicago Sun Times, 23 August 1996

Apathy

Apathy (also called **impassivity** or **perfunctoriness**) is a state of indifference, or the suppression of emotions such as concern, excitement, motivation and passion. An apathetic individual has an absence of interest in or concern about emotional, social, spiritual, philosophical or physical life.



Mental state in terms of challenge level and skill level, according to Csikszentmihalyi.<ref name="Finding Flow">Csikszentmihalyi, M., Finding Flow, 1997.</ref> (Click on a fragment of the image to go to the appropriate article)

They may lack a sense of purpose or meaning in their life. He or she may also exhibit insensibility or sluggishness. The opposite of apathy is flow.[1] In positive psychology, apathy is described as a result of the individual feeling they do not possess the level of skill required to confront a challenge. It may also be a result of perceiving no challenge at all (e.g. the challenge is irrelevant to them, or conversely, they have learned helplessness). In light of the insurmountable certainty of universal doom, apathy is the default mode of existential nihilism, and, as such, is not considered to be a pathological state by those who experience it. (See the works of Arthur Schopenhauer).

Etymology

Although the word *apathy* is derived from the Greek ἀπάθεια (*apatheia*),[2] it is important not to confuse the two terms. Also meaning "absence of passion," "apathy" or "insensibility" in Greek, the term *apatheia* was used by the Stoics to signify a (desirable) state of indifference towards events and things which lie outside one's control (that is, according to their philosophy, all things exterior, one being only responsible for his representations and judgments).[3] In contrast to *apathy*, *apatheia* is considered a virtue, especially in Orthodox monasticism. In the Philokalia the word *dispassion* is used for *apatheia*, so as not to confuse it with *apathy*.

History and other views

Christians have historically condemned apathy as a deficiency of love and devotion to God and 'his works'; this interpretation of apathy is also referred to as Sloth and is listed among the Seven Deadly Sins. Clemens Alexandrinus used the term to draw to Christianity philosophers who aspired after virtue.[1] Macaulay referred to "The apathy of despair." Prescott described "A certain apathy or sluggishness in his nature which led him . . . to leave events to take their own course."

Indifference. A sculpture in the group *Children are the Victims of Adult Vices* by Mikhail Shemyakin in Moscow.

The modern concept of apathy became more well known after World War I, when it was called "shell shock." Soldiers who lived in the trenches amidst the bombing and machine gun fire, and who saw the battlefields strewn with dead and maimed comrades, developed a sense of disconnected numbness and indifference to normal social interaction.

In 1950, US novelist John Dos Passos wrote: "Apathy is one of the characteristic responses of any living organism when it is subjected to stimuli too intense or too complicated to cope with. The cure for apathy is comprehension." US educational philosopher Robert Maynard Hutchins summarized the concerns about political indifference when he claimed that the "death of democracy is not likely to be an assassination from ambush. It will be a slow extinction from apathy, indifference, and undernourishment."

Douglas Hofstadter suggests that, recognizing that the human brain's "ego" is nothing but a construct, no emotion is necessary. Since the realization of the future of an expanding universe, apathy is the only intelligent response. It is in contrast to the contented feeling of self-satisfaction of complacency, driven by the illusion of the "ego".

There may be other things contributing to a person's apathy. Activist Dave Meslin argues that people often care, and that apathy is often the result of social systems actively obstructing engagement and involvement. He describes various obstacles that keep people from knowing how or why they might get involved in something. Meslin focuses on design choices that unintentionally or intentionally exclude people. These include: capitalistic media systems that have no provisions for ideas that are not immediately (monetarily) profitable, government and political media (e.g. notices) that make it difficult for potentially interested individuals to find relevant information, and media portrayals of heroes as "chosen" by outside forces rather than self motivated. He moves that we redefine social apathy to think of it, not as a population that is stupid or lazy, but as result of poorly designed systems that fail to invite others to participate.[4] [5]

Medical aspects

Relationship with depression

Mental health journalist and author John McManamy argues that although psychiatrists do not explicitly deal with the condition of apathy, it is a psychological problem for some depressed people, in which they get a sense that "nothing matters", the "lack of will to go on and the inability to care about the consequences".[6] He describes depressed people who "...cannot seem to make [themselves] do anything," who "can't complete anything," and who do not "feel any excitement about seeing loved ones."[6] He acknowledges that the *Diagnostic and Statistical Manual of Mental Disorders* does not discuss apathy.

In a *Journal of Neuropsychiatry and Clinical Neurosciences* article from 1991, Robert Marin, MD, claimed that apathy occurs due to brain damage or neuropsychiatric illnesses such as Alzheimer's, dementia, Parkinson's, or Huntington's, or else an event such as a stroke. Marin argues that apathy should be regarded as a syndrome or illness.[6]

A review article by Robert van Reekum, MD, et al. from the University of Toronto in the *Journal of Neuropsychiatry* (2005) claimed that "depression and apathy were a package deal" in some populations which may help illustrate what people mean when they say that "The opposite of love is not hate, it is apathy."

Other medical

Often, apathy has been felt after witnessing horrific acts, such as the killing or maiming of people during a war. It is also known to be associated with many conditions, some of which are: CADASIL syndrome, depression, Alzheimer's disease, Chagas' disease, Creutzfeldt-Jakob disease, dementia, Korsakoff's syndrome, excessive vitamin D; hypothyroidism; hyperthyroidism; general fatigue; Huntington's disease; Pick's disease; progressive supranuclear palsy (PSP); schizophrenia; schizoid personality disorder; bipolar disorder, and others. Some medications and the heavy use of drugs such as heroin may bring apathy as a side effect.

References

- ^ *This article incorporates content from the 1728* Cyclopaedia*, a publication in the public domain.* [7]

[1] Csikszentmihalyi, M., *Finding Flow,* 1997

[2] Apatheia (http://www.perseus.tufts.edu/cgi-bin/ptext?doc=Perseus:text:1999.04.0057:entry=#11220), Henry George Liddell, Robert Scott, *A Greek-English Lexicon*, at Perseus.

[3] William Fleming (1857). *The vocabulary of philosophy, mental, moral, and metaphysical*. p.&34 (http://books.google.com/books?id=S-MYAAAAYAAJ&pg=PA34&dq=Fleming+Stoics+apathy&ei=PvdKSvHZEoS8yQSYxaD0DQ). Reprinted by Kessinger Publishing as paperback (2006; ISBN 978-1428633247) and in hardcover (2007; ISBN 978-0548123713).

[4] Ted.com, lecture, "The antidote to apathy" (http://www.ted.com/talks/dave_meslin_the_antidote_to_apathy.html)

[5] Ted.com, autobiographical page, "Dave Meslin" (http://www.ted.com/speakers/dave_meslin.html)

[6] John McManamy. " Apathy Matters - Apathy and Depression: Psychiatry may not care about apathy, but that doesn't mean you shouldn't (http://www.mcmanweb.com/apathy.html)".

[7] http://digicoll.library.wisc.edu/cgi-bin/HistSciTech/HistSciTech-idx?type=turn&entity=HistSciTech000900250154&isize=L

External links

- The Roots of Apathy - Essay By David O. Solmitz (http://www.rem1.org/local_voices/summer2000/education/apathy.htm)
- Apathy Matters - Apathy and Depression: Psychiatry may not care about apathy, but that doesn't mean you shouldn't. by John McManamy (http://www.mcmanweb.com/apathy.html)
- 75 Things you can do when you are bored (http://nonaa.org/bored/bored_1.htm)

Worry

Worry is thoughts, images and emotions of a negative nature in which mental attempts are made to avoid anticipated potential threats.[1] As an emotion it is experienced as anxiety or concern about a real or imagined issue, usually personal issues such as health or finances or broader ones such as environmental pollution and social or technological change. Most people experience short-lived periods of worry in their lives without incident; indeed, a moderate amount of worrying may even have positive effects, if it prompts people to take precautions (e.g., fastening their seat belt or buying fire insurance) or avoid risky behaviours (e.g., angering dangerous animals, or binge drinking).

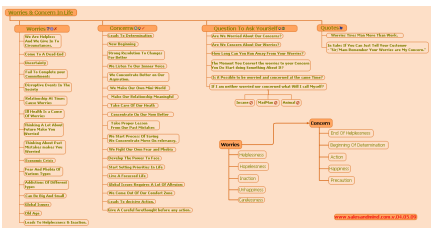
Excessive worry is the main component of generalized anxiety disorder.

Biting one's lip can be a physical manifestation of worry.

Guido Reni's 17th century painting of John the Baptist depicts anguish and worry.

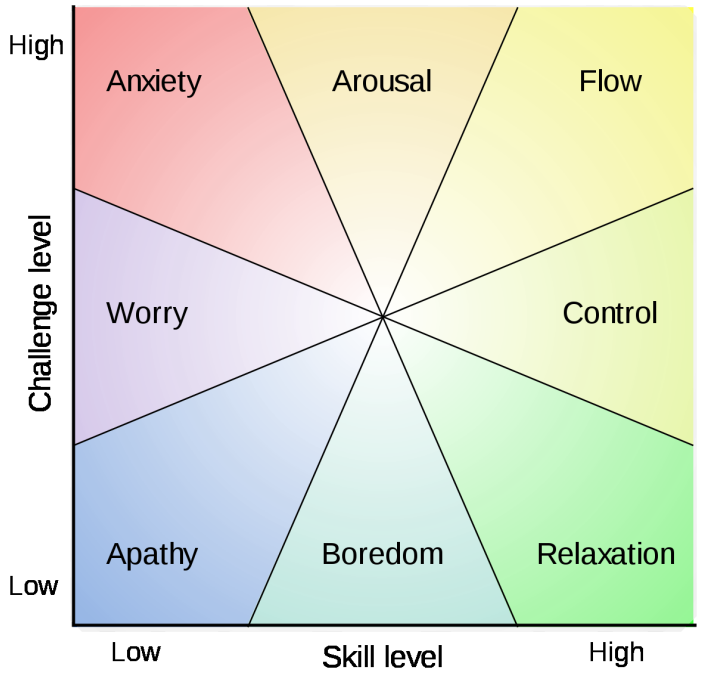
Theories

One theory of anxiety by Liebert and Morris in 1967 suggests that anxiety consists of two components; worry and emotionality. Emotionality refers to physiological symptoms such as sweating, increased heart beat and raised blood pressure. Worry refers to negative self-talk that often distracts the mind from focusing on solutions to the problem at hand. For example, when



A Mind Map - Analyzing The Difference Between Worries & Concern

students become anxious during a test, they may repeatedly tell themselves they are going to fail, or they cannot remember the material, or that their teacher will become angry with them if they perform poorly. This thinking interferes with focusing on the test as the speech areas of the brain that are needed to complete test questions are being used for worrying.



Mental state in terms of challenge level and skill level, according to Csikszentmihalyi.<ref name="Finding Flow">Csikszentmihalyi, M., Finding Flow, 1997.</ref> (Click on a fragment of the image to go to the appropriate article)

Dr. Edward Hallowell , psychiatrist and author of *Worry*, argues that while "Worry serves a productive function", "anticipatory and dangerous" worrying—which he calls "toxic worry"--can be harmful for your mental and physical health. He claims that "Toxic worry is when the worry paralyzes you," whereas "Good worry leads to constructive action" such as taking steps to resolve the issue that is causing concern. To combat worry, Hallowell suggests that people should not worry alone, because people are much more likely to come up with solutions when talking about their concerns with a friend. As well, he urges worriers to find out more information about the issue that is troubling them, or make sure that their information is correct. Another step to reduce worry is to make a plan and take action and take "care of your brain" by sleeping enough, getting exercise, and eating a healthy diet (without a "lot of carbs, junk food, alcohol, drugs, etc). Hallowell encourages worriers to get "regular doses of positive human contact" such as "a hug or a warm pat on the back". Finally, he suggests that worriers let the problem go rather than gathering them around themselves.[2]

In positive psychology, worry is described as a response to a moderate challenge for which the subject has inadequate skills.[3]

References

[1] Borkovec TD. (2002). Living in a state of worry can cause anxiety, and depression, as well as ruin the present. "Worry does take the pain out of tomorrow, it causes one to be prepared today." -Anonymous. Life in the future versus life in the present. Clinical Psychology: Science and Practice 9, 76–80.

[2] 5 steps to control worry (http://www.canadianliving.com/health/mind_and_spirit/5_steps_to_control_your_worry.php)

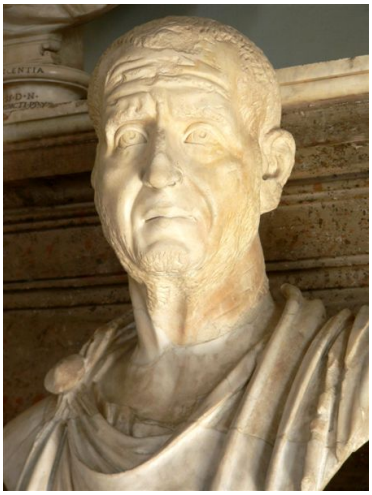
[3] Csikszentmihalyi, M., *Finding Flow,* 1997

External links

- Chronic worry information from the Canadian Mental Health Association http://www.cmha-rmd.com/worry.html

Anxiety

Anxiety



A marble bust of the Roman Emperor Decius from the Capitoline Museum. This portrait "conveys an impression of anxiety and weariness, as of a man shouldering heavy [state] responsibilities." [1]

MeSH	D001007 [2]

Anxiety (also called **angst** or **worry**) is a psychological and physiological state characterized by somatic, emotional, cognitive, and behavioral components.[3] It is the displeasing feeling of fear and concern [4] The root meaning of the word anxiety is 'to vex or trouble'; in either presence or absence of psychological stress, anxiety can create feelings of fear, worry, uneasiness, and dread.[5] Anxiety is considered to be a normal reaction to a stressor. It may help an individual to deal with a demanding situation by prompting them to cope with it. When anxiety becomes excessive, it may fall under the classification of an anxiety disorder.[6]

Description

Anxiety is a generalized mood condition that can occur without an identifiable triggering stimulus. As such, it is distinguished from fear, which is an appropriate emotional response to a perceived threat. Additionally, fear is related to the specific behaviors of escape and avoidance, whereas anxiety is related to situations perceived as uncontrollable or unavoidable.[7] Another view defines anxiety as "a future-oriented mood state in which one is ready or prepared to attempt to cope with upcoming negative events",[8] suggesting that it is a distinction between future vs. present dangers which divides anxiety and fear. In a 2011 review of the literature,[9] fear and anxiety were said to be differentiated in four domains: (1) duration of emotional experience, (2) temporal focus, (3) specificity of the threat, and (4) motivated direction. Fear was defined as short lived, present focused, geared towards a specific threat, and facilitating escape from threat; while anxiety was defined as long acting, future focused, broadly focused towards a diffuse threat, and promoting caution while approaching a potential threat.

The **physical effects** of anxiety may include heart palpitations, tachycardia, muscle weakness and tension, fatigue, nausea, chest pain, shortness of breath, stomach aches, or headaches. As the body prepares to deal with a threat, blood pressure, heart rate, perspiration, blood flow to the major muscle groups are increased, while immune and digestive functions are inhibited (the *fight or flight* response). External signs of anxiety may include pallor, sweating, trembling, and pupillary dilation. Someone who has anxiety might also experience it subjectively as a sense of dread

or panic.

Although panic attacks are not experienced by every person who has anxiety, they are a common symptom. Panic attacks usually come without warning and although the fear is generally irrational, the subjective perception of danger is very real. A person experiencing a panic attack will often feel as if he or she is about to die or lose consciousness.

The **emotional effects** of anxiety may include "feelings of apprehension or dread, trouble concentrating, feeling tense or jumpy, anticipating the worst, irritability, restlessness, watching (and waiting) for signs (and occurrences) of danger, and, feeling like your mind's gone blank"[10] as well as "nightmares/bad dreams, obsessions about sensations, deja vu, a trapped in your mind feeling, and feeling like everything is scary."[11]

The **cognitive effects** of anxiety may include thoughts about suspected dangers, such as fear of dying. "You may... fear that the chest pains are a deadly heart attack or that the shooting pains in your head are the result of a tumor or aneurysm. You feel an intense fear when you think of dying, or you may think of it more often than normal, or can't get it out of your mind."[12]

The **behavioral effects** of anxiety may include withdrawal from situations which have provoked anxiety in the past.[13] Anxiety can also be experienced in ways which include changes in sleeping patterns, nervous habits, and increased motor tension like foot tapping.[13]

Causes

An evolutionary psychology explanation is that increased anxiety serves the purpose of increased vigilance regarding potential threats in the environment as well as increased tendency to take proactive actions regarding such possible threats. This may cause false positive reactions but also avoid real threats. This may explain why anxious people are less likely to die due to accidents.[14]

The psychologist David H. Barlow of Boston University conducted a study that showed three common characteristics of people suffering from chronic anxiety, which he characterized as "a generalized biological vulnerability," "a generalized psychological vulnerability," and "a specific psychological vulnerability."[15] While chemical issues in the brain that result in anxiety (especially resulting from genetics) are well documented, this study highlights an additional environmental factor that may result from being raised by parents suffering from chronic anxiety themselves.

Research upon adolescents who as infants had been highly apprehensive, vigilant, and fearful finds that their nucleus accumbens is more sensitive than that in other people when selecting to make an action that determined whether they received a reward.[16] This suggests a link between circuits responsible for fear and also reward in anxious people. As researchers note "a sense of 'responsibility,' or self agency, in a context of uncertainty (probabilistic outcomes) drives the neural system underlying appetitive motivation (i.e., nucleus accumbens) more strongly in temperamentally inhibited than noninhibited adolescents."[16]

Neural circuitry involving the amygdala and hippocampus is thought to underlie anxiety.[17] When people are confronted with unpleasant and potentially harmful stimuli such as foul odors or tastes, PET-scans show increased bloodflow in the amygdala.[18] [19] In these studies, the participants also reported moderate anxiety. This might indicate that anxiety is a protective mechanism designed to prevent the organism from engaging in potentially harmful behaviors.

Although single genes have little effect on complex traits and interact heavily both between themselves and with the external factors, research is underway to unravel possible molecular mechanisms underlying anxiety and comorbid conditions. One candidate gene with polymorphisms that influence anxiety is PLXNA2.[20]

Varieties

In medicine

Anxiety can be a symptom of an underlying health issue such as chronic obstructive pulmonary disease (COPD), heart failure, or heart arrythmia.[21]

Abnormal and pathological anxiety or fear may itself be a medical condition falling under the blanket term "anxiety disorder". Such conditions came under the aegis of psychiatry at the end of the 19th century[22] and current psychiatric diagnostic criteria recognize several specific forms of the disorder. Recent surveys have found that as many as 18% of Americans may be affected by one or more of them.[23]

Standardized screening tools such as Zung Self-Rating Anxiety Scale, Beck Anxiety Inventory, and HAM-A (Hamilton Anxiety Scale) can be used to detect anxiety symptoms and suggest the need for a formal diagnostic assessment of anxiety disorder.[24] The HAM-A (Hamilton Anxiety Scale) measures the severity of a patient's anxiety, based on 14 parameters, including anxious mood, tension, fears, insomnia, somatic complaints and behavior at the interview.[25]

Existential anxiety

Further information: Angst, Existential crisis, and Nihilism

The philosopher Søren Kierkegaard, in *The Concept of Anxiety,* described anxiety or dread associated with the "dizziness of freedom" and suggested the possibility for positive resolution of anxiety through the self-conscious exercise of responsibility and choosing. In *Art and Artist* (1932), the psychologist Otto Rank wrote that the psychological trauma of birth was the pre-eminent human symbol of existential anxiety and encompasses the creative person's simultaneous fear of – and desire for – separation, individuation and differentiation.

The theologian Paul Tillich characterized existential anxiety[26] as "the state in which a being is aware of its possible nonbeing" and he listed three categories for the nonbeing and resulting anxiety: ontic (fate and death), moral (guilt and condemnation), and spiritual (emptiness and meaninglessness). According to Tillich, the last of these three types of existential anxiety, i.e. spiritual anxiety, is predominant in modern times while the others were predominant in earlier periods. Tillich argues that this anxiety can be accepted as part of the human condition or it can be resisted but with negative consequences. In its pathological form, spiritual anxiety may tend to "drive the person toward the creation of certitude in systems of meaning which are supported by tradition and authority" even though such "undoubted certitude is not built on the rock of reality".

According to Viktor Frankl, the author of *Man's Search for Meaning*, when a person is faced with extreme mortal dangers, the most basic of all human wishes is to find a meaning of life to combat the "trauma of nonbeing" as death is near.

Test and performance anxiety

According to Yerkes-Dodson law, an optimal level of arousal is necessary to best complete a task such as an exam, performance, or competitive event. However, when the anxiety or level of arousal exceeds that optimum, the result is a decline in performance.

Test anxiety is the uneasiness, apprehension, or nervousness felt by students who had a fear of failing an exam. Students who have test anxiety may experience any of the following: the association of grades with personal worth; fear of embarrassment by a teacher; fear of alienation from parents or friends; time pressures; or feeling a loss of control. Sweating, dizziness, headaches, racing heartbeats, nausea, fidgeting, and drumming on a desk are all common. Because test anxiety hinges on fear of negative evaluation, debate exists as to whether test anxiety is itself a unique anxiety disorder or whether it is a specific type of social phobia.

While the term "test anxiety" refers specifically to students, many workers share the same experience with regard to their career or profession. The fear of failing at a task and being negatively evaluated for failure can have a similarly negative effect on the adult.

Stranger and social anxiety

Anxiety when meeting or interacting with unknown people is a common stage of development in young people. For others, it may persist into adulthood and become social anxiety or social phobia. "Stranger anxiety" in small children is not considered a phobia. In adults, an excessive fear of other people is not a developmentally common stage; it is called social anxiety. According to Cutting,[27] social phobics do not fear the crowd but the fact that they may be being judged negatively.

Social anxiety varies in degree and severity. Whilst for some people it is characterized by experiencing discomfort or awkwardness during physical social contact (Embracing, Shaking Hands, etc.), in other cases it can lead to a fear of interacting with unfamiliar people altogether. There can be a tendency among those suffering from this condition to restrict their lifestyles to accommodate the anxiety, minimizing social interaction whenever possible. Social Anxiety also forms a core aspect of certain personality disorders, including Avoidant Personality Disorder.

Generalized anxiety

Further information: Generalized anxiety disorder and Cognitive behavioral therapy

Overwhelming anxiety, if not treated early, can consequently become a generalized anxiety disorder (GAD), which can be identified by symptoms of exaggerated and excessive worry, chronic anxiety, and constant, irrational thoughts. The anxious thoughts and feelings felt while suffering from GAD are difficult to control and can cause serious mental anguish that interferes with normal, daily functioning.[28]

The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) includes specific criteria for diagnosing generalized anxiety disorder. The DSM-IV states that a patient must experience chronic anxiety and excessive worry, almost daily, for at least 6 months due to a number of stressors (such as work or school) and experience three or more defined symptoms, including, “restlessness or feeling keyed up or on edge, being easily fatigued, difficulty concentrating or mind going blank, irritability, muscle tension, sleep disturbance (difficulty falling or staying asleep, or restless unsatisfying sleep).”[29]

If symptoms of chronic anxiety are not addressed and treated in adolescence then the risk of developing an anxiety disorder in adulthood increases significantly.[30] “Clinical worry is also associated with risk of comorbidity with other anxiety disorders and depression” which is why immediate treatment is so important.[30]

Generalized anxiety disorder can be treated through specialized therapies aimed at changing thinking patterns and in turn reducing anxiety-producing behaviors. Cognitive behavioral therapy (CBT) and short-term psychodynamic psychotherapy (STPP) can be used to successfully treat GAD with positive effects lasting 12 months after treatment.[31] There are also other treatment plans that should be discussed with a knowledgeable health care practitioner, which can be used in conjunction with behavioral therapy to greatly reduce the disabling symptoms of generalized anxiety disorder.

Trait anxiety

Anxiety can be either a short term 'state' or a long term "trait." Trait anxiety reflects a stable tendency to respond with state anxiety in the anticipation of threatening situations.[32] It is closely related to the personality trait of neuroticism. Such anxiety may be conscious or unconscious.[33]

Choice or decision anxiety

Anxiety induced by the need to choose between similar options is increasingly being recognized as a problem for individuals and for organisations:[34] [35]

> "Today we're all faced with greater choice, more competition and less time to consider our options or seek out the right advice."[36]

Paradoxical anxiety

Further information: Adverse effects of meditation

Paradoxical anxiety is anxiety arising from use of methods or techniques which are normally used to reduce anxiety. This includes relaxation or meditation techniques[37] as well as use of certain medications.[38] In some Buddhist meditation literature, this effect is described as something which arises naturally and should be turned toward and mindfully explored in order to gain insight into the nature of emotion, and more profoundly, the nature of self.[39]

Positive psychology

Further information: Mental state

In Positive psychology, anxiety is described as the mental state that results from a difficult challenge for which the subject has insufficient coping skills.[40]

External links

- Anxiety [41] at the Open Directory Project
- Social Anxiety [42] at the Open Directory Project
- Psychology Tools [43]: Anxiety support forum

References

[1] Chris Scarre, Chronicle of the Roman Emperors, Thames & Hudson, 1995. pp.168-169.

[2] http://www.nlm.nih.gov/cgi/mesh/2009/MB_cgi?field=uid&term=D001007

[3] Seligman, M.E.P., Walker, E.F. & Rosenhan, D.L.*Abnormal psychology*, (4th ed.) New York: W.W. Norton & Company, Inc.

[4] Davison, Gerald C. (2008). *Abnormal Psychology*. Toronto: Veronica Visentin. pp. 154. ISBN 978-0-470-84072-6.

[5] Bouras, n. and Holt, G. (2007). *Psychiatric and Behavioural Disorders in Intellectual and Developmental Disabilities* 2nd ed. Cambridge University Press: UK.

[6] National Institute of Mental Health (http://www.nimh.nih.gov/health/topics/anxiety-disorders/index.shtml) Retrieved September 3, 2008.

[7] Ohman, A. (2000). Fear and anxiety: Evolutionary, cognitive, and clinical perspectives. In M. Lewis & J. M. Haviland-Jones (Eds.). *Handbook of emotions*. (pp.573-593). New York: The Guilford Press.

[8] Barlow, David H. (November 2002). "Unraveling the mysteries of anxiety and its disorders from the perspective of emotion theory" (http://psycnet.apa.org/journals/amp/55/11/1247.pdf). *American Psychologist* **55** (11): 1247–63. PMID 11280938. .

[9] Sylvers, Patrick; Jamie Laprarie and Scott Lilienfeld (February 2011). "Differences between trait fear and trait anxiety: Implications for psychopathology". *Clinical Psychology Review* **31** (1): 122–137. doi:10.1016/j.cpr.2010.08.004.

[10] Smith, Melinda (2008, June). Anxiety attacks and disorders: Guide to the signs, symptoms, and treatment options. Retrieved March 3, 2009, from Helpguide Web site: http://www.helpguide.org/mental/anxiety_types_symptoms_treatment.htm

[11] (1987-2008). Anxiety Symptoms, Anxiety Attack Symptoms (Panic Attack Symptoms), Symptoms of Anxiety. Retrieved March 3, 2009, from Anxiety Centre Web site: http://www.anxietycentre.com/anxiety-symptoms.shtml

[12] (1987-2008). Anxiety symptoms - Fear of dying. Retrieved March 3, 2009, from Anxiety Centre Web site: http://www.anxietycentre.com/anxiety-symptoms/fear-of-dying.shtml

[13] Barker, P. (2003) *Psychiatric and Mental Health Nursing: The Craft of Care*. Edward Arnold, London.

[14] Andrews, P. W.; Thomson, J. A. (2009). "The bright side of being blue: Depression as an adaptation for analyzing complex problems". *Psychological Review* **116** (3): 620–654. doi:10.1037/a0016242. PMC 2734449. PMID 19618990.

[15] Barlow, David H.; Durand, Vincent (2008). *Abnormal Psychology: An Integrative Approach*. Cengage Learning. p. 125. ISBN 0534581560.

[16] Bar-Haim Y, Fox NA, Benson B, Guyer AE, Williams A, Nelson EE, Perez-Edgar K, Pine DS, Ernst M. (2009). Neural correlates of reward processing in adolescents with a history of inhibited temperament. Psychol Sci. 20(8):1009-18. PMID 19594857

[17] Rosen JB, Schulkin J (1998). "From normal fear to pathological anxiety". *Psychol Rev* **105** (2): 325–50. doi:10.1037/0033-295X.105.2.325. PMID 9577241.

[18] Zald, D.H.; Pardo, JV (1997). "Emotion, olfaction, and the human amygdala: amygdala activation during aversive olfactory stimulation". *Proc Nat'l Acad Sci* (USA) **94** (8): 4119–24. doi:10.1073/pnas.94.8.4119. PMC 20578. PMID 9108115.

[19] Zald, D.H.; Hagen, M.C.; & Pardo, J.V (1 February 2002). "Neural correlates of tasting concentrated quinine and sugar solutions" (http://jn.physiology.org/cgi/content/full/87/2/1068). *J. Neurophysiol* **87** (2): 1068–75. PMID 11826070. .

[20] Wray NR, James MR, Mah SP, Nelson M, Andrews G, Sullivan PF, Montgomery GW, Birley AJ, Braun A, Martin NG (March 2007). "Anxiety and comorbid measures associated with PLXNA2" (http://archpsyc.ama-assn.org/cgi/pmidlookup?view=long&pmid=17339520). *Arch. Gen. Psychiatry* **64** (3): 318–26. doi:10.1001/archpsyc.64.3.318. PMID 17339520. .

[21] NPSPractice Review 48: Anxiety disorders (2009) Available at http://www.nps.org.au/health_professionals/publications/prescribing_practice_review/current/prescribing_practice_review_48

[22] Berrios GE (1999). "Anxiety Disorders: a conceptual history". *J Affect Disord* **56** (2–3): 83–94. doi:10.1016/S0165-0327(99)00036-1. PMID 10701465.

[23] Kessler RC, Chiu WT, Demler O, Merikangas KR, Walters EE (June 2005). "Prevalence, severity, and comorbidity of 12-month DSM-IV disorders in the National Comorbidity Survey Replication" (http://archpsyc.ama-assn.org/cgi/content/full/62/6/617). *Arch. Gen. Psychiatry* **62** (6): 617–27. doi:10.1001/archpsyc.62.6.617. PMC 2847357. PMID 15939839. .

[24] Zung WWK. A rating instrument for anxiety disorders. Psychosomatics. 1971; 12: 371-379 PMID 5172928

[25] Psychiatric Times. Clinically Useful Psychiatric Scales: HAM-A (Hamilton Anxiety Scale) (http://www.psychiatrictimes.com/clinical-scales/anxiety/). Accessed on March 6, 2009.

[26] Tillich, Paul, (1952). *The Courage To Be*, New Haven: Yale University Press, ISBN 0-300-08471-4

[27] Cutting, P., Hardy, S. and Thomas, B. 1997 *Mental Health Nursing: Principles and Practice* Mosby, London.

[28] Generalized anxiety disorder: People who worry about everything--and nothing in particular--have several treatment options. (2011). Harvard Mental Health Letter, 27(12), 1-3. Retrieved from EBSCOhost.

[29] Andrews, G., Hobbs, M. J., Borkovec, T. D., Beesdo, K., Craske, M. G., Heimberg, R. G., & ... Stanley, M. A. (2010). Generalized worry disorder: a review of DSM-IV generalized anxiety disorder and options for DSM-V. Depression & Anxiety (1091-4269), 27(2), 134-147. doi:10.1002/da.20658

[30] Ellis D, Hudson J. The Metacognitive Model of Generalized Anxiety Disorder in Children and Adolescents. Clinical Child & Family Psychology Review [serial online]. June 2010;13(2):151-163. Available from: Academic Search Premier, Ipswich, MA. Accessed September 29, 2011.

[31] Salzer, S., Winkelbach, C., Leweke, F., Leibing, E., & Leichsenring, F. (2011). Long-Term Effects of Short-Term Psychodynamic Psychotherapy and Cognitive-Behavioural Therapy in Generalized Anxiety Disorder: 12-Month Follow-Up. Canadian Journal of Psychiatry, 56(8), 503-508. Retrieved from EBSCOhost.

[32] Schwarzer, R. (December 1997). "Anxiety" (http://web.archive.org/web/20070920115547/http://www.macses.ucsf.edu/Research/Psychosocial/notebook/anxiety.html). Archived from the original (http://www.macses.ucsf.edu/Research/Psychosocial/notebook/anxiety.html) on 2007-09-20. . Retrieved 2008-01-12.

[33] Giddey, M. and Wright, H. *Mental Health Nursing: From first principles to professional practice* Stanley Thornes Ltd. UK.

[34] Downey, Jonathan (April 27, 2008). "Premium choice anxiety" (http://women.timesonline.co.uk/tol/life_and_style/women/the_way_we_live/article3778818.ece). *The Times* (London). . Retrieved April 25, 2010.

[35] http://www.selfgrowth.com/articles/Gates26.html

[36] http://www.uk.capgemini.com/news/pr/pr1487/

[37] Bourne, Edmund J. (2005). *The anxiety & phobia workbook* (4th ed.). New Harbinger Publications. p. 369. ISBN 1572244135.

[38] Heide, Frederick J.; Borkovec, T. D. (1983). "Relaxation-Induced Anxiety: Paradoxical Anxiety Enhancement Due to Relaxation Training". *Journal of Consulting and Clinical Psychology* **51** (2): 171–82. doi:10.1037/0022-006X.51.2.171. PMID 6341426.

[39] Gunaratana, Henepola. "Mindfullness in Plain English - The threefold Guidance" (http://www.urbandharma.org/udharma4/mpe9.html). .

[40] Csikszentmihalyi, M., *Finding Flow,* 1997

[41] http://www.dmoz.org/Health/Mental_Health/Disorders/Anxiety/Support_Groups/

[42] http://www.dmoz.org/Health/Mental_Health/Disorders/Anxiety/Social_Anxiety/

[43] http://psychology-tools.com/forum/forumdisplay.php?25-Anxiety

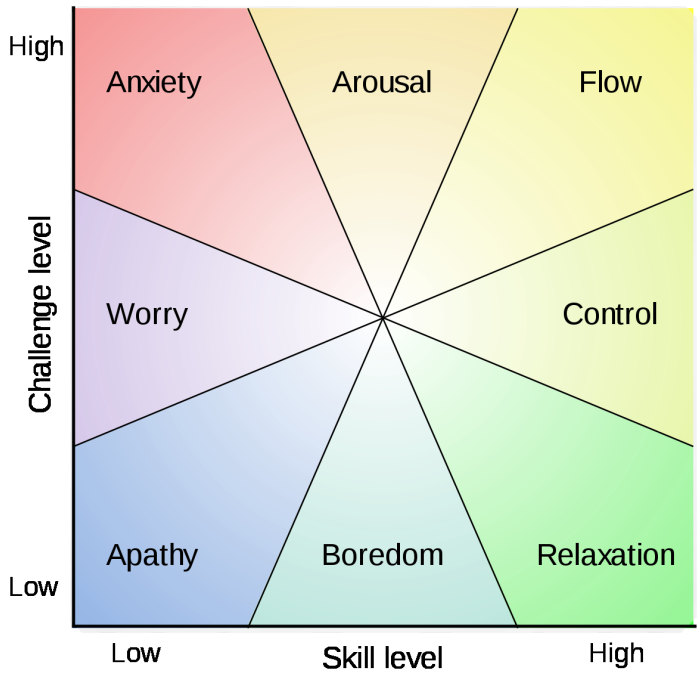
Arousal

Arousal is a physiological and psychological state of being awake or reactive to stimuli. It involves the activation of the reticular activating system in the brain stem, the autonomic nervous system and the endocrine system, leading to increased heart rate and blood pressure and a condition of sensory alertness, mobility and readiness to respond.

There are many different neural systems involved in what is collectively known as the arousal system. Four major systems originating in the brainstem, with connections extending throughout the cortex, are based on the brain's neurotransmitters, acetylcholine, norepinephrine, dopamine, and serotonin. When these systems are in action, the receiving neural areas become sensitive and responsive to incoming signals.

Importance

Arousal is important in regulating consciousness, attention, and information processing. It is crucial for motivating certain behaviours, such as mobility, the pursuit of nutrition, the fight-or-flight response and sexual activity (see Masters and Johnson's human sexual response cycle, where it is known as the *arousal phase*). It is also very important in emotion, and has been included as a part of many influential theories such as the James-Lange theory of emotion. According to Hans Eysenck, differences in baseline arousal level lead people to be either extraverts or introverts. Later research suggest it is most likely that extroverts and introverts have different *arousability*. Their baseline arousal level is the same, but the response to stimulation is different.[1]



Mental state in terms of challenge level and skill level, according to Csikszentmihalyi.<ref name="Finding Flow">Csikszentmihalyi, M., Finding Flow, 1997.</ref> (Click on a fragment of the image to go to the appropriate article)

The Yerkes-Dodson Law states that there is a relationship between arousal and task performance, essentially arguing that there is an optimal level of arousal for performance, and too little or too much arousal can adversely affect task performance. One interpretation of the Yerkes-Dodson Law is the Easterbrook Cue-Utilisation hypothesis. Easterbrook states that an increase of arousal leads to a decrease in number of cues that can be utilised.[2]

In positive psychology, arousal is described as a response to a difficult challenge for which the subject has moderate skills.[3]

Abnormally increased behavioral arousal

This is a state caused by withdrawal from alcohol or barbiturates, acute encephalitis, head trauma resulting in coma, partial seizures in epilepsy, metabolic disorders of electrolyte imbalance, Intra-cranial space- occupying lesions, Alzheimer's disease, rabies, hemispheric lesions in stroke and multiple sclerosis.[4]

Anatomically this is a disorder of the limbic system, hypothalamus, temporal lobes, amygdala and frontal lobes.[4] It is not to be confused with mania.

References

[1] Randy J. Larsen, David M Buss; "Personality psychology, domains of knowledge about human nature", McGraw Hill, 2008

[2] Easterbrooke, J.A. (1959). The effect of emotion on cue utilization and the organization of behavior. *Psychological Review*, *66*, 187-201

[3] Csikszentmihalyi, M., *Finding Flow,* 1997

[4] Mirr, Michelne Pheifer. "Abnormally Increased Behavioral Arousal" Cris Stewart- Amidei and Joyce A. Kunkel. Neuroscience Nursing: Human Response to Neurologic Dysfunction. W. B. Sunders Philadelphia: PA, 2001

Mindfulness (psychology)

Modern clinical psychology and psychiatry since the 1970s have developed a number of therapeutic applications based on the concept of mindfulness (Pali *sati* or Sanskrit *smṛti* / स्मृति) in Buddhist meditation.

Definitions

Several definitions of **mindfulness** have been used in modern psychology. According to various prominent psychological definitions, *Mindfulness* refers to a psychological quality that involves

> bringing one's complete attention to the present experience on a moment-to-moment basis,[1]

or involves

> paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally,[1]

or involves

> a kind of nonelaborative, nonjudgmental, present-centered awareness in which each thought, feeling, or sensation that arises in the attentional field is acknowledged and accepted as it is[2]

Bishop, Lau, and colleagues (2004)[3] offered a two component model of mindfulness:

> The first component [of mindfulness] involves the self-regulation of attention so that it is maintained on immediate experience, thereby allowing for increased recognition of mental events in the present moment. The second component involves adopting a particular orientation toward one's experiences in the present moment, an orientation that is characterized by curiosity, openness, and acceptance.[3] :232

In this two-component model, self-regulated attention (the first component) involves conscious awareness of one's current thoughts, feelings, and surroundings, which can result in metacognitive skills for controlling concentration. Orientation to experience (the second component) involves accepting one's mindstream, maintaining open and curious attitudes, and thinking in alternative categories (developing upon Ellen Langer's research on decision-making). Training in mindfulness and mindfulness-based practices, oftentimes as part of a quiet meditation session, results in the development of a Beginner's mind, or, looking at experiences as if for the first time.

Historical development

In 1979 Dr. Jon Kabat-Zinn founded the Mindfulness-Based Stress Reduction program at the University of Massachusetts to treat the chronically ill,[4] which sparked a growing interest and application of mindfulness ideas and practices in the medical world[5] :230-1 for the treatment of a variety of conditions in people both healthy and unhealthy. Many of the variety of mindfulness-based clinical treatments we have today are mentioned on this webpage below.

Much of this was inspired by teachings from the East, and particularly from the Buddhist traditions, where mindfulness is the 7th step of the Noble Eightfold Path taught by Siddhartha Gautama, The Buddha, who founded Buddhism almost 2,500 years ago. Although originally articulated as a part of what we know in the West as Buddhism, there is nothing inherently religious about mindfulness, and it is often taught independent of religious or cultural connotation.[6] [7]

Teachers such as Thich Nhat Hanh[9] have brought mindfulness to the attention of Westerners. Mindfulness and other Buddhist meditation techniques receive support in the West from figures such as the scientist Jon Kabat-Zinn, the teacher Jack Kornfield, the teacher Joseph Goldstein, the psychologist Tara Brach, the writer Alan Clements, and the teacher Sharon Salzberg, who have been widely attributed with playing a significant role in integrating the healing aspects of Buddhist meditation practices with the concept of psychological awareness and healing. Psychotherapists have adapted and developed mindfulness techniques into a promising cognitive behavioral therapies vis. Acceptance and Commitment Therapy (ACT, pronounced act) [10] [11] ACT was recently reviewed by SAMHSA's National Registry of Evidence-Based Programs and Practices [12]

Clinical research shows Buddhist mindfulness techniques can help alleviate anxiety[8] , stress[8] , and depression[8]

Scientific research

Over the past 30 years there has been an increase in the number of published studies on mindfulness.[13] The current body of scientific literature on the effects of mindfulness practices is promising despite the presence of methodological weaknesses.[8] [14] The current research does suggest that mindfulness practices are useful in the treatment of pain,[8] stress,[8] anxiety,[8] depressive relapse,[8] disordered eating,[8] and addiction,[15] [16] among others. Mindfulness has been investigated for its potential benefit for individuals who do not experience these disorders, as well, with positive results. Mindfulness practice improves the immune system[17] and alters activation symmetries in the prefrontal cortex, a change previously associated with an increase in positive affect and a faster recovery from a negative experience.[17]

Mindfulness is often used synonymously with the traditional Buddhist processes of cultivating awareness as described above, but more recently has been studied as a psychological tool capable of stress reduction and the elevation of several positive emotions or traits. In this relatively new field of western psychological mindfulness, researchers attempt to define and measure the results of mindfulness primarily through controlled, randomised studies of mindfulness intervention on various dependent variables. The participants in mindfulness interventions measure many of the outcomes of such interventions subjectively. For this reason, several mindfulness inventories or scales (a set of questions posed to a subject whose answers output the subject's aggregate answers in the form of a rating or category) have arisen. The most prominent include:

- the Mindful Attention Awareness Scale (MAAS)
- the Freiburg Mindfulness Inventory

- the Kentucky Inventory of Mindfulness Skills
- the Cognitive and Affective Mindfulness Scale.[18]

Through the use of these scales - which can illuminate self-reported changes in levels of mindfulness, the measurement of other correlated inventories in fields such as subjective well-being, and the measurement of other correlated variables such as health and performance - researchers have produced studies that investigate the nature and effects of mindfulness. The research on the outcomes of mindfulness falls into two main categories: stress reduction and positive-state elevation.

Stress reduction

Human response to stressors in the environment produces emotional and physiological changes in individual human bodies in order to cope with that stress.[19] This process most likely evolved to help us attend to immediate concerns in our environment to better our chances of survival, but in modern society, much of the stress felt is not beneficial in this way. Stress has been shown to have several negative effects on health, happiness, and overall wellbeing (see stress (biology)). One field of psychological inquiry into mindfulness is Mindfulness-based stress reduction or MBSR. Several studies have produced relevant findings:

- Jain and Shapiro (2007)[20] conducted a study to show that mindfulness meditation may be specific in its ability to "reduce distractive and ruminative thoughts and behaviours", which may provide a "unique mechanism by which mindfulness meditation reduces distress".
- Arch (2006)[21] found emotional regulation following focused breathing. A breathing group provided moderately positive responses to emotionally neutral visual slides, while "unfocused attention and worry" groups both responded significantly more negatively to neutral slides.
- Brown (2003)[22] found declines in mood disturbance and stress following mindfulness interventions.
- Jha (2010)[23] found that a sufficient meditation training practice may protect against functional impairments associated with high-stress contexts.
- Garland (2009)[24] found declines in stress after mindfulness interventions, which are potentially due to the positive re-appraisals of what were at first appraised as stressors.

Elevation of positive emotions and outcomes

While much research centered on mindfulness seeks to reduce stress, another large body of research has examined mindfulness as a tool to elevate and sustain "positive" emotional states as well and their related outcomes:

- Fredrickson (2008)[25] studied the building of personal resources through increased daily experiences of positive emotions due to meditation. She found that meditation practice showed increases over time in purpose in life, social support, and decreased illness symptoms.
- Davidson (2003)[26] found that mindfulness meditation increased brain and immune function in positive ways, but highlighted the need for additional research.
- Brown (2009)[27] investigated subjective well-being and financial desire. He found that a large discrepancy between financial desires and financial reality correlated with low subjective well-being but that the accumulation of wealth did not tend to close the gap. Mindfulness however was associated with a lower financial-desire discrepancy and thus a higher subjective well-being, so mindfulness may promote the perception of "having enough".
- Shao (2009)[28] used a randomised controlled study to illuminate the correlation between MBA candidates subjected to a mindfulness intervention and increased academic performance. He found mindfulness was positively related to performance for women.
- Davidson *et al.*[29] showed that mindfulness practice improves the immune system and alters activation symmetries in the prefrontal cortex, a change previously associated with an increase in positive affect and a faster recovery time from exposure to a negative experience. These changes in subjects persisted even after periods they

were done meditating.

Future directions

The research leaves many questions still unanswered. Much of the terminology used in such research has no cohesive definition. For example, there is a lack of differentiation between "attention" and "awareness" and an interchangeable use of the two in modern descriptions. Buddhist contemplative psychology however, differentiates more clearly, as "attention" in that context signifies an ever-changing factor of consciousness, while "awareness" refers to a stable and specific state of consciousness.[18]

Reception and criticism

Various scholars have criticized how mindfulness has been defined or represented in recent western psychology publications. B. Alan Wallace has stated that an influential definition of mindfulness in the psychology literature (by Bishop et al.[3]) differs in significant ways from how mindfulness was defined by the Buddha himself, and by much of Buddhist tradition.[30] For example, Wallace writes that

> According to one psychological paper on the topic, mindfulness is "a kind of nonelaborative, nonjudgmental present-centered awareness in which each thought, feeling, or sensation that arises in the attentional field is acknowledged and accepted as it is.[31] .... The modern psychological account of mindfulness, which is explicitly based on the descriptions of mindfulness presented in the modern Vipassana (contemplative insight) tradition of Theravada Buddhism.... is oddly at variance with the Buddha's own description of mindfulness, or sati: "And what monks, is the faculty of sati? Here, monks, the noble disciple has sati, he is endowed with perfect sati and intellect, he is one who remembers, who recollects what was done and said long before."[32] .... So, rather than refraining from labeling or categorizing experiences in a nonjudgmental fashion, in the earliest, most authorititative accounts, sati is said to distinguish between wholesome and unwholesome, beneficial and unbeneficial tendencies. The contrast between the ancient and modern accounts is striking.[30] :61

Wallace concludes that "The modern description and practice of mindfulness are certainly valuable, as thousands of people have discovered for themselves through their own practice. But this doesn't take away from the fact that the modern understanding departs significantly from the Buddha's own account of sati, and from those of the most authoritative commentators in the Theravada and Indian Mahayana traditions."[30] :62

Eleanor Rosch has stated that contemporary "therapeutic systems that include mindfulness"[33] "could as much be called wisdom-based as mindfulness-based."[34] :262 In these therapeutic approaches

> Mindfulness would seem to play two roles: as a part of the therapy itself and as an umbrella justification ("empirical") for the inclusion of other aspects of wisdom that may be beyond our present cultural assumptions. Where in this is mindfulness in its original sense of the mind adhering to an object of consciousness with a clear mental focus?[34] :262

William Mikulas, in the *Journal of Consciousness Studies*, stated that "In Western psychology, mindfulness and concentration are often confused and confounded because, although in the last few years there has been a moderate interest in mindfulness, there has not been a corresponding interest in concentration. Hence, many mindfulness-based programs are actually cultivating both concentration and mindfulness, but all results are attributed to mindfulness."[35] :20

Specific mindfulness-based therapy programs

Since 2006 research supports promising mindfulness-based therapies for a number of medical and psychiatric conditions, notably chronic pain (McCracken et al. 2007), stress (Grossman et al. 2004), anxiety and depression (Hofmann et al. 2010), substance abuse (Melemis 2008:141-157), and recurrent suicidal behavior (Williams et al. 2006). Bell (2009) gives a brief overview of mindful approaches to therapy, particularly family therapy, starting with a discussion of mysticism and emphasizing the value of a mindful therapist.

Morita therapy

The Japanese psychiatrist Shoma Morita, who trained in Zen meditation, developed Morita therapy upon principles of mindfulness and non-attachment.

Gestalt therapy

Since the beginnings of Gestalt therapy in the early 1940s, mindfulness, referred to as "awareness", has been an essential part of its theory and practice.

Adaptation Practice

The British psychiatrist, Clive Sherlock , who trained in the traditional Rinzai School of Zen, developed Adaptation Practice (AP) in 1978 based on the profound mindfulness/awareness training of Zen daily-life practice and meditation. Adaptation Practice is used for long-term relief of depression, anxiety, anger, stress and other emotional problems.[36] [37]

Mindfulness-based stress reduction

Jon Kabat-Zinn developed the Mindfulness-Based Stress Reduction (MBSR) over a ten-year period at the University of Massachusetts Medical School. He (1990:11) defines the essence of MBSR: "This "work" involves above all the regular, disciplined practice of moment-to-moment awareness or *mindfulness,* the complete "owning" of each moment of your experience, good, bad, or ugly." Kabat-Zinn explains the non-Buddhist universality of MBSR:

> Although at this time mindfulness meditation is most commonly taught and practiced within the context of Buddhism, its essence is universal. … Yet it is no accident that mindfulness comes out of Buddhism, which has as its overriding concerns the relief of suffering and the dispelling of illusions. (2005:12-13)

MBSR has clinically proven beneficial for people with depression and anxiety disorders. This mindfulness-based psychotherapy is practiced as a form of complementary medicine in over 200 hospitals, and is currently the focus of numerous research studies funded by the National Center for Complementary and Alternative Medicine.

Mindfulness-based cognitive therapy

Mindfulness-based cognitive therapy (MBCT) psychotherapy combines cognitive therapy with mindfulness techniques as a treatment for major depressive disorder.

Acceptance and commitment therapy

Steven C. Hayes and others have developed acceptance and commitment therapy (ACT), originally called "comprehensive distancing", which uses strategies of mindfulness, acceptance, and behavior change.

Dialectical behavior therapy

Mindfulness is a "core" exercise used in Dialectical behavior therapy (DBT), a psychosocial treatment Marsha M. Linehan developed for treating people with borderline personality disorder. DBT is dialectic, explains Linehan (1993:19), in the sense of "the reconciliation of opposites in a continual process of synthesis." As a practitioner of

Buddhist meditation techniques, Linehan says:

> This emphasis in DBT on a balance of acceptance and change owes much to my experiences in studying meditation and Eastern spirituality. The DBT tenets of observing, mindfulness, and avoidance of judgment are all derived from the study and practice of Zen meditations. (1993:20-21)

Hakomi

Hakomi therapy, under development by Ron Kurtz and others, is a somatic psychology based upon Asian philosophical precepts of mindfulness and nonviolence.

Internal Family Systems Therapy

Internal Family Systems Therapy (IFS), developed by Richard C. Schwartz, emphasizes the importance of both therapist and client engaging in therapy from the Self, which is the IFS term for one's "spiritual center". The Self is curious about whatever arises in one's present experience and open and accepting toward all manifestations.

Mindfulness meditation in organizations

In the U.S., certain businesses, universities, government agencies, counseling centers, schools, hospitals, religious groups, law firms, prisons, the army, and other organizations offer training in mindfulness meditation.

In the U.S. business world, interest in mindfulness is rising dramatically. This shows in the popular business press, including books such as *Awake at Work* (Carroll, 2004) and *Resonant Leadership: Renewing Yourself and Connecting with Others Through Mindfulness, Hope, and Compassion*.[38]

The website of the University of Massachusetts Medical School Center for Mindfulness in Medicine, Health Care, and Society and Carroll's (2007) book, *The Mindful Leader*, mention many companies that have provided training programs in mindfulness. These include Fortune 500 companies (such as Raytheon, Procter & Gamble, Monsanto, General Mills, and Comcast) and others (such as BASF Bioresearch, Bose, New Balance, Unilever, and Nortel Networks). Executives who "meditate and consider such a practice beneficial to running a corporation"[39] have included the chairman of the Ford Motor Company, Bill Ford, Jr.; a managing partner of McKinsey & Co., Michael Rennie; and Aetna International's former chairman, Michael Stephen. A professional-development program — "Mindfulness at Monsanto" — was started at Monsanto corporation by its CEO, Robert Shapiro.

Sounds True, an audio recordings company,[40] has mindfulness as a core value.

> At Sounds True, we strive to practice mindfulness in every aspect of our work. Recognizing the importance of silence, inward attention, active listening and being centered, Sounds True begins its all-company meetings with a minute of silence and maintains a meditation room on-site for employees to utilize throughout the day.[41]

In some newspapers, magazines, and scholarly journals in fields other than management, one can find indicators of interest in mindfulness in organizations outside of business. This includes legal and law enforcement organizations.[42]

- Harvard Law School's Program on Negotiation hosted a workshop on "Mindfulness in the Law & Alternative Dispute Resolution."[43]
- Police officers in Los Angeles and in Madison, Wisconsin, have received mindfulness training. Many law firms offer mindfulness classes.[39]
- Mindfulness has been taught by The Art of Living Foundation, in prisons, reducing hostility and mood disturbance among inmates, and improving their self esteem.[44]
- There are over 240 mindfulness programs in hospitals and clinics throughout the U.S. Many government organizations offer mindfulness training.[45] Coping Strategies is an example of a program utilized by United States Armed Forces personnel.

Research on mindfulness in the workplace has been conducted by McCormick and Hunter.[46] Hunter has taught a course on mindfulness to graduate students in business at Claremont Graduate University, and McCormick has taught mindfulness in the business school of California State University Northridge. In 2000, The Inner Kids Program, a mindfulness-based program developed for children, was introduced into public and private school curricula in the greater Los Angeles area.[47]

References

[1] "Mindfulness is a way of paying attention that originated in Eastern meditation practices. It has been described as “bringing one’s complete attention to the present experience on a moment-to-moment basis” (Marlatt & Kristeller, 1999, p. 68) and as “paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally” (Kabat-Zinn, 1994, p. 4)" - Mindfulness Training as a Clinical Intervention: A Conceptual and Empirical Review, by Ruth A. Baer, available at http://www.wisebrain.org/papers/MindfulnessPsyTx.pdf

[2] "a kind of nonelaborative, nonjudgmental, present-centered awareness in which each thought, feeling, or sensation that arises in the attentional field is acknowledged and accepted as it is" - Bishop et al. (2004:232)

[3] Scott R. Bishop, Mark Lau, Shauna Shapiro, Linda Carlson, Nicole D. Anderson, James Carmody, Zindel V. Segal, Susan Abbey, Michael Speca, Drew Velting & Gerald Devins (2004). "Mindfulness: A proposed operational definition" (http://www.oup.com/). *Clinical Psychology: Science & Practice* **11** (3): 230–241. doi:10.1093/clipsy.bph077. ISSN 0969-5893. . (see also this page's bibliography)

[4] "The Stress Reduction Program, founded by Dr. Jon Kabat-Zinn in 1979..." - http://www.umassmed.edu/cfm/stress/index.aspx

[5] "Much of the interest in the clinical applications of mindfulness has been sparked by the introduction of Mindfulness-Based Stress Reduction (MBSR), a manualized treatment program originally developed for the management of chronic pain (Kabat-Zinn, 1982; Kabat-Zinn, Lipworth, & Burney, 1985; Kabat-Zinn, Lipworth, Burney, & Sellers, 1987)." - Bishop et al, 2004, "Mindfulness: A Proposed Operational Definition"

[6] "Kabat-Zinn (2000) suggests that mindfulness practice may be beneficial to many people in Western society who might be unwilling to adopt Buddhist traditions or vocabulary. Thus, Western researchers and clinicians who have introduced mindfulness practice into mental health treatment programs usually teach these skills independently of the religious and cultural traditions of their origins (Kabat-Zinn, 1982;Linehan, 1993b)." - Mindfulness Training as a Clinical Intervention: A Conceptual and Empirical Review by Ruth A. Baer

[7] "Historically a Buddhist practice, mindfulness can be considered a universal human capacity proposed to foster clear thinking and open-heartedness. As such, this form of meditation requires no particular religious or cultural belief system." - Mindfulness in Medicine by Ludwig and Kabat-Zinn, available at http://jama.ama-assn.org/cgi/content/short/300/11/1350

[8] "The empirical literature on the effects of mindfulness training contains many methodological weaknesses, but it suggests that mindfulness interventions may lead to reductions in a variety of problematic conditions, including pain, stress, anxiety, depressive relapse, and disordered eating (e.g., Kabat-Zinn, 1982;Kabat-Zinn et al., 1992; Kristeller & Hallett, 1999; Shapiro, Schwartz, & Bonner, 1998;Teasdale et al., 2000)." - Mindfulness Training as a Clinical Intervention: A Conceptual and Empirical Review by Ruth A. Baer

[9] Thich Nhat Hanh, The Miracle of Mindfulness (1975), Beacon Books, ISBN 0-8070-1239-4

[10] Steven C. Hayes, Get Out of Your Mind and Into Your Life (2004) New Harbinger Press

[11] Russ Harris, The Happiness Trap (2008)Trumpeter Books

[12] available at http://nrepp.samhsa.gov/ViewIntervention.aspx?id=191 on 3/9/2011 (July 2010)

[13] "In the past 30 years, interest in the therapeutic uses of mindfulness has increased, with more than 70 scientific articles on the topic published in 2007." - Mindfulness in Medicine by Ludwig and Kabat-Zinn, available at http://jama.ama-assn.org/cgi/content/short/300/11/1350

[14] "Secondly, most studies reviewed suffered from methodological deficiencies beyond merely the type of design as randomized, quasiexperimental or observational..." - Mindfulness-based stress reduction and health benefits: A meta-analysis by Grossman et. al, available at http://www.uniklinik-freiburg.net/iuk/live/forschung/publikationen/MBSR_MA_JPR_2004.pdf

[15] "The potential benefits from treating addictive behaviors [with the non-rejecting and aware principles of mindfulness] has been recognized (Marlatt & Kristeller 1999), and DBT [Dialectical Behavior Therapy] has recently been evaluated for treating substance abusers (Linehan et ala, 1999)." - An Information-Processing Analysis of Mindfulness:Implications for Relapse Prevention in the Treatment of Substance Abuse, by Breslin, Zack, and McClain, available at http://home.earthlink.net/~wendylliles/articles/breslin.pdf

[16] from the abstract, "Preliminary data in support of mindfulness-meditation as a treatment for addictive behavior are provided and directions for future research are discussed." - Mindfulness-Based Relapse Prevention for Alcohol and Substance Use Disorders by Witkiewitz et. al, available at http://www.ingentaconnect.com/content/springer/jcogp/2005/00000019/00000003/art00003

[17] the Conclusion of "Alterations in Brain and Immune Function Produced by Mindfulness Meditation" by Davidson et al., available at http://www.psychosomaticmedicine.org/cgi/content/full/65/4/564?ijkey=ad6454f747329753c6e432b298e4953c38cc6857

[18] Rapgay, L, & Bystrisky, A. (2009). Classical mindfulness: an introduction to its theory and practice for clinical application. Proceedings of the Conference on longevity, regeneration and optimal health: integrating eastern and western perspectives Phoenicia, NY

[19] http://deepblue.lib.umich.edu/bitstream/2027.42/49484/2/cortisolpulseLightman.pdf

[20] Jain S *et al.* (2007). "A randomised controlled trial of mindfulness meditation versus relaxation training: Effects on distress, positive states of mind, rumination, and distraction". *Annals of Behavioral Medicine* **33** (1): 11–21. doi:10.1207/s15324796abm3301_2. PMID 17291166.

[21] Arch JJ, Craske MG (2006). "Mechanisms of mindfulness: Emotion regulation following a focused breathing induction". *Behaviour Research and Therapy* **44** (12): 1849–58. doi:10.1016/j.brat.2005.12.007. PMID 16460668.

[22] Brown KW, Ryan RM (2003). "The benefits of being present: Mindfulness and its role in psychological well-being". *Journal of Personality and Social Psychology* **84** (4): 822–48. doi:10.1037/0022-3514.84.4.822. PMID 12703651.

[23] Jha Ap *et al.* (2010). "Examining the protective effects of mindfulness training on working memory capacity and affective experience". *Emotion* **10** (1): 54–64. doi:10.1037/a0018438. PMID 20141302.

[24] Garland E *et al.* (2009). "The role of mindfulness in positive reappraisal". *Explore-The Journal of Science and Healing* **5** (1): 37–44. doi:10.1016/j.explore.2008.10.001. PMC 2719560. PMID 19114262.

[25] Fredrickson BL *et al.* (2008). "Open hearts build lives: positive emotions, induced through loving-kindness meditation, build consequential personal resources". *Journal of Personality and Social Psychology* **95** (5): 1045–62. doi:10.1037/a0013262. PMID 18954193.

[26] Davidson RJ *et al.* (2003). "Alterations in brain and immune function produced by mindfulness meditation". *Psychosomatic Medicine* **65** (3): 564–70. doi:10.1097/01.PSY.0000077505.67574.E3. PMID 12883106.

[27] Brown KW *et al.* (2009). "When what one has is enough: Mindfulness, financial desire discrepancy, and subjective well being". *Journal of Research in Personality* **43** (5): 727–736. doi:10.1016/j.jrp.2009.07.002.

[28] Shao RP, Skarlicki DP (2009). "The role of mindfulness in predicting individual performance". *Canadian Journal of Behavioral Science* **41** (4): 195–201. doi:10.1037/a0015166.

[29] Davidson RJ, Kabat-Zinn J, Schumacher J, *et al.* (2003). "Alterations in brain and immune function produced by mindfulness meditation". *Psychosom Med* **65** (4): 564–70. doi:10.1097/01.PSY.0000077505.67574.E3. PMID 12883106.

[30] Wallace, B. Alan (2006). *The attention revolution: Unlocking the power of the focused mind* (http://www.loc.gov/catdir/toc/ecip065/2005037195.html). Boston: Wisdom Publications. ISBN 0861712765. .

[31] Wallace cites his quotation to the paper by Bishop, Lau, et al., 2004

[32] Wallace footnotes this quotation to Samyutta Nikaya V, 197-198.

[33] Rosch (2007) is discussing "the four therapeutic systems that include mindfulness training as a component. These systems are Mindfulness Based Stress Reduction (MBSR; Kabat-Zinn, 1990), Mindfulness Based Cognitive Therapy (MBCT; Segal, Williams, & Teasdale, 2002; Teasdale &Barnard, 1993), Dialectical Behavior Therapy (DBT; Linehan, 1993a,b), and Acceptance and Commitment Therapy (ACT; Hays, Strosahl, & Wilson, 1999). (See also Baer, 2006; and Hayes, Jacobson, Follette, & Dougher, 1994.) Patients are never just given minimalist mindfulness instructions (such as “Pay bare attention to what comes into your mind”) and then left to themselves—for good reason. I know of no cases where anyone has developed a meditation, or even relaxation, practice without considerable input." (p. 261)

[34] Eleanor Rosch (2007). "More than mindfulness: When you have a tiger by the tail, let it eat you". *Psychological Inquiry* **18** (4): 258–264. doi:10.1080/10478400701598371. ISSN 1047-840X.

[35] William L. Mikulas (2007). "Buddhism & western psychology: fundamentals of integration" (http://www.ingentaconnect.com/content/imp/jcs/2007/00000014/00000004/art00001). *Journal of Consciousness Studies* **14** (4): 4–49. ISSN 1355-8250. .

[36] http://www.adaptationpractice.org/the-times.php

[37] Garvey, Anne (May 4, 2004). "Depressed? Go and clean the kitchen" (http://www.guardian.co.uk/lifeandstyle/2004/may/04/healthandwellbeing.mentalhealth). *The Guardian* (London). .

[38] Boyatzis, R. E., & McKee, A. (2005). *Resonant Leadership: Renewing yourself and connecting with others through mindfulness, hope, and compassion*. Boston: Harvard Business School Press.

[39] Carroll, M. (2007). *The mindful leader: Ten principles for bringing out the best in ourselves and others (1st ed.)*. Boston: Trumpeter.

[40] Caudron, S. (2001). Meditation and mindfulness at Sounds True, *Workforce* V. 80 No. 6 (June 2001) P. 40-6 (Vol. 80, pp. 40-46).

[41] Anonymous (2003). Sounds True Case Study: The Willis Harmon Spirit at Work Award Retrieved January 15, 2008, from http://spiritat.netatlantic.com/index.php/isaw_casestudies

[42] Meditation classes raise attorneys mindfulness (2009). *New Orleans CityBusiness*.

[43] Program on Negotiation at Harvard Law School (2008). Program on Negotiation Webcasts.

[44] Samuelson, M. (2007). Mindfulness-Based Stress Reduction in Massachusetts Correctional Facilities. In C. James, K.-Z. Jon, A. B. Michael, C. James, K.-Z. Jon & A. B. Michael (Eds.), *Prison Journal* (Vol. 87, pp. 254-268).

[45] Rochman, B. (2009, September 6, 2009). Samurai Mind Training for Modern American Warriors. *Time*.

[46] McCormick, Donald W. & Hunter, Jeremy. (2008) *Mindfulness in the Workplace: An Exploratory Study*. Presentation at the 2008 Academy of Management Annual Meeting, Anaheim, CA. A copy can be obtained by contacting Don McCormick, in the Department of Management in the College of Business and Economics at California State University Northridge.

[47] http://www.susankaisergreenland.com/inner-kids.html

Bibliography

- Bell L. G. (2009). "Mindful Psychotherapy". *J. of Spirituality in Mental Health* **11**: 126–144. doi:10.1080/19349630902864275.
- Bishop, S.R., Lau, M., Shapiro, S., Carlson, L., et al. (2004). "Mindfulness: A Proposed Operational Definition" (http://www.personal.kent.edu/~dfresco/mindfulness/Bishop_et_al.pdf), *Clin Psychol Sci Prac* 11:230–241. (also available here (http://dunntastic.com/sources/Bishop 2004 - Mindfulness A proposed operational definition.pdf))
- Brantley, Jeffrey (2007). *Calming Your Anxious Mind: How Mindfulness & Compassion Can Free You from Anxiety, Fear, & Panic*. 2nd ed. New Harbinger. ISBN 978-1-57224-487-0.
- Bernhard J., Kristeller J., Kabat-Zinn J. (1988). "Effectiveness of relaxation and visualization techniques as an adjunct to phototherapy and photochemotherapy of psoriasis". *J. Am. Acad. Dermatol* **19** (3): 572–73. doi:10.1016/S0190-9622(88)80329-3.
- Germer, Christopher K., Ronald Siegel, Paul R. Fulton (2005), Mindfulness and Psychotherapy, The Guilford Press, ISBN 1-59385-139-1 (The use of mindfulness in psychology, and the history of mindfulness)
- Grossman P., Niemann L., Schmidt S., Walach H. (2004). "Mindfulness-based stress reduction and health benefits: A meta-analysis". *Journal of Psychosomatic Research* **57** (1): 35–43. doi:10.1016/S0022-3999(03)00573-7. PMID 15256293.
- Hofmann S.G., Sawyer A.T., Witt A.A., Oh D. (2010). "The effect of mindfulness-based therapy on anxiety and depression: A meta-analytic review". *J Consult Clin Psychol* **78** (2): 169–83. doi:10.1037/a0018555. PMC 2848393. PMID 20350028.
- Kabat-Zinn J (1982). "An out-patient program in Behavioral Medicine for chronic pain patients based on the practice of mindfulness meditation: Theoretical considerations and preliminary results". *Gen. Hosp. Psychiatry* **4** (1): 33–47. doi:10.1016/0163-8343(82)90026-3. PMID 7042457.
- Kabat-Zinn, Jon (1990). *Full Catastrophe Living: Using the Wisdom of Your Body and Mind to Face Stress, Pain, and Illness*. Dell.
- Kabat-Zinn, Jon (2005). *Coming to Our Senses: Healing Ourselves and the World Through Mindfulness*. Hyperion.
- Kabat-Zinn J., Chapman-Waldrop A. (1988). "Compliance with an outpatient stress reduction program: rates and predictors of completion". *J.Behav. Med.* **11** (4): 333–352. doi:10.1007/BF00844934. PMID 3070046.
- Kabat-Zinn J. Chapman, Salmon P. (1997). "The relationship of cognitive and somatic components of anxiety to patient preference for alternative relaxation techniques". *Mind/ Body Medicine* **2**: 101–109.
- Kabat-Zinn J., Lipworth L., Burney R. (1985). "The clinical use of mindfulness meditation for the self-regulation of chronic pain". *J. Behav. Med.* **8** (2): 163–190. doi:10.1007/BF00845519. PMID 3897551.
- Kabat-Zinn J., Lipworth L., Burney R., Sellers W. (1986). "Four year follow-up of a meditation-based program for the self-regulation of chronic pain: Treatment outcomes and compliance". *Clin. J.Pain* **2** (3): 159–173. doi:10.1097/00002508-198602030-00004.
- Kabat-Zinn J., Massion A.O., Kristeller J., Peterson L.G., Fletcher K., Pbert L., Linderking W., Santorelli S.F. (1992). "Effectiveness of a meditation-based stress reduction program in the treatment of anxiety disorders". *Am. J Psychiatry* **149** (7): 936–943. PMID 1609875.
- Kabat-Zinn J., Wheeler E., Light T., Skillings A., Scharf M.S., Cropley T. G., Hosmer D., Bernhard J. (1998). "Influence of a mindfulness-based stress reduction intervention on rates of skin clearing in patients with moderate to severe psoriasis undergoing phototherapy (UVB) and photochemotherapy (PUVA)". *Psychosomat Med* **60**: 625–632.
- Kapleau, Phillip (1989). *The Three Pillars of Zen: Teaching, Practice and Enlightenment*. Anchor Books.
- Langer, Ellen J. (1989). *Mindfulness*. Merloyd Lawrence.
- Linehan, Marsha (1993). *Cognitive-Behavioral Treatment of Borderline Personality Disorder*. Guilford Press.

- Massion A.O., Teas J., Hebert J.R., Wertheimer M.D., Kabat-Zinn J. (1995). "Meditation, melatonin, and breast/prostate cancer: Hypothesis and preliminary data". *Medical Hypotheses* **44** (1): 39–46. doi:10.1016/0306-9877(95)90299-6. PMID 7776900.
- McCracken L., Gauntlett-Gilbert J., Vowles K.E. (2007). "The role of mindfulness in a contextual cognitive-behavioral analysis of chronic pain-related suffering and disability". *Pain* **131** (1): 63–69. doi:10.1016/j.pain.2006.12.013. PMID 17257755.
- Melemis, Steven M. (2008). *Make Room for Happiness: 12 Ways to Improve Your Life by Letting Go of Tension. Better Health, Self-Esteem and Relationships*. Modern Therapies. ISBN 978-1-897572-17-7
- Miller J., Fletcher K., Kabat-Zinn J. (1995). "Three-year follow-up and clinical implications of a mindfulness-based stress reduction intervention in the treatment of anxiety disorders". *Gen. Hosp. Psychiatry* **17** (3): 192–200. doi:10.1016/0163-8343(95)00025-M. PMID 7649463.
- Nemcova, M. and Hajek, K. (2009). *Introduction to Satitherapy – Mindfulness and Abhidhamma Principles in Person-Centered Integrative Psychotherapy*. Morrisville, Lulu.com. ISBN 978-1-4092-5900-8
- Ockene J.K., Ockene I.S., Kabat-Zinn J., Greene H.L., Frid D. (1990). "Teaching risk-factor counseling skills to medical students, house staff, and fellows". *Am. J. Prevent. Med.* **6** (2): 35–42.
- Ockene J., Sorensen G., Kabat-Zinn J., Ockene I.S., Donnelly G. (1988). "Benefits and costs of lifestyle change to reduce risk of chronic disease". *Preventive Medicine* **17** (2): 224–234. doi:10.1016/0091-7435(88)90065-5. PMID 3047727.
- Saxe G., Hebert J., Carmody J., Kabat-Zinn J., Rosenzweig P., Jarzobski D., Reed G., Blute R. (2001). "Can Diet, in conjunction with Stress Reduction, Affect the Rate of Increase in Prostate-specific Antigen after Biochemical Recurrence of Prostate Cancer?". *J. Of Urology* **166** (6): 2202–2207. doi:10.1016/S0022-5347(05)65535-8.
- Siegel, Daniel J. (2007). *The Mindful Brain: Reflection and Attunement in the Cultivation of Well-Being*. Norton. ISBN 978-0-393-70470-9.
- Williams J.M.G., Duggan D.S., Crane C., Fennell M.J.V. (2006). "Mindfulness-Based cognitive therapy for prevention of recurrence of suicidal behavior". *J Clin Psychol* **62** (2): 201–210. doi:10.1002/jclp.20223. PMID 16342287.
- Williams, Mark, John Teasdale, Zindel Segal, and Jon Kabat-Zinn (2007). *The Mindful Way through Depression: Freeing Yourself from Chronic Unhappiness*. Guilford Press. ISBN 978-1-59385-128-6.

External links

- *The Mindfulness Forum* (http://mindfulnessweb.net/)
- Oxford University Mindfulness Research Centre (http://www.oxfordmindfulness.org/)
- Using Mindfulness in a frantic world (http://franticworld.com/)
- Free to download Mindfulness exercises (http://www.freemindfulness.org/)
- Jon Kabat-Zinn on Mindfulness (http://www.youtube.com/watch?v=3nwwKbM_vJc)
- Mindfulness Videos from Kabat-Zinn and colleagues (http://www.learnmindfulness.co.uk/videos)
- Video- Mindfulness Meditation Taught To Google (http://www.mymeditationgarden.com/meditation-techniques/mindfulness-meditation/google-learns-mindfulness-meditation-watch-the-video/)

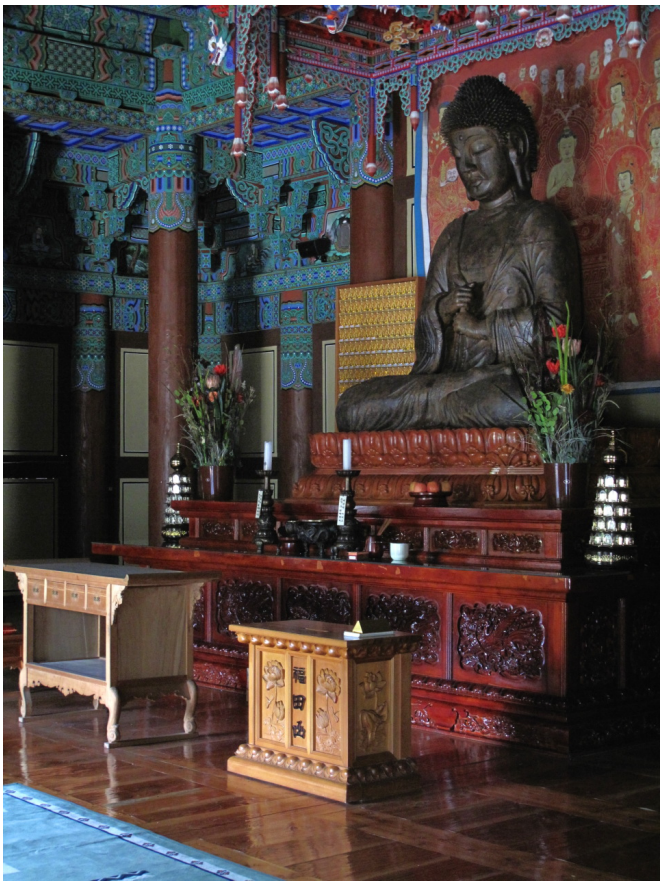
Meditation

Meditation is any form of a family of practices in which practitioners train their minds or self-induce a mode of consciousness to realize some benefit.[1] [2] [3]

Meditation is generally an inwardly oriented, personal practice, which individuals can do by themselves. Prayer beads or other ritual objects may be used during meditation. Meditation may involve invoking or cultivating a feeling or internal state, such as *compassion*, or *attending to a specific focal point*. The term can refer to the state itself, as well as to practices or techniques employed to cultivate the state.[4]

There are dozens of specific styles of meditation practice;[3] the word *meditation* may carry different meanings in different contexts. Meditation has been practiced since antiquity as a component of numerous religious traditions.

A 2007 study by the U.S. government found that nearly 9.4% of U.S. adults (over 20 million) had practiced meditation within the past 12 months, up from 7.6% (more than 15 million people) in 2002.[5]



A statue of the Buddha meditating, Borim Temple, Korea

Since the 1960s, meditation has been the focus of increasing scientific research of uneven rigor and quality.[6] In over 1,000 published research studies, various methods of meditation have been linked to changes in metabolism, blood pressure, brain activation, and other bodily processes.[7] [8] Meditation has been used in clinical settings as a method of stress and pain reduction.[9] [10]

Terminology

Caravans on the Silk Road helped spread meditative practices from India.

The English *meditation* is derived from the Latin *meditatio*, from a verb *meditari*, meaning "to think, contemplate, devise, ponder, meditate".[11]

In the Old Testament *hāgâ* (Hebrew: הגה), means to sigh or murmur, but also to meditate. When the Hebrew Bible was translated into Greek, *hāgâ* became the Greek *melete*. The Latin Bible then translated *hāgâ*/*melete* into *meditatio*.[12] The use of the term *meditatio* as part of a formal, stepwise process of meditation goes back to the 12th-century monk Guigo II.[13]

Apart from its historical usage, the term *meditation* was introduced as a translation for Eastern spiritual practices, referred to as *dhyāna* in Buddhism and in Hinduism, which comes from the

Sanskrit root *dhyai*, meaning to contemplate or meditate.[4] [14] The term "meditation" in English may also refer to practices from Islamic Sufism,[15] or other traditions such as Jewish Kabbalah and Christian Hesychasm.[16] An edited book about "meditation" published in 2003, for example, included chapter contributions by authors describing Buddhist, Christian, Hindu, Islamic, and Taoist traditions.[17] [18] Scholars have noted that "the term 'meditation' as it has entered contemporary usage" is parallel to the term "contemplation" in Christianity.[19]

History

The history of meditation is intimately bound up with the religious context within which it was practiced.[20] Even in prehistoric times civilizations used repetitive, rhythmic chants and offerings to appease the gods.[21] Some authors have even suggested the hypothesis that the emergence of the capacity for focused attention, an element of many methods of meditation,[22] may have contributed to the final phases of human biological evolution.[23] Some of the earliest references to meditation are found in the Bible, dating around 1400 BCE,[24] [25] and in the Hindu Vedas from around the 15th century BCE.[20] Around the 6th to 5th centuries BCE, other forms of meditation developed in Taoist China and Buddhist India.[20]

Man Meditating in a Garden Setting

In the west, by 20BCE Philo of Alexandria had written on some form of "spiritual exercises" involving attention (prosoche) and concentration[26] and by the 3rd century Plotinus had developed meditative techniques.

The Pāli Canon, which dates to 1st century BCE considers Indian Buddhist meditation as a step towards salvation.[27] By the time Buddhism was spreading in China, the Vimalakirti Sutra which dates to 100CE included a number of passages on meditation, clearly pointing to Zen.[28] The Silk Road transmission of Buddhism introduced meditation to other oriental countries, and in 653 the first meditation hall was opened in Japan.[29] Returning from China around 1227, Dōgen wrote the instructions for Zazen.[30] [31]

The Islamic practice of Dhikr had involved the repetition of the 99 Names of God since the 8th or 9th century.[32] [33] By the 12th century, the practice of Sufism included specific meditative techniques, and its followers practiced breathing controls and the repetition of holy words.[34] Interactions with Indians or the Sufis may have influenced the Eastern Christian meditation approach to hesychasm, but this can not be proved.[35] [36] Between the 10th and 14th centuries, hesychasm was developed, particularly on Mount Athos in Greece, and involves the repetition of the Jesus prayer.[37]

Western Christian meditation contrasts with most other approaches in that it does not involve the repetition of any phrase or action and requires no specific posture. Western Christian meditation progressed from the 6th century practice of Bible reading among Benedictine monks called Lectio Divina, i.e. divine reading. Its four formal steps as a "ladder" were defined by the monk Guigo II in the 12th century with the Latin terms *lectio*, *meditatio*, *oratio*, and *contemplatio* (i.e. read, ponder, pray, contemplate). Western Christian meditation was further developed by saints such as Ignatius of Loyola and Teresa of Avila in the 16th century.[38] [39] [40] [41]

By the 18th century, the study of Buddhism in the West was a topic for intellectuals. The philosopher Schopenhauer discussed it,[42] and Voltaire asked for toleration towards Buddhists.[43] The first English translation of the *Tibetan Book of the Dead* was published in 1927.[44]

Secular forms of meditation were introduced in India in the 1950s as a Westernized form of Hindu meditative techniques and arrived in the United States and Europe in the 1960s. Rather than focusing on spiritual growth, secular meditation emphasizes stress reduction, relaxation and self improvement.[45] [46] Both spiritual and secular

forms of meditation have been subjects of scientific analyses. Research on meditation began in 1931, with scientific research increasing dramatically during the 1970s and 1980s.[47] Since the beginning of the '70s more than a thousand studies of meditation in English-language have been reported.[47] However, after 60 years of scientific study, the exact mechanism at work in meditation remains unclear.[9]

Modern definitions and Western models

Definitions and scope

Definitions or Characterizations of Meditation: Examples from Prominent Reviews*	
Definition / Characterization	Review
•"[M]editation refers to a family of self-regulation practices that focus on training attention and awareness in order to bring mental processes under greater voluntary control and thereby foster general mental well-being and development and/or specific capacities such as calm, clarity, and concentration"[48] :228-9	Walsh & Shapiro (2006)
•"*[M]editation* is used to describe practices that self-regulate the body and mind, thereby affecting mental events by engaging a specific attentional set.... regulation of attention is the central commonality across the many divergent methods"[8] :180	Cahn & Polich (2006)
•"We define meditation... as a stylized mental technique... repetitively practiced for the purpose of attaining a subjective experience that is frequently described as very restful, silent, and of heightened alertness, often characterized as blissful"[49] :415	Jevning et al. (1992)
•"the need for the meditator to retrain his attention, whether through concentration or mindfulness, is the single invariant ingredient in... every meditation system"[16] :107	Goleman (1988)
*Influential reviews (cited >50 times in PsycINFO[50]), encompassing *multiple* methods of meditation.	

As early as 1971, Naranjo noted that "The word 'meditation' has been used to designate a variety of practices that differ enough from one another so that we may find trouble in defining what *meditation* is."[51] :6 There remains no definition of necessary and sufficient criteria for meditation that has achieved universal or widespread acceptance within the modern scientific community, as one study recently noted a "persistent lack of consensus in the literature" and a "seeming intractability of defining *meditation*".[52] :135

In popular usage, the word "meditation" and the phrase "meditative practice" are often used imprecisely to designate broadly similar practices, or sets of practices, that are found across many cultures and traditions.[16] [53]

Some of the difficulty in precisely defining meditation has been the need to recognize the particularities of the many various traditions.[54] There may be differences between the theories of one tradition of meditation as to what it means to practice meditation.[55] The differences between multiple various traditions, which have grown up a great distance apart from each other, may be even starker.[55] The defining of what 'meditation' is has caused difficulties for modern scientists. Scientific reviews have proposed that researchers attempt to more clearly define the type of meditation being practiced in order that the results of their studies be made clearer.[54] :499 Taylor noted that to refer only to meditation from a particular faith (e.g., "Hindu" or "Buddhist")

> is not enough, since the cultural traditions from which a particular kind of meditation comes are quite different and even within a single tradition differ in complex ways. The specific name of a school of thought or a teacher or the title of a specific text is often quite important for identifying a particular type of meditation.[56] :2

The table shows several definitions of meditation that have been used by influential modern reviews of research on meditation across multiple traditions. Within a specific context, more precise meanings are not uncommonly given

the word "meditation."[57] For example, 'meditation', is sometimes the translation of *meditatio* in Latin, which is the third of four steps of *Lectio Divina*, an ancient form of Christian prayer. 'Meditation' may also refer to the second of the three steps of Yoga in Patanjali's *Yoga Sutras*, a step called *dhyāna* in Sanskrit. Meditation may refer to a mental or spiritual *state* that may be attained by such practices,[4] and may also refer to the practice of that state.

This article mainly focuses on meditation in the broad sense of a type of discipline, found in various forms in many cultures, by which the practitioner attempts to get beyond the reflexive, "thinking" mind[58] (sometimes called "discursive thinking"[59] or "logic"[60]) into a deeper, more devout, or more relaxed state. The terms "meditative practice" and "meditation" are mostly used here in this broad sense. However, usage may vary somewhat by context - readers should be aware that in quotations, or in discussions of particular traditions, more specialized meanings of "meditation" may sometimes be used (with meanings made clear by context whenever possible).

Western typologies

Ornstein noted that "most techniques of meditation do not exist as solitary practices but are only artificially separable from an entire system of practice and belief".[61] :143 This means that, for instance, while monks engage in meditation as a part of their everyday lives, they also engage the codified rules and live together in monasteries in specific cultural settings, that go along with their meditative practices. These meditative practices sometimes have similarities (often noticed by Westerners), for instance concentration on the breath is practiced in both Zen, Tibetan and Theravadan contexts, and these similarities or 'typologies' are noted here.

Progress on the "intractable" problem of defining meditation was attempted by a recent study of views common to 7 experts trained in diverse but empirically highly studied (clinical or Eastern-derived) forms of meditation.[62] The study identified "three main criteria... as essential to any meditation practice: the use of a defined technique, logic relaxation, and a self-induced state/mode. Other criteria deemed important [but not essential] involve a state of psychophysical relaxation, the use of a self-focus skill or anchor, the presence of a state of suspension of logical thought processes, a religious/spiritual/philosophical context, or a state of mental silence".[52] :135 However, the study cautioned that "It is plausible that meditation is best thought of as a natural category of techniques best captured by 'family resemblances'... or by the related prototype model of concepts".[52] :135[63]

Bodhidharma practicing zazen.

In modern psychological research, meditation has been defined and characterized in a variety of ways; many of these emphasize the role of attention.[8] [16] [48] [49]

In the West, meditation is sometimes thought of in two broad categories: concentrative meditation and mindfulness meditation.[64] These two categories are discussed in the following two paragraphs, with concentrative meditation being used interchangeably with focused attention and mindfulness meditation being used interchangeably with open monitoring,

> direction of mental attention... A practitioner can focus intensively on one particular object (so-called *concentrative meditation*), on all mental events that enter the field of awareness (so-called *mindfulness meditation*), or both specific focal points and the field of awareness.[52] :130[65]
>
> "One style, Focused Attention (FA) meditation, entails the voluntary focusing of attention on a chosen object. The other style, Open Monitoring (OM) meditation, involves non-reactive monitoring of the content of experience from moment to moment."[66]

Other typologies have also been proposed,[67] [68] [additional citations useful] and some techniques shift among major categories.[69]

Evidence from neuroimaging studies suggests that the categories of meditation, defined by how they direct attention, appear to generate different brainwave patterns.[67] [68] [additional citations useful] Evidence also suggests that using different focus objects during meditation may generate different brainwave patterns.[70]

Religious and spiritual meditation

Bahá'í Faith

In the teachings of the Bahá'í Faith meditation, along with prayer, is one of the primary tools for spiritual development,[71] and it mainly refers to one's reflection on the words of God.[72] While prayer and meditation are linked where meditation happens generally in a prayerful attitude, prayer is seen specifically as turning toward God,[73] and meditation is seen as a communion with one's self where one focuses on the divine.[72]

The Bahá'í teachings note that the purpose of meditation is to strengthen one's understanding of the words of God, and to make one's soul more susceptible to their potentially transformative power,[72] and that both prayer and meditation are needed to bring about and to maintain a spiritual communion with God.[74]

Bahá'u'lláh, the founder of the religion, never specified any particular form of meditation, and thus each person is free to choose their own form.[71] However, he specifically did state that Bahá'ís should read a passage of the Bahá'í writings twice a day, once in the morning, and once in the evening, and meditate on it. He also encouraged people to reflect on one's actions and worth at the end of each day.[72] The Nineteen Day Fast, a nineteen-day period of the year, during which Bahá'ís adhere to a sunrise-to-sunset fast, is also seen as meditative, where Bahá'ís must meditate and pray to reinvigorate their spiritual forces.[75]

Buddhism

Dynamic tranquility: the Buddha in contemplation.

Buddhist meditation refers to the meditative practices associated with the religion and philosophy of Buddhism. Core meditation techniques have been preserved in ancient Buddhist texts and have proliferated and diversified through teacher-student transmissions. Buddhists pursue meditation as part of the path toward Enlightenment and Nirvana.[76] The closest words for meditation in the classical languages of Buddhism are *bhāvanā*[77] and *jhāna*/*dhyāna*.[78]

Buddhist meditation techniques have become increasingly popular in the wider world, with many non-Buddhists taking them up for a variety of reasons. There is considerable homogeneity across meditative practices — such as breath meditation and various recollections (*anussati*) — that are used across Buddhist schools, as well as significant diversity. In the Theravāda tradition alone, there are over fifty methods for developing mindfulness and forty for developing concentration, while in the Tibetan tradition there are thousands of visualization meditations.[79] Most classical and contemporary Buddhist meditation guides are school-specific.[80]

The Buddha is said to have identified two paramount mental qualities that arise from wholesome meditative practice:

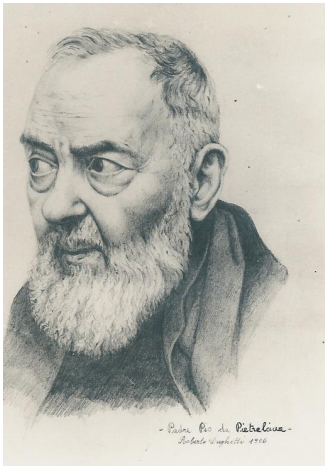
- "serenity" or "tranquillity" (Pali: *samatha*) which steadies, composes, unifies and concentrates the mind;
- "insight" (Pali: *vipassana*) which enables one to see, explore and discern "formations" (conditioned phenomena based on the five aggregates).[81]

Through the meditative development of serenity, one is able to suppress obscuring hindrances; and, with the suppression of the hindrances, it is through the meditative development of insight that one gains liberating wisdom.[82]

Christianity

Christian Meditation is a term for form of prayer in which a structured attempt is made to get in touch with and deliberately reflect upon the revelations of God.[84] The word meditation comes from the Latin word *meditari* which means to concentrate. Christian meditation is the process of deliberately focusing on specific thoughts (e.g. a biblical scene involving Jesus and the Virgin Mary) and reflecting on their meaning in the context of the love of God.[85]

Christian meditation contrasts with cosmic styles of eastern meditation as radically as the portrayal of God the Father in the Bible contrasts with discussions of Krishna or Brahman in Indian teachings.[86] Unlike eastern meditations, most styles of Christian meditations do not rely on the repeated use of mantras, but are intended to stimulate thought and deepen meaning. Christian meditation aims to heighten the personal relationship based on the love of God that marks Christian communion.[87] [88]



A strong believer in Christian meditation, Saint Padre Pio stated: "Through the study of books one seeks God; by meditation one finds him".[83]

In *Aspects of Christian meditation*, the Catholic Church warned of potential incompatibilities in mixing Christian and eastern styles of meditation.[89] In 2003, in *A Christian reflection on the New Age* the Vatican announced that the "Church avoids any concept that is close to those of the New Age".[90] [91] [92]

Christian meditation is sometimes taken to mean the middle level in a broad three stage characterization of prayer: it then involves more reflection than first level vocal prayer, but is more structured than the multiple layers of contemplation in Christianity.[93]

Hinduism

There are many, many schools and styles of meditation within Hinduism. Yoga is generally done to prepare one for meditation, and meditation is done to realize union of one's self, one's atman, with the omnipresent and non-dual Brahman. This experience is referred to as moksha by Hindus, and is similar to the concept of Nibbana in Buddhism. The earliest clear references to meditation in Hindu literature are in the middle Upanishads and the Mahabharata, which includes the Bhagavad Gita.[94] [95] According to Gavin Flood, the earlier Brihadaranyaka Upanishad refers to meditation when it states that "having becoming calm and concentrated, one perceives the self (*ātman*) within oneself".[96]

A large statue in Bangalore depicting Lord Shiva meditating

Within Patañjali's ashtanga yoga practice there are eight limbs leading to moksha. These are ethical discipline (yamas), rules (niyamas), physical postures (asanas), breath control (pranayama), withdrawal from the senses (pratyahara), one-pointedness of mind (dharana), meditation (dhyana), and finally samadhi, which is often described as the union of the Self (atman) with the omnipresent (Brahman), and is the ultimate aim of all Hindu yogis.

Meditation in Hinduism is not confined to any school or sect and has expanded beyond Hinduism to the West.[96] Today there is a new branch of yoga which combines Christian practices with yogic postures known popularly as Christian Yoga.[97]

The influential modern proponent of Hinduism who first introduced Eastern philosophy to the West in the late 19th century, Swami Vivekananda, describes meditation as follows:

> Meditation has been laid stress upon by all religions. The meditative state of mind is declared by the Yogis to be the highest state in which the mind exists. When the mind is studying the external object, it gets identified with it, loses itself. To use the simile of the old Indian philosopher: the soul of man is like a piece of crystal, but it takes the colour of whatever is near it. Whatever the soul touches ... it has to take its colour. That is the difficulty. That constitutes the bondage.[98]

Islam

Dhikr singing.

A Muslim is obligated to pray five times a day: once before sunrise, at noon, in the afternoon, after sunset, and once at night. During prayer a Muslim focuses and meditates on God by reciting the Qur'an and engaging in dhikr to reaffirm and strengthen the bond between Creator and creation, with the purpose of guiding the soul to truth. Such meditation is intended to help maintain a feeling of spiritual peace, in the face of whatever challenges work, social or family life may present.

The five daily acts of peaceful prayer are to serve as a template and inspiration for conduct during the rest of the day, transforming it, ideally, into one single and sustained meditation: even sleep is to be regarded as but another phase of that sustained meditation.[99]

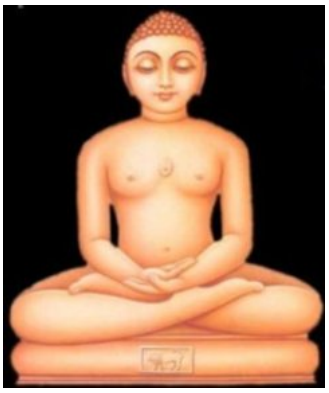
Meditative quiescence is said to have a quality of healing, and—in contemporary terminology—enhancing *creativity*.[100] The Islamic prophet Muhammad spent sustained periods in contemplation and meditation. It was during one such period that Muhammad began to receive the revelations of the Qur'an.[101] [102]

Following are the styles, or schools, of meditation in the Muslim traditions:

- *Tafakkur* or *tadabbur*, literally means *reflection upon the universe*: this is considered to permit access to a form of cognitive and emotional development that can emanate only from the higher level, i.e. from God. The sensation of receiving divine inspiration awakens and liberates both heart and intellect, permitting such inner growth that the apparently mundane actually takes on the quality of the infinite. Muslim teachings embrace life as a test of one's submission to God.[103]
- Meditation in the Sufi traditions is largely based on a spectrum of mystical exercises, varying from one lineage to another. Such techniques, particularly the more audacious, can be, and often have been down the ages, a source of controversy among scholars. One broad group of ulema, followers of the great Al-Ghazzali, for example, have in general been open to such techniques and forms of devotion, while another such group, those who concur with the Ibn Taymiya, reject and generally condemn such procedures as species of bid'ah (Arabic: بدعة) or mere innovation.

Numerous Sufi traditions place emphasis upon a meditative procedure similar in its cognitive aspect to one of the two principal approaches to be found in the Buddhist traditions: that of the concentration technique, involving high-intensity and sharply focused introspection. In the Oveyssi-Shahmaghsoudi Sufi order, for example, this is particularly evident, where muraqaba takes the form of tamarkoz, the latter being a Persian term that means *concentration*.

Jainism


Mahavira in meditative posture

In Jainism, meditation has been a core spiritual practice, one that Jains believe people have undertaken since the teaching of the Tirthankara, Rishabha.[104] All the twenty four Tirthankaras practiced deep meditation and attained enlightenment.[105] They are all shown in meditative postures in the images or idols. Mahavira practiced deep meditation for twelve years and attained enlightenment.[106] The Acaranga Sutra dating to 500 BC, addresses the meditation system of Jainism in detail.[107] Acharya Bhadrabahu of the 4th century BC practiced deep *Mahaprana* meditation for 12 years.[108] Kundakunda of 1st century BCE, opened new dimensions of meditation in Jain tradition through his books Samayasāra, Pravachansar and others.[109]

Jain meditation and spiritual practices system were referred to as salvation-path. It has three important parts called the Ratnatraya "Three Jewels": right perception and faith, right knowledge and right conduct.[110] Meditation in Jainism aims at realizing the self, attaining salvation, take the soul to complete freedom.[111] It aims to reach and to remain in the pure state of soul which is believed to be pure consciousness, beyond any attachment or aversion. The practitioner strives to be just a knower-seer (Gyata-Drashta). Jain meditation can be broadly categorized to *Dharmya Dhyana* and *Shukla Dhyana*.

There exists a number of meditation techniques such as *pindāstha-dhyāna, padāstha-dhyāna, rūpāstha-dhyāna, rūpātita-dhyāna, savīrya-dhyāna*, etc. In *padāstha dhyāna* one focuses on Mantra.[112] A Mantra could be either a combination of core letters or words on deity or themes. There is a rich tradition of Mantra in Jainism. All Jain followers irrespective of their sect, whether Digambara or Svetambara, practice mantra. Mantra chanting is an important part of daily lives of Jain monks and followers. Mantra chanting can be done either loudly or silently in mind. Yogasana and *Pranayama* has been an important practice undertaken since ages. Pranayama – breathing exercises – are performed to strengthen the ten *Pranas* or vital energy.[113] Yogasana and *Pranayama* balances the functioning of neuro-endocrine system of body and helps in achieving good physical, mental and emotional health.[114]

Contemplation is a very old and important meditation technique. The practitioner meditates deeply on subtle facts. In *agnya vichāya*, one contemplates on seven facts - life and non-life, the inflow, bondage, stoppage and removal of *karmas*, and the final accomplishment of liberation. In *apaya vichāya*, one contemplates on the incorrect insights one indulges into and that eventually develops right insight. In *vipaka vichāya*, one reflects on the eight causes or basic types of *karma*. In *sansathan vichāya*, one thinks about the vastness of the universe and the loneliness of the soul.[112]

Acharya Mahapragya formulated Preksha meditation in the 1970s and presented a well-organised system of meditation. Asana and *Pranayama*, meditation, contemplation, mantra and therapy are its integral parts.[115] Numerous Preksha meditation centers came into existence around the world and numerous meditations camps are being organized to impart training in it.

Judaism

There is evidence that Judaism has had meditative practices that go back thousands of years.[116] [117] For instance, in the Torah, the patriarch Isaac is described as going "לשוח" (*lasuach*) in the field—a term understood by all commentators as some type of meditative practice (Genesis 24:63), probably prayer.[118]

Similarly, there are indications throughout the Tanach (the Hebrew Bible) that meditation was used by the prophets.[119] In the Old Testament, there are two Hebrew words for meditation: *hāgâ* (Hebrew: הגה), which means *to sigh* or *murmur*, but also *to meditate*, and *sîḥâ* (Hebrew: שיחה), which means *to muse*, or *rehearse in one's mind*.

The Jewish mystical tradition, Kabbalah, is inherently a meditative field of study.[120] [121] Traditionally Kabbalah is only taught to orthodox Jews over the age of forty. The Talmud refers to the advantage of the scholar over the prophet, as his understanding takes on intellectual, conceptual form, that deepens mental grasp, and can be communicated to others. The advantage of the prophet over the scholar is in the transcendence of their intuitive vision. The ideal illumination is achieved when the insights of mystical revelation are brought into conceptual structures. For example, Isaac Luria revealed new doctrines of Kabbalah in the 16th Century, that revolutionised and reordered its teachings into a new system.[122] However, he did not write down his teachings, which were recounted and interpreted instead by his close circle of disciples. After a mystical encounter, called in Kabbalistic tradition an "elevation of the soul" into the spiritual realms, Isaac Luria said that it would take 70 years to explain all that he had experienced. As Kabbalah evolved its teachings took on successively greater conceptual form and philosophical system. Nonetheless, as is implied by the name of Kabbalah, which means "to receive", its exponents see that for the student to understand its teachings requires a spiritual intuitive reception that illuminates and personalises the intellectual structures.

Corresponding to the learning of Kabbalah are its traditional meditative practices, as for the Kabbalist, the ultimate purpose of its study is to understand and cleave to the Divine.[123] Classic methods include the mental visualisation of the supernal realms the soul navigates through to achieve certain ends. One of the best known types of meditation in early Jewish mysticism was the work of the Merkabah, from the root /R-K-B/ meaning "chariot" (of God).

In modern Jewish practice, one of the best known meditative practices is called "hitbodedut" (התבודדות, alternatively transliterated as "hisbodedus"), and is explained in Kabbalistic, Hasidic, and Mussar writings, especially the Hasidic method of Rabbi Nachman of Breslav. The word derives from the Hebrew word "boded" (בודד), meaning the state of being alone.[124] Another Hasidic system is the Habad method of "hisbonenus", related to the Sephirah of "Binah", Hebrew for understanding.[125] This practice is the analytical reflective process of making oneself understand a mystical concept well, that follows and internalises its study in Hasidic writings.

New Age

New Age meditations are often influenced by Eastern philosophy, mysticism, Yoga, Hinduism and Buddhism, yet may contain some degree of Western influence. In the West, meditation found its mainstream roots through the social revolution of the 1960s and 1970s, when many of the youth of the day rebelled against traditional belief systems as a reaction against what some perceived as the failure of Christianity to provide spiritual and ethical guidance.[126] New Age meditation as practised by the early hippies is regarded for its techniques of blanking out the mind and releasing oneself from conscious thinking. This is often aided by repetitive chanting of a mantra, or focusing on an object.[127]

Meditation workshop at 1979 Nambassa in New Zealand

In Zen Yoga, Aaron Hoopes talks of meditation as being an avenue to touching the spiritual nature that exists within each of us.

At its core, meditation is about touching the spiritual essence that exists within us all. Experiencing the joy of this essence has been called enlightenment, nirvana, or even rebirth, and reflects a deep understanding within us. The spiritual essence is not something that we create through meditation. It is already there, deep within, behind all the barriers, patiently waiting for us to recognize it. One does not have to be religious or even interested in religion to find value in it. Becoming more aware of your self and realizing your spiritual nature is something that transcends religion. Anyone who has explored meditation knows that it is simply a path that leads to a new, more expansive way of seeing the world around us.[128]

Sikhism

In Sikhism, the practices of simran and Nām Japō encourage quiet meditation. This is focusing one's attention on the attributes of God. Sikhs believe that there are 10 'gates' to the body; 'gates' is another word for 'chakras' or energy centres. The top most energy level is called the tenth gate or Dasam Duaar. When one reaches this stage through continuous practice meditation becomes a habit that continues whilst walking, talking, eating, awake and even sleeping. There is a distinct taste or flavour when a meditator reaches this lofty stage of meditation, as one experiences absolute peace and tranquility inside and outside the body.

Followers of the Sikh religion also believe that love comes through meditation on the lord's name since meditation only conjures up positive emotions in oneself which are portrayed through our actions. The first Guru of the Sikhs, Guru Nanak Dev Ji preached the equality of all humankind and stressed the importance of living a householder's life instead of wandering around jungles meditating, the latter of which being a popular practice at the time. The Guru preached that we can obtain liberation from life and death by living a totally normal family life and by spreading love amongst every human being regardless of religion.

In the Sikh religion, kirtan, otherwise known as singing the hymns of God is seen as one of the most beneficial ways of aiding meditation, and it too in some ways is believed to be a meditation of one kind.

Taoism

Taoism includes a number of meditative and contemplative traditions, said to have their principles described in the *I Ching*, *Tao Te Ching*, *Chuang Tzu* and *Tao Tsang* among other texts. The multitude of schools relating to Qigong, Neigong, Internal alchemy, Daoyin and Zhan zhuang is a large, diverse array of breath-training practices in aid of meditation with much influence on later Chinese Buddhism and with much influence on traditional Chinese medicine and the Chinese as well as some Japanese martial arts. The Chinese martial art T'ai chi ch'uan is named after the well-known focus for Taoist and Neo-Confucian meditation, the Taijitu (T'ai Chi T'u), and is often referred to as “meditation in motion”.

"Gathering the Light", Taoist meditation from *The Secret of the Golden Flower*

"The *Guanzi* essay 'Neiye' 內業 (Inward training) is the oldest received writing on the subject of the cultivation of vapor and meditation techniques. The essay was probably composed at the Jixia Academy in Qi in the late fourth century B.C."[129]

Often Taoist Internal martial arts, especially T'ai chi ch'uan are thought of as moving meditation. A common phrase being, "movement in stillness" referring to energetic movement in passive Qigong and seated Taoist meditation; with the converse being "stillness in movement", a state of mental calm and meditation in the tai chi form.

In a form of meditation using visualization, such as Chinese Qigong, the practitioner concentrates on flows of energy (Qi) in the body, starting in the abdomen and then circulating through the body, until dispersed.[69]

Other

Jiddu Krishnamurti

Indian-born philosopher Jiddu Krishnamurti used the term "meditation" to mean something entirely different from the practice of any system or method to control the mind, or to consciously achieve a specific goal or state:

> Man, in order to escape his conflicts, has invented many forms of meditation. These have been based on desire, will, and the urge for achievement, and imply conflict and a struggle to arrive. This conscious, deliberate striving is always within the limits of a conditioned mind, and in this there is no freedom. All effort to meditate is the denial of meditation. Meditation is the ending of thought. It is only then that there is a different dimension which is beyond time.[130]

For Krishnamurti, meditation was "choiceless awareness" in the present:

> Meditation is a state of mind which looks at everything with complete attention, totally, not just parts of it. And no one can teach you how to be attentive. If any system teaches you how to be attentive, then you are attentive to the system and that is not attention. Meditation is one of the greatest arts in life - perhaps the greatest, and one cannot possibly learn it from anybody, that is the beauty of it. It has no technique and therefore no authority. When you learn about yourself, watch yourself, watch the way you walk, how you eat, what you say, the gossip, the hate, the jealousy - if you are aware of all that in yourself, without any choice, that is part of meditation.[131]

Prayer beads

Most of the ancient religions of the world have a tradition of using some type of prayer beads as tools in devotional meditation.[132] [133] [134] Most prayer beads and Christian rosaries consist of pearls or beads linked together by a thread.[132] [133] The Roman Catholic rosary is a string of beads containing five sets with ten small beads. Each set of ten is separated by another bead. The Hindu japa mala has 108 beads, as well as those used in Jainism and Buddhist prayer beads.[135] Each bead is counted once as a person recites a mantra until the person has gone all the way around the mala, which is counted as 100, with an extra 8 there to compensate for missed beads.[135] The Muslim mishbaha has 99 beads. Specific meditations of each religion may be different.

Secular meditation

As stated by the National Center for Complementary and Alternative Medicine, a U.S. government entity within the National Institutes of Health that advocates various forms of Alternative Medicine, "Meditation may be practiced for many reasons, such as to increase calmness and physical relaxation, to improve psychological balance, to cope with illness, or to enhance overall health and well-being."[136]

A collective meditation in Sri Lanka

Herbert Benson of Harvard Medical School conducted a series of clinical tests on meditators from various disciplines, including the Transcendental Meditation technique and Tibetan Buddhism. In 1975, Benson published a book titled *The Relaxation Response* where he outlined his own version of meditation for relaxation.[137]

Biofeedback has been used by many researchers since the 1950s in an effort to enter deeper states of mind.[138]

Mindfulness

Over the past 20 years, mindfulness-based programs have become increasingly important to Westerners and in the Western medical and psychological community as a means of helping people, whether they be clinically sick or healthy.[139] Jon Kabat-Zinn, who founded the Mindfulness-Based Stress Reduction program in 1979, has defined mindfulness as 'moment to moment non-judgmental awareness.'[140] :626 Several methods are used during time set aside specifically for mindfulness meditation, such as body scan techniques or letting thought arise and pass, and also during our daily lives, such as being aware of the taste and texture of the food that we eat.[141] Scientifically demonstrated benefits of mindfulness practice include an increase in the body's ability to heal and a shift from a tendency to use the right prefrontal cortex to a tendency to use the left prefrontal cortex, associated with a trend away from depression and anxiety and towards happiness, relaxation, and emotional balance.[142]

Jacobson's Progressive Muscle Relaxation was developed by American physician Edmund Jacobson in the early 1920s. In this practice one tenses and then relaxes muscle groups in a sequential pattern whilst concentrating on how they feel. The method has been seen to help people with many conditions especially extreme anxiety.[143]

Modern cross-cultural dissemination

Methods of meditation have been cross-culturally disseminated at various times throughout history, such as Buddhism going to East Asia, and Sufi practices going to many Islamic societies. Of special relevance to the modern world is the dissemination of meditative practices since the late 19th century, accompanying increased travel and communication among cultures worldwide. Most prominent has been the transmission of numerous Asian-derived practices to the West. In addition, interest in some Western-based meditative practices has also been revived,[144] and these have been disseminated to a limited extent to Asian countries.[145]

Ideas about Eastern meditation had begun "seeping into American popular culture even before the American Revolution through the various sects of European occult Christianity,"[56] :3 and such ideas "came pouring in [to America] during the era of the transcendentalists, especially between the 1840s and the 1880s."[56] :3 But

> The World Parliament of Religions, held in Chicago in 1893, was the landmark event that increased Western awareness of meditation. This was the first time that Western audiences on American soil received Asian spiritual teachings from Asians themselves. Thereafter, Swami Vivekananda... [founded] various Vedanta ashrams... Anagarika Dharmapala lectured at Harvard on Theravada Buddhist meditation in 1904; Abdul Baha ... [toured] the US teaching the principles of Bahai, and Soyen Shaku toured in 1907 teaching Zen...[56] :4

More recently, in the 1960s, another surge in Western interest in meditative practices began. Observers have suggested many types of explanations for this interest in Eastern meditation and revived Western contemplation. Thomas Keating, a founder of Contemplative Outreach, wrote that "the rush to the East is a symptom of what is lacking in the West. There is a deep spiritual hunger that is not being satisfied in the West."[146] :31 Daniel Goleman, a scholar of meditation, suggested that the shift in interest from "established religions" to meditative practices "is caused by the scarcity of the personal experience of these [meditation-derived] transcendental states - the living spirit at the common core of all religions."[16] :xxiv

Another suggested contributing factor is the rise of communist political power in Asia, which, "set the stage for an influx of Asian spiritual teachers to the West,"[56] :7 oftentimes as refugees.[147]

Western context

In the late 19th century, Theosophists adopted the word "meditation" to refer to various spiritual practices drawn from Hinduism, Buddhism, Sikhism and other Indian religions. Thus the English word "meditation" does not exclusively translate to any single term or concept, and can be used to translate words such as the Sanskrit *dhāraṇā*, *dhyana*, *samadhi* and *bhavana*.

Meditating in Madison Square Park, New York City

Meditation may be for a religious purpose, but even before being brought to the West it was used in secular contexts. Beginning with the Theosophists meditation has been employed in the West by a number of religious and spiritual movements, such as Yoga, New Age and the New Thought movement.

Meditation techniques have also been used by Western theories of counseling and psychotherapy. Relaxation training works toward achieving mental and muscle relaxation to reduce daily stresses. Jacobson is credited with developing the initial progressive relaxation procedure. These techniques are used in conjunction with other behavioral techniques. Originally used with systematic desensitization, relaxation techniques are now used with other clinical problems. Meditation, hypnosis and biofeedback-induced relaxation are a few of the techniques used with relaxation training. One of the eight essential phases of EMDR (developed by Francine Shapiro), bringing adequate closure to the end of each session, also entails the use of relaxation techniques, including meditation. Multimodal therapy, a technically eclectic approach to behavioral therapy, also employs the use of meditation as a technique used in individual therapy.[148]

From the point of view of psychology and physiology, meditation can induce an altered state of consciousness.[149] Such altered states of consciousness may correspond to altered neuro-physiologic states.[150]

Meditation, religion, and drugs

Many traditions in which meditation is practiced, such as Transcendental Meditation,[151] Buddhism,[152] Hinduism,[153] and other religions, advise members not to consume intoxicants, while others, such as the Rastafarian movements and Native American Church, view drugs as integral to their religious lifestyle.

The fourth of the five precepts of the Pancasila, the ethical code in the Theravada and Mahayana Buddhist traditions, states that adherents must not ingest, "intoxicating drinks and drugs causing heedlessness."

On the other hand, the ingestion of psychoactives has been a central feature in the rituals of many religions, in order to produce altered states of consciousness. In several traditional shamanistic ceremonies, drugs are used as agents of ritual. In the Rastafari movement, cannabis is believed to be a gift from Jah and a sacred herb to be used regularly, while alcohol is considered to debase man. Bob Marley 'meditated' daily on his long hammock in a corridor-like room with wooden floor and shutters. Salvia divinorum had a long history of use amongst the Mazatec shamans, who used it to produce visionary states of consciousness in spiritual healing rituals.[154] Native Americans are known to use peyote, as part of religious ceremony, continuing today.[155] In India, the soma drink has a long history of use alongside prayer and sacrifice, and is mentioned in the Vedas.

During the 1960s, eastern meditation traditions and psychedelics, such as LSD, became popular in America, and it was suggested that LSD use and meditation were both means to the same spiritual/existential end.[156] Many practictioners of eastern traditions rejected this idea, including many who had tried LSD themselves. In *The Master Game*, Robert S de Ropp writes that the "door to full consciousness" can be glimpsed with the aid of substances, but to "pass beyond the door" requires yoga and meditation. Other authors, such as Rick Strassman, believe that the relationship between religious experiences reached by way of meditation and through the use of psychedelic drugs

deserves further exploration.[157] Also see Psychedelic psychotherapy.

Physical postures

Various postures are taken up in meditation. Sitting, supine, and standing postures are used. The bodily positions applied during yoga are described at the Wikipedia page Asana.

Popular in Buddhism, Jainism and Hinduism are the full-lotus, half-lotus, Burmese, and kneeling positions. Meditation is sometimes done while walking, known as kinhin, or while doing a simple task mindfully, known as samu.

Benefits of meditation

Meditation has been linked to a variety of health benefits. In a study conducted on college students by Oman, Shapiro, Thoresen, Plante, and Flinders (2008), they were able to demonstrate findings that meditation may tend to changes in the neurological process cultivating physiological health benefits. This finding was supported by an expert panel at the National Institutes of Health. The practice of meditation has also been linked with various favourable outcomes that include: “effective functioning, including academic performance, concentration, perceptual sensitivity, reaction time, memory, self control, empathy, and self esteem.”(Oman *et al.*, 2008, pg. 570) In their evaluation of the effects of two meditation-based programs they were able to conclude that meditating had stress reducing effects and cogitation, and also increased forgiveness. (Oman *et al.*, 2008)

A cross sectional survey research design study lead by Li Chuan Chu (2009), Chu demonstrated that benefits to the psychological state of the participants in the study arose from practicing meditation. Meditation enhances overall psychological health and preserves a positive attitude towards stress. (Chu, 2009)

Mindfulness Meditation has now entered the health care domain because of evidence suggesting a positive correlation between the practice and emotional and physical health. Examples of such benefits include: reduction in stress, anxiety, depression, headaches, pain, elevated blood pressure, etc. Researchers at the University of Massachusetts found that those who meditated approximately half an hour per day during an eight week period reported that at the end of the period, they were better able to act in a state of awareness and observation. Respondents also said they felt non-judgmental. (Harvard’s Women’s Health Watch, 2011)

Scientific studies

Over 1,000 publications on meditation have appeared to date. Many of the early studies lack a theoretically unified perspective, often resulting in poor methodological quality,[158] as discussed in Meditation#Definitions and scope.

A review of scientific studies identified relaxation, concentration, an altered state of awareness, a suspension of logical thought and the maintenance of a self-observing attitude as the behavioral components of meditation;[69] it is accompanied by a host of biochemical and physical changes in the body that alter metabolism, heart rate, respiration, blood pressure and brain activation.[7] [8] Meditation has been used in clinical settings as a method of stress and pain reduction. Meditation has also been studied specifically for its effects on stress.[159] [160] Despite the large number of scientific publications on meditation, its measurable effect on brain activity is still not well understood.

In June, 2007 the United States National Center for Complementary and Alternative Medicine published an independent, peer-reviewed, meta-analysis of the state of research on meditation and health outcomes.[6] The report reviewed 813 studies in five broad categories of meditation: mantra meditation, mindfulness meditation, yoga, T'ai chi and Qigong. The result was mixed. The report concluded that "firm conclusions on the effects of meditation practices in healthcare cannot be drawn based on the available evidence. However, the results analyzed from methodologically stronger research include findings sufficiently favorable to emphasize the value of further research in this field."[6] :210 More rigor in future studies was called for.[6] :v

More recent research suggests that meditation may increase attention spans. A recent randomized study published in *Psychological Science* reported that practicing meditation led to doing better on a task related to sustained attention.[161]

Popular culture

Various forms of meditation have been described in popular culture sources. In particular, science fiction stories such as Frank Herbert's *Dune*, *Star Trek*, *Artemis Fowl*, *Star Wars*, *Maskman*, *Lost Horizon* by James Hilton, and *Stargate SG-1* have featured characters who practice one form of meditation or another. Meditation also appears as overt themes in novels such as Jack Kerouac's *The Dharma Bums* and Herman Hesse's *Siddhartha*.

References

[1] Lutz et. al; Slagter, HA; Dunne, JD; Davidson, RJ (2008). "Attention regulation and monitoring in meditation". *Trends in cognitive sciences* **12** (4): 163–9. doi:10.1016/j.tics.2008.01.005. PMC 2693206. PMID 18329323. The term *meditation* refers to a broad variety of practices, ranging from techniques designed to promote relaxation to exercises performed with a more far-reaching goal such as a heightened sense of well-being. It is thus essential to be specific about the type of meditation practice under investigation. Failure to make such distinctions would be akin to the use of the word 'sport' to refer to all sports as if they were essentially the same. For example, the overly generic description of meditation as a mere relaxation technique12 becomes extremely problematic when one attends to the details of many practices (see 7 and Box 1 and Box 2)7,13,14. In contrast, here we conceptualize meditation as a family of complex emotional and attentional regulatory strategies developed for various ends, including the cultivation of well-being and emotional balance"

[2] "MacMillan Reference Encyclopedia of Buddhism", the article entitled, "Meditation"

[3] There are many different types of meditation, at least dozens, or perhaps many more: For descriptions of some of the more prominent approaches, both eastern and western, see Goleman's (1988) *Meditative Mind*, ISBN 0-87477-833-6 and Shear's (2006) *Experience of Meditation*, ISBN 9781557788573, both listed in this article's bibliography.

[4] Feuerstein, Georg. "Yoga and Meditation (Dhyana)." (http://www.santosha.com/moksha/meditation1.html) Moksha Journal. Issue 1. 2006. ISSN 1051-127X, OCLC 21878732

[5] "NCAAM, Meditation: An Introduction "Uses of Meditation for Health in the United States" (http://nccam.nih.gov/health/meditation/overview.htm#research). nccam.nih.gov. . A 2007 national Government survey that asked about CAM use in a sample of 23,393 U.S. adults found that 9.4 percent of respondents (representing more than 20 million people) had used meditation in the past 12 months—compared with 7.6 percent of respondents (representing more than 15 million people) in a similar survey conducted in 2002. The 2007 survey also asked about CAM use in a sample of 9,417 children; 1 percent (representing 725,000 children) had used meditation in the past 12 months."

[6] Ospina MB, Bond K, Karkhaneh M, *et al.* (June 2007). "Meditation practices for health: state of the research" (http://www.ahrq.gov/downloads/pub/evidence/pdf/meditation/medit.pdf) (pdf). *Evid Rep Technol Assess (Full Rep)* (155): 1–263. PMID 17764203. .

[7] A. B. Newberg & J. Iversen (2003). "The neural basis of the complex mental task of meditation: Neurotransmitter and neurochemical considerations". *Medical Hypotheses* (Elsevier) **61** (2): 282–291. doi:10.1016/S0306-9877(03)00175-0. ISSN 0306-9877. PMID 12888320.

[8] B. Rael Cahn & John Polich (2006). "Meditation states and traits: EEG, ERP, and neuroimaging studies". *Psychological Bulletin* (American Psychological Association) **132** (2): 180–211. doi:10.1037/0033-2909.132.2.180. ISSN 0033-2909. PMID 16536641.

[9] *A clinical guide to the treatment of human stress response* by George S. Everly, Jeffrey M. Lating 2002 ISBN 0306466201 pages 201-202

[10] Wilkinson, G. *Understanding Stress*, Poole, Family Doctor Publications in association with British Medical Association, p111.

[11] *An universal etymological English dictionary* 1773, London, by Nathan Bailey ISBN 1002377870. Note: from the 1773 edition on Google books, not earlier editions.

[12] *Christian spirituality: themes from the tradition* by Lawrence S. Cunningham, Keith J. Egan 1996 ISBN 0809136600 page 88

[13] *The Oblate Life* by Gervase Holdaway, 2008 ISBN 0814631762 page 115

[14] The verb root "dhyai" is listed as referring to "contemplate, meditate on" and "dhyāna" is listed as referring to "meditation; religious contemplation" on page 134 of Macdonell, Arthur Anthony (1929 (1971 reprint)). *A practical Sanskrit dictionary with transliteration, accentuation and etymological analysis throughout*. London: Oxford University Press.

[15] Mirahmadi, Sayyid Nurjan; Muhammad Nazim Adil al-Haqqani Naqshbandi, Muhammad Hisham Kabbani & Hedieh Mirahmadi (2005). *The healing power of sufi meditation* (http://www.loc.gov/catdir/toc/ecip057/2005001975.html). Fenton, MI: Naqshbandi Haqqani Sufi Order of America. ISBN 1930409265. .

[16] Goleman, Daniel (1988). *The meditative mind: The varieties of meditative experience*. New York: Tarcher. ISBN 0-87477-833-6.

[17] Jonathan Shear, ed (2006). *The experience of meditation: Experts introduce the major traditions* (http://www.loc.gov/catdir/toc/ecip066/2005037743.html). St. Paul, MN: Paragon House. ISBN 9781557788573. .

[18] Joel Stein (2003). "Just say Om" (http://www.time.com/time/magazine/article/0,9171,1005349,00.html). *Time* **162** (5): 48–56. . In the print edition (pp. 54-55), the "Through the Ages" box describes "Christian Meditation", "Cabalistic (Jewish) Meditation", "Muslim Meditation", and others.

[19] Jean L. Kristeller (2010). Ruth A. Baer & Kelly G. Wilson. ed. "Spiritual engagement as a mechanism of change in mindfulness- and acceptance-based therapies" (http://books.google.com/?id=8K41STQ06MMC&pg=PA162&dq=isbn:9781572246942+easwaran+passage&q=isbn:9781572246942 easwaran passage). *Assessing mindfulness and acceptance processes in clients: Illuminating the theory and practice of change* (Oakland, CA: New Harbinger): 152–184. ISBN 9781572246942. .. Page 161 states "In Christianity, the term 'contemplation' is parallel to the term 'meditation' as it has entered contemporary usage"

[20] *A clinical guide to the treatment of human stress response* by George S. Everly, Jeffrey M. Lating 2002 ISBN 0306466201 page 199

[21] Joseph, M. 1998, *The effect of strong religious beliefs on coping with stress* Stress Medicine. Vol 14(4), Oct 1998, 219-224.

[22] Buddhist scholar B. Alan Wallace has argued that focused attention is a basis for the practice of mindfulness. He writes that "Truly effective meditation is impossible without focused attention... the cultivation of attentional stability has been a core element of the meditative traditions throughout the centuries" (p. xi) in Wallace, B. Alan (2006). *The attention revolution: Unlocking the power of the focused mind* (http://www.loc.gov/catdir/toc/ecip065/2005037195.html). Boston: Wisdom. ISBN 0861712765. .

[23] Matt J. Rossano (2007). "Did meditating make us human?". *Cambridge Archaeological Journal* (Cambridge University Press) **17** (1): 47–58. doi:10.1017/S0959774307000054. This paper draws on various lines of evidence to argue that "Campfire rituals of focused attention created Baldwinian selection for enhanced working memory among our Homo sapiens ancestors.... this emergence was [in part] caused by a fortuitous genetic mutation that enhanced working memory capacity [and] a Baldwinian process where genetic adaptation follows somatic adaptation was the mechanism for this emergence" (p. 47).

[24] "Online Bible" (http://www.biblegateway.com/passage/?search=Joshua 1:8&version=NIV). . Retrieved November 16, 2011.

[25] "Joshua". *Wikipedia*. Wikipedia, The Free Encyclopedia.

[26] Hadot, Pierre; Arnold I. Davidson (1995) *Philosophy as a way of life* ISBN 0631180338 pages 83-84

[27] *Zen Buddhism : a History: India and China* by Heinrich Dumoulin, James W. Heisig, Paul F. Knitter 2005 ISBN 0941532895 pages 15

[28] *Zen Buddhism : a History: India and China* by Heinrich Dumoulin, James W. Heisig, Paul F. Knitter 2005 ISBN 0941532895 pages 50

[29] *Zen Buddhism : a History: Japan* by Heinrich Dumoulin, James W. Heisig, Paul F. Knitter 2005 ISBN 0941532909 page 5

[30] *Soto Zen in Medieval Japan* by William Bodiford 2008 ISBN 0824833031 page 39

[31] *The Cambridge History of Japan: Medieval Japan* by Kōzō Yamamura, John Whitney Hall 1990 ISBN 0521223547 646

[32] *Prayer: a history* by Philip Zaleski, Carol Zaleski 2005 ISBN 0618152881 page 147-149

[33] *Global Encyclopaedia of Education* by Rama Sankar Yadav & B.N. Mandal 2007 ISBN 9788182202276 page 63

[34] *Spiritual Psychology* by Akbar Husain 2006 ISBN 8182200954 page 109

[35] *An introduction to the Christian Orthodox churches* by John Binns 2002 ISBN 0521667380 page 128

[36] "Hesychasm" (http://orthodoxwiki.org/Hesychasm). *OrthodoxWiki*. . Retrieved 12 May 2010.

[37] "Mount Athos: History" (http://www.macedonian-heritage.gr/Athos/General/AthosHistory.html). *Macedonian Heritage*. . Retrieved 12 May 2010.

[38] *Christian Spirituality: A Historical Sketch* by George Lane 2005 ISBN 0829420819 page 20

[39] *Christian spirituality: themes from the tradition* by Lawrence S. Cunningham, Keith J. Egan 1996 ISBN 0809136600 page 38

[40] *The Oblate Life* by Gervase Holdaway, 2008 ISBN 0814631762 page 109

[41] *After Augustine: the meditative reader and the text* by Brian Stock 2001 ISBN 0812236025 page 105

[42] Abelson, Peter (April 1993) Schopenhauer and Buddhism (http://ccbs.ntu.edu.tw/FULLTEXT/JR-PHIL/peter2.htm). *Philosophy East and West Volume 43, Number 2,* pp. 255-278. University of Hawaii Press. Retrieved on: 12 April 2008.

[43] *Enlightenment and reform in 18th-century Europe* by Derek Edward Dawson Beales 2005 ISBN 1860649491 page 13

[44] Shakya, Tsering "Review of *Prisoners of Shangri-la* by Donald Lopez". online (http://www.buddhistethics.org/6/shakya991.htm)

[45] *A clinical guide to the treatment of human stress response* by George S. Everly, Jeffrey M. Lating 2002 ISBN 0306466201 page 200

[46] *Encyclopedia of Psychology and Religion* by David A. Leeming, Kathryn Madden, Stanton Marlan 2009 ISBN page 559

[47] Murphy, Michael. "1" (http://www.noetic.org/research/medbiblio/ch1.htm). *The Physical and Psychological Effects of Meditation: Scientific Studies of Contemplative Experience: An Overview*. .

[48] Roger Walsh & Shauna L. Shapiro (2006). "The meeting of meditative disciplines and western psychology: A mutually enriching dialogue". *American Psychologist* (American Psychological Association) **61** (3): 227–239. doi:10.1037/0003-066X.61.3.227. ISSN 0003-066X. PMID 16594839.

[49] R. Jevning, R. K. Wallace & M. Beidebach (1992). "The physiology of meditation: A review: A wakeful hypometabolic integrated response". *Neuroscience & Biobehavioral Reviews* **16** (3): 415–424. doi:10.1016/S0149-7634(05)80210-6. PMID 1528528.

[50] Number of citations in PsycINFO: 69 for Walsh & Shapiro, 2006 (2 July 2010); 95 for Cahn & Polich, 2006 (2 July 2010); 57 for Jevning et al (1992) (3 July 2010); 103 for Goleman, 1988 (2 July 2010).

[51] Claudio Naranjo (1972, originally published 1971), in: Naranjo and Orenstein, *On the Psychology of Meditation*. New York: Viking.

[52] Kenneth Bond, Maria B. Ospina, Nicola Hooton, Liza Bialy, Donna M. Dryden, Nina Buscemi, David Shannahoff-Khalsa, Jeffrey Dusek & Linda E. Carlson (2009). "Defining a complex intervention: The development of demarcation criteria for "meditation"". *Psychology of Religion and Spirituality* (American Psychological Association) **1** (2): 129–137. doi:10.1037/a0015736. (a journal published by the American Psychological Association)

[53] Mary Carroll (2005). "Divine therapy: Teaching reflective and meditative practices". *Teaching Theology and Religion* (Wiley) **8** (4): 232–238. doi:10.1111/j.1467-9647.2005.00249.x. ISSN 1467-9647.

[54] Lutz, Dunne and Davidson, "Meditation and the Neuroscience of Consciousness: An Introduction" in *The Cambridge handbook of consciousness* by Philip David Zelazo, Morris Moscovitch, Evan Thompson, 2007 ISBN 0521857430 page 499-551 (proof copy) (http://

compassion.stanford.edu/pdf/Dunne_Ch 19 Lutz Dunne Davidson-1.pdf) (NB: pagination of published was 499-551 proof was 497-550).

[55] "John Dunne's speech" (http://ccare.stanford.edu/node/21). .

[56] Eugene Taylor (1999). Michael Murphy, Steven Donovan & Eugene Taylor. ed. "Introduction" (http://www.noetic.org/research/medbiblio/index.htm). *The physical and psychological effects of meditation: A review of contemporary research with a comprehensive bibliography 1931-1996* (Sausalito, CA: Institute of Noetic Sciences): 1–32. .

[57] Besides Lectio and Yoga, examples include Herbert Benson's (1975) *Relaxation Response* ISBN 0-380-00676-6, Jon Kabat-Zinn's (1990) *Full Catastrophe Living* ISBN 0385298978, and Eknath Easwaran's (1978) *Passage Meditation* ISBN 9781586380267

[58] This does not mean that all meditation seeks to take a person beyond *all* thought processes, only those processes that are sometimes referred to as "discursive" or "logical" (see Shapiro, 1982/1984; Bond, Ospina, et al, 2009; Appendix B, pp. 279-282 in Ospina, Bond, et al, 2007).

[59] An influential definition by Shapiro (1982; republished 1984, 2008) states that "*meditation refers to a family of techniques which have in common a conscious attempt to focus attention in a nonanalytical way and an attempt not to dwell on discursive, ruminating thought*" (p. 6, italics in original); the term "discursive thought" has long been used in Western philosophy, and is often viewed as a synonym to logical thought (Rappe, Sara (2000). *Reading neoplatonism : Non-discursive thinking in the texts of plotinus, proclus, and damascius* (http://books.google.com/?id=_DrXt-7UGkkC&printsec=frontcover&dq=isbn=9780521651585#v=onepage&q&f=false). Cambridge; New York: Cambridge University Press. ISBN 9780521651585. .).

[60] Bond, Ospina et al (2009) -- see fuller discussion elsewhere on this page -- report that 7 expert scholars who had studied different traditions of meditation agreed that an "essential" component of meditation "Involves logic relaxation: not 'to intend' to analyze the possible psychophysical effects, not 'to intend' to judge the possible results, not 'to intend' to create any type of expectation regarding the process" (p. 134, Table 4). In their final consideration, all 7 experts regarded this feature as an "essential" component of meditation; none of them regarded it as merely "important but not essential" (p. 234, Table 4). (This same result is presented in Table B1 in Ospina, Bond, et al, 2007, p. 281)

[61] Robert Ornstein (1972, originally published 1971), in: Naranjo and Orenstein, *On the Psychology of Meditation*. New York: Viking. LCCN 76149720

[62] "members were chosen on the basis of their publication record of research on the therapeutic use of meditation, their knowledge of and training in traditional or clinically developed meditation techniques, and their affiliation with universities and research centers.... Each member had specific expertise and training in at least one of the following meditation practices: kundalini yoga, Transcendental Meditation, relaxation response, mindfulness-based stress reduction, and vipassana meditation" (Bond, Ospina et al, 2009, p. 131); their views were combined using the "The Delphi technique... a method of eliciting and refining group judgments to address complex problems with a high level of uncertainty" (p. 131).

[63] The full quotation from Bond, Ospina et al (2009, p. 135) reads: "It is plausible that meditation is best thought of as a natural category of techniques best captured by 'family resemblances' (Wittgenstein, 1968) or by the related prototype model of concepts (Rosch, 1973; Rosch & Mervin, 1975)."

[64] Lutz, A., Slagter, H. Dunne, J. and Davidson, R. (8 March 2010). Attention regulation and monitoring in meditation (http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2693206/). "The term 'meditation' refers to a broad variety of practices...In order to narrow the explanandum to a more tractable scope, this article uses Buddhist contemplative techniques and their clinical secular derivatives as a paradigmatic framework (see e.g., 9,10 or 7,9 for reviews including other types of techniques, such as Yoga and Transcendental Meditation). Among the wide range of practices within the Buddhist tradition, we will further narrow this review to two common styles of meditation, FA and OM (see box 1–box 2), that are often combined, whether in a single session or over the course of practitioner's training. These styles are found with some variation in several meditation traditions, including Zen, Vipassanā and Tibetan Buddhism (e.g. 7,15,16)....The first style, FA meditation, entails voluntary focusing attention on a chosen object in a sustained fashion. The second style, OM meditation, involves non-reactively monitoring the content of experience from moment to moment, primarily as a means to recognize the nature of emotional and cognitive patterns"

[65] The full quote from Bond, Ospina et al (2009, p. 130) reads: "The differences and similarities among these techniques is often explained in the Western meditation literature in terms of the direction of mental attention (Koshikawa & Ichii, 1996; Naranjo, 1971; Orenstein, 1971): A practitioner can focus intensively on one particular object (so-called *concentrative mediation*), on all mental events that enter the field of awareness (so-called *mindfulness meditation*), or both specific focal points and the field of awareness (Orenstein, 1971)."

[66] Attention regulation and monitoring in meditation by Antoine Lutz, Heleen A. Slagter, John D. Dunne, and Richard J. Davidson online at http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2693206/

[67] Antoine Lutz, Heleen A. Slagter, John D. Dunne & Richard J. Davidson (2008). "Attention regulation and monitoring in meditation". *Trends in Cognitive Sciences* **12** (4): 163–169. doi:10.1016/j.tics.2008.01.005. PMC 2693206. PMID 18329323.

[68] Fred Travis & Jonathan Shear (2010). "Focused attention, open monitoring and automatic self-transcending: Categories to organize meditations from Vedic, Buddhist and Chinese traditions". *Consciousness and Cognition* **19** (4): 1110–8. doi:10.1016/j.concog.2010.01.007. PMID 20167507.

[69] Perez-De-Albeniz, Alberto; Jeremy Holmes (March 2000). "Meditation: concepts, effects and uses in therapy" (http://onwww.net/trancenet.org/research/2000perezdealbeniz.shtml). *International Journal of Psychotherapy* **5** (1): 49–59. doi:10.1080/13569080050020263. . Retrieved 2007-08-23.

[70] Dietrich Lehmann, P. L. Faber, Peter Achermann, Daniel Jeanmonod, Lorena R. R. Gianotti & Diego Pizzagalli (2001). "Brain sources of EEG gamma frequency during volitionally meditation-induced, altered states of consciousness, and experience of the self". *Psychiatry Research* **108** (2): 111–121. doi:10.1016/S0925-4927(01)00116-0. PMID 11738545.

[71] "Prayer, Meditation, and Fasting" (http://info.bahai.org/article-1-4-0-7.html). Bahá'í International Community. 2011. . Retrieved 2011-07-01.

[72] Smith, Peter (2000). "Meditation". *A concise encyclopedia of the Bahá'í Faith*. Oxford: Oneworld Publications. pp. 243–44. ISBN 1-85168-184-1.

[73] Smith, Peter (2000). "Prayer". *A concise encyclopedia of the Bahá'í Faith*. Oxford: Oneworld Publications. pp. 274. ISBN 1-85168-184-1.

[74] Effendi, Shoghi (1983). Hornby, Helen (Ed.). ed. *Lights of Guidance: A Bahá'í Reference File* (http://bahai-library.com/hornby_lights_guidance). Bahá'í Publishing Trust, New Delhi, India. p. 506. ISBN 81-85091-46-3. .

[75] Effendi, Shoghi (1973). *Directives from the Guardian* (http://reference.bahai.org/en/t/se/DG/dg-71.html#pg28). Hawaii Bahá'í Publishing Trust. p. 28. .

[76] For instance, Kamalashila (2003), p. 4, states that Buddhist meditation "includes any method of meditation that has Enlightenment as its *ultimate* aim." Likewise, Bodhi (1999) writes: "To arrive at the experiential realization of the truths it is necessary to take up the practice of meditation.... At the climax of such contemplation the mental eye ... shifts its focus to the unconditioned state, Nibbana...." A similar although in some ways slightly broader definition is provided by Fischer-Schreiber *et al.* (1991), p. 142: "**Meditation** – general term for a multitude of religious practices, often quite different in method, but all having the same goal: to bring the consciousness of the practitioner to a state in which he can come to an experience of 'awakening,' 'liberation,' 'enlightenment.'" Kamalashila (2003) further allows that some Buddhist meditations are "of a more preparatory nature" (p. 4).

[77] The Pāli and Sanskrit word *bhāvanā* literally means "development" as in "mental development." For the association of this term with "meditation," see Epstein (1995), p. 105; and, Fischer-Schreiber *et al.* (1991), p. 20. As an example from a well-known discourse of the Pali Canon, in "The Greater Exhortation to Rahula" (*Maha-Rahulovada Sutta*, MN 62), Ven. Sariputta tells Ven. Rahula (in Pali, based on VRI, n.d.) (http://www.tipitaka.org/romn/cscd/s0202m.mul1.xml): *ānāpānassatiṃ, rāhula, bhāvanaṃ bhāvehi.* Thanissaro (2006) (http://www.accesstoinsight.org/tipitaka/mn/mn.062.than.html) translates this as: "Rahula, develop the meditation [*bhāvana*] of mindfulness of in-&-out breathing." (Square-bracketed Pali word included based on Thanissaro, 2006, end note.)

[78] See, for example, Rhys Davids & Stede (1921-25), entry for "jhāna[1]" (http://dsal.uchicago.edu/cgi-bin/philologic/getobject.pl?c.1:1:2005.pali); Thanissaro (1997) (http://www.accesstoinsight.org/lib/authors/thanissaro/onetool.html); as well as, Kapleau (1989), p. 385, for the derivation of the word "zen" from Sanskrit "dhyāna." PTS Secretary Dr. Rupert Gethin, in describing the activities of wandering ascetics contemporaneous with the Buddha, wrote:

> "...[T]here is the cultivation of meditative and contemplative techniques aimed at producing what might, for the lack of a suitable technical term in English, be referred to as 'altered states of consciousness'. In the technical vocabulary of Indian religious texts such states come to be termed 'meditations' ([Skt.:] *dhyāna* / [Pali:] *jhāna*) or 'concentrations' (*samādhi*); the attainment of such states of consciousness was generally regarded as bringing the practitioner to deeper knowledge and experience of the nature of the world." (Gethin, 1998, p. 10.)

[79] Goldstein (2003) writes that, in regard to the Satipatthana Sutta, "there are more than fifty different practices outlined in this Sutta. The meditations that derive from these foundations of mindfulness are called *vipassana*..., and in one form or another — and by whatever name — are found in all the major Buddhist traditions" (p. 92). The forty concentrative meditation subjects refer to Visuddhimagga's oft-referenced enumeration. Regarding Tibetan visualizations, Kamalashila (2003), writes: "The Tara meditation ... is one example out of thousands of subjects for visualization meditation, each one arising out of some meditator's visionary experience of enlightened qualities, seen in the form of Buddhas and Bodhisattvas" (p. 227).

[80] Examples of contemporary school-specific "classics" include, from the Theravada tradition, Nyanaponika (1996) and, from the Zen tradition, Kapleau (1989).

[81] These definitions of *samatha* and *vipassana* are based on the "Four Kinds of Persons Sutta" (AN 4.94). This article's text is primarily based on Bodhi (2005), pp. 269-70, 440 *n.* 13. See also Thanissaro (1998d) (http://www.accesstoinsight.org/tipitaka/an/an04/an04.094.than.html).

[82] See, for instance, AN 2.30 in Bodhi (2005), pp. 267-68, and Thanissaro (1998e) (http://www.accesstoinsight.org/tipitaka/an/an02/an02.030.than.html).

[83] *The Rosary: A Path Into Prayer* by Liz Kelly 2004 ISBN 082942024X pages 79 and 86

[84] *Christian Meditation for Beginners* by Thomas Zanzig, Marilyn Kielbasa 2000, ISBN 0884893618 page 7

[85] *An introduction to Christian spirituality* by F. Antonisamy, 2000 ISBN 8171094295 pages 76-77

[86] *Christian Meditation* by Edmund P. Clowney, 1979 ISBN 1573832278 page 12

[87] *Christian Meditation* by Edmund P. Clowney, 1979 ISBN 1573832278 pages 12-13

[88] *The encyclopedia of Christianity, Volume 3* by Erwin Fahlbusch, Geoffrey William Bromiley 2003 ISBN 9004126546 page 488

[89] EWTN: [[Congregation for the Doctrine of the Faith (http://www.ewtn.com/library/curia/cdfmed.htm)] *Letter on certain aspects of Christian meditation* (in English), October 15, 1989]

[90] [[Los Angeles Times (http://articles.latimes.com/2003/feb/08/local/me-relignewage8/2)], February 8, 2003 *New Age Beliefs Aren't Christian, Vatican Finds*]

[91] [[BBC (http://news.bbc.co.uk/2/hi/europe/2722743.stm)] Feb 4, 2003 Vatican sounds New Age alert]

[92] Vatican website (http://www.vatican.va/roman_curia/pontifical_councils/interelg/documents/rc_pc_interelg_doc_20030203_press-conf-new-age_en.html)
[93] *Simple Ways to Pray* by Emilie Griffin 2005 ISBN 0742550842 page 134
[94] Alexander Wynne, The Origin of Buddhist Meditation. Routledge 2007, page 51. The earliest reference is actually in the Mokshadharma, which dates to the early Buddhist period.
[95] The Katha Upanishad describes yoga, including mediation. On meditation in this and other post-Buddhist Hindu literature see Randall Collins, The Sociology of Philosophies: A Global Theory of Intellectual Change. Harvard University Press, 2000, page 199.
[96] Flood, Gavin (1996). *An Introduction to Hinduism* (http://books.google.com/?id=KpIWhKnYmF0C&pg=PA94). Cambridge: Cambridge University Press. pp. 94–95. ISBN 0-521-43878-0. .
[97] Wheeler, Deborah (22 July 2010). "Yoga with a Christian twist" (http://www.waltonsun.com/news/christian-5144-practice-yoga.html). waltonsun.com. . Retrieved 28 November 2010.
[98] "Swami Vivekananda. Complete Works Vol 4" (http://en.wikisource.org/wiki/The_Complete_Works_of_Swami_Vivekananda/Volume_4/Lectures_and_Discourses/Meditation). .
[99] 3 Al Emran, verses 189-194; 6 Al Anaam verses 160 to 163.
[100] Dwivedi, Kedar Nath. *Review:Freedom from Self, Sufism, Meditation and Psychotherapy*. Group Analysis, vol. 22, no. 4, pp. 434-436, December 1989
[101] Nigosian, S. A. (2004). *Islam. Its History, Teaching, and Practices*. Bloomington: Indiana University Press. pp. 111. ISBN 0253343151.
[102] The Final Testament by Rashad Khalifa, Appendix 28 - Muhammad Wrote God's Revelations With His Own Hand (http://www.submission.org/quran/app28.html) submission.org. Retrieved on: January 8, 2009.
[103] Khalifa, Rashad (2001). *Quran: The Final Testament*. Universal Unity. pp. 536. ISBN 1881893057.
[104] "01.01 Traditions of shramanas" (http://www.herenow4u.net/index.php?id=66251). *Bhagwan Mahavira*. JVB, Ladnun, India. 1995. . Retrieved 2009-09-27.
[105] "1 History and Tradition". *Introduction to Jainism*. JVB, Ladnun, India. 2007.
[106] "04.04 accomplishment of sadhana" (http://www.herenow4u.net/index.php?id=66251). *Bhagwan Mahavira*. JVB, Ladnun, India. 1995. . Retrieved 2009-09-27.
[107] Ahimsa - The Science Of Peace: *by Surendra Bothra 1987*
[108] "Achraya Bhadrabahu Swami" (http://www.ejainism.com/bhadrabahuswami.html). . Retrieved 2010-07-20.
[109] *Jain Yoga* by Acharya Mahapragya 2004
[110] "Foreword". *Jain Yog*. Aadarsh Saahitya Sangh. 2004.
[111] "blessings". *Sambodhi*. Aadarsh Saahitya Sangh. 2004.
[112] "07 Yoga and Meditation (2)" (http://www.herenow4u.net/index.php?id=66251). *Introduction To Jainism*. Prakrit Bharti Academy, jaipur, India. 2006. . Retrieved 2009-09-14.
[113] "07 Yoga and Meditation (2)" (http://www.herenow4u.net/index.php?id=66251). *Introduction To Jainism*. Prakrit Bharti Academy, jaipur, India. 2006. . Retrieved 2010-07-28.
[114] *Preksha Dhyana: Yogic Exercises* (http://www.herenow4u.net/index.php?id=71578). Jain Vishva Bharati. 2007. . Retrieved 2010-07-28.
[115] "Preksha Meditation" (http://www.preksha.com/). Preksha International. . Retrieved 2010-07-26.
[116] *The history and varieties of Jewish meditation* by Mark Verman 1997 ISBN 9781568215228 page 1
[117] Jacobs, L. (1976) *Jewish Mystical Testimonies*, Jerusalem, Keter Publishing House Jerusalem Ltd.
[118] Kaplan, A. (1978) *Meditation and the Bible*, Maine, Samuel Weiser Inc, p 101.
[119] *The history and varieties of Jewish meditation* by Mark Verman 1997 ISBN 9781568215228 page 45
[120] Kaplan, A. (1982) *Meditation and Kabbalah*, Maine, Samuel Weiser, Inc.
[121] Matt, D.C. (1996) *The Essential Kabbalah: The Heart of Jewish Mysticism*, San Francisco, HarperCollins.
[122] Scholem, G. G. (1988) *Major Trends in Jewish Mysticism*, New York, Schocken Books, pp 244-286
[123] Kaplan, A. (1985) *Jewish Meditation: A Practical Guide,* New York Schocken Books.
[124] Kaplan, A. (1978) op cit p2
[125] Kaplan, (1982) op cit, p13
[126] Time Magazine, *Youth: The Hippies* Friday, Jul. 07, 1967 (http://www.time.com/time/magazine/article/0,9171,899555-1,00.html)
[127] Barnia, George (1996). religioustolerance.org *The Index of Leading Spiritual Indicators* (http://www.religioustolerance.org/newage.htm). Dallas TX: Word Publishing. religioustolerance.org.
[128] Hoopes, Aaron (2007). *Zen Yoga: A Path to Enlightenment though Breathing, Movement and Meditation*. Kodansha International. ISBN 9784770030474.
[129] Harper, Donald; Michael Loewe and Edward L. Shaughnessy (1999/2007). *The Cambridge History of Ancient China: From the Origins of Civilization to 221 BC.* (http://books.google.com/?id=cHA7Ey0-pbEC&dq=cambridge++history+of+ancient+china&printsec=frontcover&q=). Cambridge, U.K.: Cambridge University Press. pp. 880. ISBN 9780521470308. .
[130] Jiddu, Krishnamurti (2002) [Originally published 1979. New York: Harper & Row]. "Preface". *Meditations*. Blau, Evelyne ed. Boston: Shambhala Publications. Paperback. ISBN 978-1570629419.
[131] Jiddu, Krishnamurti (1975). (Reprint ed.) [Originally published 1969]. *Freedom from the Known* (http://www.jkrishnamurti.org/krishnamurti-teachings/view-context.php?tid=48&chid=56797&w="When+you+learn+about+yourself"). Lutyens, Mary ed.

HarperSanFrancisco. p. 116. ISBN 0-06-064808-2. J.Krishnamurti Online. Serial No. 237. Para. 312. Retrieved 2010-08-25.

[132] *Mysteries of the Rosary* by Stephen J. Binz 2005 ISBN 1585955191 page 3

[133] *The everything Buddhism book* by Jacky Sach 2003 ISBN 9781580628846 page 175

[134] For a general overview see *Beads of Faith: Pathways to Meditation and Spirituality Using Rosaries, Prayer Beads, and Sacred Words* by Gray Henry, Susannah Marriott 2008 ISBN 1887752951

[135] *Meditation and Mantras* by Vishnu Devananda 1999 ISBN 8120816153 pages 82-83

[136] "Meditation: An Introduction" (http://nccam.nih.gov/health/meditation/overview.htm). NCCAM. .

[137] Herbert Benson, Miriam Z. Klipper. *The Relaxation Response* (http://www.amazon.com/Relaxation-Response-M-D-Herbert-Benson/dp/0380815958/ref=sr_1_1?ie=UTF8&s=books&qid=1280405037&sr=8-1). Amazon.com. ISBN 0517091321. . Retrieved 28 November 2010.

[138] "The Healing History of EEG Biofeedback" (http://www.eaglelife.com/biofeedbackmeditation.html). Eagle Life Communications. . Retrieved March 2007.

[139] "In the last 20 years, mindfulness has become the focus of considerable attention for a large community of clinicians and, to a lesser extent, empirical psychology." - Mindfulness: A Proposed Operation Definition (http://brainimaging.waisman.wisc.edu/~perlman/0903-EmoPaper/BishopMindfulnessDefinition2004.pdf)

[140] Jon Kabat-Zinn, Elizabeth Wheeler, Timothy Light, Anne Skillings, Mark J. Scharf, Thomas G. Cropley, David Hosmer & Jeffrey D. Bernhard (1998). "Influence of a mindfulness meditation-based stress reduction intervention on rates of skin clearing in patients with moderate to severe psoriasis undergoing phototherapy (uvb) and photochemotherapy (puva)" (http://www.psychosomaticmedicine.org/cgi/content/abstract/60/5/625). *Psychosomatic Medicine* **60** (5): 625–632. ISSN 0033-3174. PMID 9773769. .

[141] Kabat-Zinn gives the body scan and food meditations in "Mindfulness for Beginners" the 2CD set, and Matthieu Ricard gives the letting thoughts arise and pass away in his 2CD set "Happiness: A Guide to Cultivating Life's Most Important Skill"

[142] "Jon Kabat-Zinn gives a Google Tech Talk about introductory mindfulness practice online" (http://www.youtube.com/watch?v=rSU8ftmmhmw). YouTube. .

[143] see Progressive muscle relaxation from where these two references were taken showing that this method reduces extreme anxiety, 1) Craske & Barlow (2006). *Worry*. Oxford University Press. p. 53. ISBN 0-19-530001-7 and 2) Chen WC; Chu H; Lu RB; Chou YH; Chen CH; Chang YC; O'Brien AP; Chou KR. (Aug 2009). "Efficacy of progressive muscle relaxation training in reducing anxiety in patients with acute schizophrenia". *Journal of Clinical Nursing* **18** (15): 2187–96. doi:10.1111/j.1365-2702.2008.02773.x. PMID 19583651.

[144] Gustave Reininger, ed (1997). *Centering prayer in daily life and ministry* (http://books.google.com/?id=xEhaEDm7jsIC&pg=PT1&dq=isbn=9780826410412+Centering+prayer+in+daily+life+and+ministry&q). New York: Continuum. ISBN 9780826410412. .

[145] The organization Contemplative Outreach (http://www.contemplativeoutreach.org/site/PageServer?pagename=community_chapters_international), which teaches Christian Centering Prayer, has chapters in non-Western locations in Malaysia, Singapore, and South Korea (accessed 5 July 2010)

[146] Keating, Thomas (1986/1997). *Open mind, open heart*. New York: Continuum. ISBN 0-8264-0696-3.

[147] Taylor (1999, p. 7) stated that "the increased Soviet influence in India, the Cultural Revolution in China, the Communist Chinese takeover of Tibet and Mongolia, and the increased political influence of Chinese Communism in Korea and Southeast Asia were key forces that collectively set the stage for an influx of Asian spiritual teachers to the West. An entirely new generation of them appeared on the American scene and they found a willing audience of devotees within the American counter-culture. Swami A.C. Bhaktivedanta Swami, Swami Satchitananda, Guru Maharaji, Kerpal Singh, Nayanaponika Thera, Swami Rama, Thich Nhat Hanh, Chogyam Trungpa, Maharishi Mahesh Yogi, Swami Muktananda, Sri Bagwan Rujneesh, Pir Viliyat Kahn, and the Karmapa were but a few of the names that found followers in the United States... [and] the most well known and influential... today remains Tenzin Gyatso, the fourteenth Dalai Lama of Tibet, winner of the Nobel Peace Prize in 1989."

[148] Corey, G. (March 2000). *Theory and practice of counseling and psychotherapy (6th ed.).*. Belmont, CA: Wadsworth Publishing Co.. pp. 550. ISBN 0534348238.

[149] Deane Shapiro "Towards an empirical understanding of meditation as an altered state of consciousness" in *Meditation, classic and contemporary perspectives* by Deane H. Shapiro, Roger N. Walsh 1984 ISBN 0202251365 page 13

[150] *New developments in consciousness research* by Vincent W. Fallio 2006 ISBN 1600212476 page 151

[151] Denise Denniston and Peter McWilliams, The TM Book: How to Enjoy the Rest of Your Life, pp. 179-180, Three Rivers Press, ISBN 0-8431-0520-8

[152] O'Brien, Barbara. "The Buddhist Precepts. An Introduction" (http://buddhism.about.com/od/theprecepts/a/preceptsintro.htm). buddhism.about.com. .

[153] Weil, Andrew (1998). *The natural mind: an investigation of drugs and the higher consciousness*. Houghton Mifflin Harcourt. pp. 68–69. ISBN 0395911567, 9780395911563.

[154] "Salvia divinorum Scotland ~ Salvia Section" (http://www.salvia-divinorum-scotland.co.uk/salvia/ethnopharmacology.htm). salvia-divinorum-scotland.co.uk. . Retrieved 28 November 2010.

[155] "PUBLIC LAW 103-344 [H.R. 4230 (http://www.nativeamericanchurch.com/law.html); October 6, 1994"]. . Retrieved 28 November 2010.

[156] "A Zen Life" a documentary film about the life of D.T. Suzuki

[157] Rick Strassman, *DMT: The Spirit Molecule: A Doctor's Revolutionary Research into the Biology of Near-Death and Mystical Experiences*, 320 pages, Park Street Press, 2001, ISBN 0-89281-927-8

[158] Lutz, Dunne and Davidson, "Meditation and the Neuroscience of Consciousness: An Introduction" in The Cambridge handbook of consciousness by Philip David Zelazo, Morris Moscovitch, Evan Thompson, 2007 ISBN 0521857430 pages 498-499

[159] Kabat-Zinn, Jon; Lipworth L, Burney R. (1985). "The clinical use of mindfulness meditation for the self-regulation of chronic pain". *Journal of Behavioral Medicine* **8** (2): 163–190. doi:10.1007/BF00845519. PMID 3897551.

[160] Davidson, Richard J.; Kabat-Zinn, Jon; Schumacher, Jessica; Rosenkrantz, Melissa; Muller, Daniel; Santorelli, Saki F.; Urbanowski, Ferris; Harrington, Anne; Bonus, Katherine; Sheridan, John F. (2003 July–August). "Alterations in brain and immune function produced by mindfulness meditation". *Psychosomatic Medicine* **65** (4): 564–570. doi:10.1097/01.PSY.0000077505.67574.E3. PMID 12883106.

[161] Katherine A. MacLean, Emilio Ferrer, Stephen R. Aichele, David A. Bridwell, Anthony P. Zanesco, Tonya L. Jacobs, Brandon G. King, Erika L. Rosenberg, Baljinder K. Sahdra, Phillip R. Shaver, Alan Wallace, George R. Mangun & Clifford D. Saron (2010). "Intensive Meditation Training Improves Perceptual Discrimination and Sustained Attention". *Psychological Science* **21** (6): 829–839. doi:10.1177/0956797610371339. ISSN 0956-7976. PMC 3132583. PMID 20483826. "Our findings suggest that training-related improvements in perception can decrease resource demands and thus improve vigilance" (p. 836). Study participants in the meditation condition practiced 5 hours per day over 3 months.

Bibliography

- Austin, James H. (1999) *Zen and the Brain: Toward an Understanding of Meditation and Consciousness*, Cambridge: MIT Press, 1999, ISBN 0-262-51109-6
- Azeemi, Khawaja Shamsuddin Azeemi (2005) *Muraqaba: The Art and Science of Sufi Meditation*. Houston: Plato, 2005, ISBN 0-9758875-4-8
- Bennett-Goleman, T. (2001) *Emotional Alchemy: How the Mind Can Heal the Heart,* Harmony Books, ISBN 0-609-60752-9
- Benson, Herbert and Miriam Z. Klipper. (2000 [1972]). The Relaxation Response. Expanded Updated edition. Harper. ISBN 0-380-81595-8
- Bond, Kenneth; Maria B. Ospina, Nicola Hooton, Liza Bialy, Donna M. Dryden, Nina Buscemi, David Shannahoff-Khalsa, Jeffrey Dusek & Linda E. Carlson (2009). "Defining a complex intervention: The development of demarcation criteria for "meditation"". *Psychology of Religion and Spirituality* (American Psychological Association) **1** (2): 129–137. doi:10.1037/a0015736. (NB: Bond, Ospina *et al.*, 2009, has substantial overlap with the full report by Ospina, Bond *et al.*, 2007, listed below. Overlap includes the first 6 authors of this paper, and the equivalence of Table 3 on p. 134 in this paper with Table B1 on p. 281 in the full report)
- Craven JL (October 1989). "Meditation and psychotherapy". *Can J Psychiatry* **34** (7): 648–53. PMID 2680046.
- Goleman, Daniel (1988). *The meditative mind: The varieties of meditative experience*. New York: Tarcher. ISBN 0-87477-833-6.
- Hayes SC, Strosahl KD, Wilson KG. (1999) *Acceptance and Commitment Therapy*. New York: Guilford Press.
- Kutz I, Borysenko JZ, Benson H (January 1985). "Meditation and psychotherapy: a rationale for the integration of dynamic psychotherapy, the relaxation response, and mindfulness meditation". *Am J Psychiatry* **142** (1): 1–8. PMID 3881049.
- Lutz, Antoine; Richard J. Davidson; *et al.* (2004). "Long-term meditators self-induce high-amplitude gamma synchrony during mental practice" (http://www.pnas.org/cgi/content/full/101/46/16369). *Proceedings of the National Academy of Sciences* **101** (November 16): 16369–73. doi:10.1073/pnas.0407401101. PMC 526201. PMID 15534199.
- Metzner R. (2005) Psychedelic, Psychoactive and Addictive Drugs and States of Consciousness. In *Mind-Altering Drugs: The Science of Subjective Experience*, Chap. 2. Mitch Earlywine, ed. Oxford: Oxford University Press.
- MirAhmadi, As Sayed Nurjan Healing Power of Sufi Meditation The Healing Power of Sufi Meditation Paperback: 180 pages Publisher: Islamic Supreme Council of America (June 30, 2005) Language: English
- Nirmalananda Giri, Swami (2007) Om Yoga: It's Theory and Practice (http://www.atmajyoti.org/med_om_yoga_download_1.asp) In-depth study of the classical meditation method of the Bhagavad Gita, Yoga Sutras of Patanjali, and the Upanishads.
- Ospina Maria B., Kenneth Bond, Mohammad Karkhaneh, Lisa Tjosvold, Ben Vandermeer, Yuanyuan Liang, Liza Bialy, Nicola Hooton, Nina Buscemi, Donna M. Dryden & Terry P. Klassen (June 2007). "Meditation practices

for health: state of the research" (http://www.ahrq.gov/downloads/pub/evidence/pdf/meditation/medit.pdf) (pdf). *Evidence Report / Technology Assessment (Full Report), prepared by the University of Alberta Evidence-based Practice Center under Contract No. 290-02-0023)* (Agency for Healthcare Research and Quality) (155): 1–263. PMID 17764203.

- Perez-De-Albeniz, Alberto & Holmes, Jeremy (2000) Meditation: Concepts, Effects And Uses In Therapy. International Journal of Psychotherapy, March 2000, Vol. 5 Issue 1, p49, 10p
- Shalif, Ilan et al. (1989) *Focusing on the Emotions of Daily Life* (http://web.archive.org/web/20080822052515/http://www.etext.org/Psychology/Shalif/emotions) (Tel-Aviv: Etext Archives, 2008)
- Shapiro, Deane H. (1982). "Overview: Clinical and physiological comparison of meditation with other self-control strategies" (http://ajp.psychiatryonline.org/cgi/content/abstract/139/3/267). *American Journal of Psychiatry* (American Psychiatric Association) **139** (3): 267–274. ISSN 0002-953X. PMID 7036760.; Reprinted as chapter 1 (pp. 5–10) in Shapiro, Deane H.; Roger N. Walsh (1984). *Meditation, classic and contemporary perspectives* (http://books.google.com/?id=2IGg9aYNeBQC&printsec=frontcover&dq=isbn=9780202362441#v=onepage&q&f=false). New York: Aldine. ISBN 0202251365. (the book was republished in 2008: ISBN 9780202362441, ISBN 0202362442)
- Shapiro DH (1992). "Adverse effects of meditation: a preliminary investigation of long-term meditators". *Int J Psychosom* **39** (1–4): 62–7. PMID 1428622.
- Shear, Jonathan, ed (2006). *The experience of meditation: Experts introduce the major traditions* (http://www.loc.gov/catdir/toc/ecip066/2005037743.html). St. Paul, MN: Paragon House. ISBN 9781557788573.
- Sogyal Rinpoche, *The Tibetan Book of Living and Dying*, ISBN 0-06-250834-2
- Smith, Fritz Frederick (1986): *Inner Bridges: A Guide to Energy Movement and Body Structure*, Humanics Ltd. Partners, ISBN 978-0-89334-086-5.
- Tart, Charles T., editor. *Altered States of Consciousness* (1969) ISBN 0-471-84560-4
- Trungpa, C. (1973) *Cutting Through Spiritual Materialism*, Shambhala South Asia Editions, Boston, Massachusetts.
- Trungpa, C. (1984) *Shambhala: The Sacred Path of the Warrior*, Shambhala Dragon Editions, Boston, Massachusetts.
- Erhard Vogel. (2001) *Journey Into Your Center*, Nataraja Publications, ISBN 1-892484-05-6
- Wenner, Melinda. "Brain Scans Reveal Why Meditation Works." LiveScience.com. 30 June 2007.

Further reading

- Ajahn Brahm, Mindfulness Bliss and Beyond. ISBN 978-0-86171-275-5
- Baba, Meher (1995). Discourses (http://www.discoursesbymeherbaba.org). Myrtle Beach, S.C.: Sheriar Foundation. ISBN 1-880619-09-1.
- Cooper, David. A. *The Art of Meditation: A Complete Guide*. ISBN 81-7992-164-6
- Easwaran, Eknath. *Meditation* (see article). ISBN 0-915132-66-4 new edition: *Passage Meditation*. ISBN 978-1-58638-026-7. *The Mantram Handbook* ISBN 978-1-58638-028-1
- Glickman, Marshall (2002) *Beyond the Breath: Extraordinary Mindfulness Through Whole-Body Vipassana. ISBN 1582900434*
- Goenka, S. N.. *Meditation Now: Inner Peace through Inner Wisdom*, ISBN 1-928706-23-1, ISBN 978-1-928706-23-6
- Hart, William. *Art of Living, Vipassana Meditation*, ISBN 0-06-063724-2, ISBN 978-0-06-063724-8
- Krishnamurti, Jiddu. *This Light in Oneself: True Meditation*, 1999, Shambhala Publications. ISBN 1-57062-442-9
- Levin, Michal. *Meditation, Path to the Deepest Self*, Dorling Kindersley, 2002. ISBN 978-0-7894-8333-1
- Long, Barry. *Meditation: A Foundation Course — A Book of Ten Lessons*. ISBN 1-899324-00-3
- Meiche, Michele. *Meditation for Everyday Living*. ISBN 0-9710374-6-9
- Monaghan, Patricia and Eleanor G. Viereck. Meditation: The Complete Guide. ISBN 1-57731-088-8

- Vethathiri Maharishi. *Yoga for Modern life*.
- Wood, Ernest. *Concentration - An Approach to Meditation.* (http://static.livingcosmos.org/ebooks/ernest-wood/ldump2/) Theosophical Publishing House 1949. ISBN 0-8356-0176-5.
- Yogananda, Paramahansa. *Autobiography of a Yogi*.
- Understanding Confucianism by Jennifer Oldstone-Moore.

External links

- Meditation (http://www.dmoz.org/Society/Religion_and_Spirituality/Meditation//) at the Open Directory Project

Yoga

Yoga (Sanskrit, Pāli: योग *yóga*) is a physical, mental, and spiritual discipline originating in ancient India.[1] [2] The goal of yoga, or of the person practicing yoga, is the attainment of a state of perfect spiritual insight and tranquility while meditating on Supersoul.[3] The word is associated with meditative practices in Hinduism, Jainism and Buddhism.[4] [5] [6]

Within Hindu philosophy, the word *yoga* is used to refer to one of the six orthodox (āstika) schools of Hindu philosophy.[7] [8] Yoga in this sense is based on the Yoga Sutras of Patanjali, and is also known as Rāja Yoga to distinguish it from later schools.[9] Patanjali's system is discussed and elaborated upon in many classical Hindu texts, and has also been influential in Buddhism and Jainism. The Bhagavad Gita introduces distinctions such as Bhakti Yoga ("yoga based on devotion"), Jnana Yoga ("yoga based on knowledge") and Karma Yoga ("yoga based on action").

Other systems of philosophy introduced in Hinduism are different forms of hatha yoga.[10] [11] [12]

The Sanskrit word *yoga* has the literal meaning of "yoke", from a root *yuj* meaning to join, to unite, or to attach. As a term for a system of abstract meditation or mental abstraction it was introduced by Patañjali in the 2nd century BCE. Someone who practices yoga or follows the yoga philosophy with a high level of commitment is called a yogi or yogini.[13]

The goals of yoga are varied and range from improving health to achieving moksha.[14] Within the Hindu monist schools of Advaita Vedanta and Shaivism, as well as in Jainism, the goal of yoga takes the form of moksha, which is liberation from all worldly suffering and the cycle of birth and death (samsara), at which point there is a realization of identity with the Supreme Brahman. In the Mahabharata, the goal of yoga is variously described as entering the world of Brahma, as Brahman, or as perceiving the Brahman or Ātman that pervades all things.[15] For the bhakti schools of Vaishnavism, *bhakti* or service to *Svayam Bhagavan* itself may be the ultimate goal of the yoga process, where the goal is to enjoy an eternal relationship with Vishnu.[16]

Terminology

Statue of Lord Shiva in Bangalore, India, performing yogic meditation in the Padmasana posture.

The Sanskrit word *yoga* has the literal meaning of "yoke", or "the act of yoking or harnessing", from a root *yuj*. A serious practitioner of Yoga (someone pursuing the higher spiritual and religious goals of Yoga) takes upon themselves a life of austere self-discipline common to nearly all forms of mystical and religious life. The practices that constitute this self-disciplined life are called in yoga *yama* and *niyama*. This self-discipline is the 'yoke' that one puts upon oneself for the purpose of attaining *moksha*. An alternative definition is that Yoga is the method of yoking, or unifying, the “lower” (egoistic) personality (those inclinations that in Hellenistic philosophy and Christianity are called passions) to the “higher” via a process of sublimation.[17] In Vedic Sanskrit, the term "yoga" besides its literal meaning, the yoking or harnessing of oxen or horses, already has a figurative sense, where it takes the general meaning of "employment, use, application, performance" (compare the figurative uses of "to harness" as in "to put something to some use"). All further developments of the sense of this word are post-Vedic. A sense of "exertion, endeavour, zeal, diligence" is found in Epic Sanskrit. The more technical sense of the term "yoga", describing a system of meditation or contemplation with the aim of the cessation of mental activity and the attaining of a "supreme state" arises with early Buddhism (5th century BC), and is adopted in Vedanta philosophy by the 4th century BC.

There are a great many compounds containing *yog* in Sanskrit, many of them unrelated to the technical or spiritual sense the word has taken in Vedanta. *Yoga* in these words takes meanings such as "union, connection, contact", or "method, application, performance", etc. For example, *guṇá-yoga* means "contact with a cord"; *cakrá-yoga* has a medical sense of "applying a splint or similar instrument by means of pulleys (in case of dislocation of the thigh)"; *candrá-yoga* has the astronomical sense of "conjunction of the moon with a constellation"; *puṃ-yoga* is a grammatical term expressing "connection or relation with a man", etc.

Many such compounds are also found in the wider field of religion. Thus, *bhakti-yoga* means "devoted attachment" in the monotheistic Bhakti movement. The term *kriyā-yoga* has a grammatical sense, meaning "connection with a verb". But the same compound is also given a technical meaning in the Yoga Sutras (2.1), designating the "practical" aspects of the philosophy, i.e. the "union with the Supreme" due to performance of duties in everyday life.

History

Before Patanjali

Prehistory

Several seals discovered at Indus Valley Civilization sites, dating to the mid 3rd millennium BC, depict figures in positions resembling a common yoga or meditation pose, showing "a form of ritual discipline, suggesting a precursor of yoga," according to archaeologist Gregory Possehl.[18] Some type of connection between the Indus Valley seals and later yoga and meditation practices is speculated upon by many scholars, though there is no conclusive evidence.[19]

Techniques for experiencing higher states of consciousness in meditation were developed by the shramanic traditions and in the Upanishadic tradition.[20] While there is no clear evidence for meditation in pre-Buddhist early Brahminic texts, there is a view that formless meditation might have originated in the Brahminic tradition. This is based on strong parallels between Upanishadic cosmological statements and the meditative goals of the two teachers of the

Buddha as recorded in early Buddhist texts.[21] As well as some less likely possibilities,[22] the view put forward is that cosmological statements in the Upanishads reflect a contemplative tradition, and it is concluded that the Nasadiya Sukta contains evidence for a contemplative tradition, even as early as the late Rg Vedic period.[21]

The Vedic Samhitas contain references to ascetics, while ascetic practices ("tapas") are referenced in the Brāhmaṇas (900 to 500 BCE), early commentaries on the Vedas.[23]

Upanishadic and Early Buddhist era

Further information: Buddhism and Hinduism#Meditation

The Buddha depicted in yogic meditation, Kamakura, Japan

The more technical linguistic sense of the term "yoga", describing a system of meditation or contemplation with the aim of the cessation of mental activity and the attaining of a "supreme state" arises with early Buddhism. In Hindu scripture, this sense of the term "yoga" first appears in the middle Upanishads, such as the Katha Upanishad (ca. 400 BCE).[24] Shvetashvatara Upanishad mentions, "When earth, water, fire, air and akasa arise, when the five attributes of the elements, mentioned in the books on yoga, become manifest then the yogi's body becomes purified by the fire of yoga and he is free from illness, old age and death." (Verse 2.12). More importantly in the following verse (2.13) it mentions, the "precursors of perfection in yoga", namely lightness and healthiness of the body, absence of desire, clear complexion, pleasantness of voice, sweet odour and slight excretions.[25]

The early Buddhist texts describe meditative practices and states that existed before the Buddha, as well as those first developed within Buddhism.[26] [27] [28] One key innovative teaching of the Buddha was that meditative absorption must be combined with liberating cognition.[29] Meditative states alone are not an end, for according to the Buddha, even the highest meditative state is not liberating. Instead of attaining a complete cessation of thought, some sort of mental activity must take place: a liberating cognition, based on the practice of mindful awareness.[30] The Buddha also departed from earlier yogic thought in discarding the early Brahminic notion of liberation at death.[31] Liberation for the Brahminic yogin was thought to be the realization at death of a nondual meditative state anticipated in life. In fact, old Brahminic metaphors for the liberation at death of the yogic adept ("becoming cool," "going out") were given a new meaning by the Buddha; their point of reference became the sage who is liberated in life.[32]

Many of the Yogic practices that came in later ages synthesized the multiple approaches seen in this era, incorporating elements from Jainism and Buddhism into the Hindu Samkhya philosophy.

Indian Antiquity

Classical Yoga as a system of contemplation with the aim of uniting the human spirit with Ishvara, the "Supreme Being" developed in early Hinduism, Buddhism and Jainism during Indian Antiquity, between the Mauryan and the Gupta era (roughly the 2nd century BCE to the 5th century CE).

Yoga Sutras of Patanjali

Yoga Sutras of Patanjali[33]		
Pada (Chapter)	English meaning	Sutras
Samadhi Pada	On being absorbed in spirit	51
Sadhana Pada	On being immersed in spirit	55
Vibhuti Pada	On supernatural abilities and gifts	56
Kaivalya Pada	On absolute freedom	34

In Hindu philosophy, Yoga is the name of one of the six orthodox philosophical schools.[34] [35] The Yoga philosophical system is closely allied with the Samkhya school.[36] The Yoga school as expounded by the sage Patanjali accepts the Samkhya psychology and metaphysics, but is more theistic than the Samkhya, as evidenced by the addition of a divine entity to the Samkhya's twenty-five elements of reality.[37] [38] The parallels between Yoga and Samkhya were so close that Max Müller says that "the two philosophies were in popular parlance distinguished from each other as Samkhya with and Samkhya without a Lord...."[39] The intimate relationship between Samkhya and Yoga is explained by Heinrich Zimmer:

> These two are regarded in India as twins, the two aspects of a single discipline. Sāṅkhya provides a basic theoretical exposition of human nature, enumerating and defining its elements, analyzing their manner of co-operation in a state of bondage ("bandha"), and describing their state of disentanglement or separation in release ("mokṣa"), while Yoga treats specifically of the dynamics of the process for the disentanglement, and outlines practical techniques for the gaining of release, or "isolation-integration" ("kaivalya").[40]

Patanjali is widely regarded as the compiler of the formal Yoga philosophy.[41] Patanjali's yoga is known as Raja yoga, which is a system for control of the mind.[42] Patanjali defines the word "yoga" in his second sutra, which is the definitional sutra for his entire work:

> योगः चित्त-वृत्ति निरोधः
> *(yogaś citta-vṛtti-nirodhaḥ)*
> - *Yoga Sutras* 1.2

This terse definition hinges on the meaning of three Sanskrit terms. I. K. Taimni translates it as "Yoga is the inhibition (*nirodhaḥ*) of the modifications (*vṛtti*) of the mind (*citta*)".[43] The use of the word *nirodhaḥ* in the opening definition of yoga is an example of the important role that Buddhist technical terminology and concepts play in the Yoga Sutra; this role suggests that Patanjali was aware of Buddhist ideas and wove them into his system.[44] Swami Vivekananda translates the sutra as "Yoga is restraining the mind-stuff (Citta) from taking various forms (Vrittis)."[45]

A sculpture of a Hindu yogi in the Birla Mandir, Delhi

Patanjali's writing also became the basis for a system referred to as "Ashtanga Yoga" ("Eight-Limbed Yoga"). This eight-limbed concept derived from the 29th Sutra of the 2nd book, and is a core characteristic of practically every Raja yoga variation taught today. The Eight Limbs are:

1. Yama (The five "abstentions"): Ahimsa (non-violence), Satya (Truth, non-lying), Asteya (non-covetousness), Brahmacharya (non-sensuality, celibacy), and Aparigraha (non-possessiveness).
2. Niyama (The five "observances"): Shaucha(purity), Santosha(contentment), Tapas (austerity), Svadhyaya (study of the Vedic scriptures to know about God and the soul), and Ishvara-Pranidhana (surrender to God).
3. Asana: Literally means "seat", and in Patanjali's Sutras refers to the seated position used for meditation.
4. Pranayama ("Suspending Breath"): *Prāna*, breath, "āyāma", to restrain or stop. Also interpreted as control of the life force.
5. Pratyahara ("Abstraction"): Withdrawal of the sense organs from external objects.
6. Dharana ("Concentration"): Fixing the attention on a single object.
7. Dhyana ("Meditation"): Intense contemplation of the nature of the object of meditation.
8. Samādhi ("Liberation"): merging consciousness with the object of meditation.

In the view of this school, the highest attainment does not reveal the experienced diversity of the world to be illusion. The everyday world is real. Furthermore, the highest attainment is the event of one of many individual selves discovering itself; there is no single universal self shared by all persons.[46]

Yoga and Samkhya

Further information: Samkhya

Patanjali systematized the conceptions of Yoga and set them forth on the background of the metaphysics of Samkhya, which he assumed with slight variations. In the early works, the Yoga principles appear along with the Samkhya ideas. Vyasa's commentary on the Yoga Sutras, also called the “Samkhyapravacanabhasya,” brings out the intimate relation between the two systems.[47]

Yoga agrees with the essential metaphysics of Samkhya, but differs from it in that while Samkhya holds that knowledge is the means of liberation, Yoga is a system of active striving, mental discipline, and dutiful action. Yoga also introduces the conception of God. Sometimes Patanjali's system is referred to as “Seshvara Samkhya” in contradistinction to Kapila's "Nirivara Samkhya." [48]

Bhagavad Gita

The Bhagavad Gita ('Song of the Lord'), uses the term "yoga" extensively in a variety of ways. In addition to an entire chapter (ch. 6) dedicated to traditional yoga practice, including meditation,[14] it introduces three prominent types of yoga:[49]

- Karma yoga: The yoga of action.
- Bhakti yoga: The yoga of devotion, note Krishna had also specified devotion itself was action similar to above.
- Jnana yoga: The yoga of knowledge.

In Chapter 2 of the Bhagavad Gita, Krishna explains to Arjuna about the essence of Yoga as practiced in daily lives:

> योगस्थ: कुरु कर्माणि सङ्गं त्यक्त्वा धनंजय ।
> सिद्ध्यसिद्ध्यो: समो भूत्वा समत्वं योग उच्यते ।।
> *(yoga-sthaḥ kuru karmani sanyugam tyaktvā dhananjay*
> *siddhy-asiddhyoḥ samo bhutvā samatvam yoga ucyate)*

- *Bhagavad Gita* 2.48

A. C. Bhaktivedanta Swami Prabhupada translates it as "Be steadfast in yoga (*yoga-sthaḥ*), O Arjuna. Perform your duty (*kuru karmani*) and abandon all attachment (*sangam*) to success or failure (*siddhy-asiddhyoḥ*). Such evenness of mind (*samatvam*) is called yoga."[50]

Madhusudana Sarasvati (b. circa 1490) divided the Gita into three sections, with the first six chapters dealing with Karma yoga, the middle six with Bhakti yoga, and the last six with Jnana (knowledge).[51] Other commentators ascribe a different 'yoga' to each chapter, delineating eighteen different yogas.[52]

Yoga and Jainism

According to "Tattvarthasutra," 2nd century CE Jain text, "Yoga," is the sum total of all the activities of mind, speech and body.[6] Umasvati calls yoga the cause of "asrava" or karmic influx [53] as well as one of the essentials—*samyak caritra*—in the path to liberation.[53] In his "Niyamasara," Acarya Kundakunda, describes *yoga bhakti*—devotion to the path to liberation—as the highest form of devotion.[54] Acarya Haribhadra and Acarya Hemacandra mention the five major vows of ascetics and 12 minor vows of laity under yoga. This has led certain Indologists like Prof. Robert J. Zydenbos to call Jainism, essentially, a system of yogic thinking that grew into a full-fledged religion.[55]

The five yamas or the constraints of the Yoga Sutras of Patanjali bear a resemblance to the five major vows of Jainism, indicating a history of strong cross-fertilization between these traditions.[56] [57]

Yogacara school

In the late phase of Indian antiquity, on the eve of the development of Classical Hinduism, the Yogacara movement arises during the Gupta period (4th to 5th centuries). Yogacara received the name as it provided a "yoga," a framework for engaging in the practices that lead to the path of the bodhisattva.[58] The Yogacara sect teaches "yoga" as a way to reach enlightenment.[59]

Middle Ages

The practice of Yoga remained in development in Classical Hinduism, and cognate techniques of meditation within Buddhism, throughout the medieval period.

Yoga in classical Jain literature

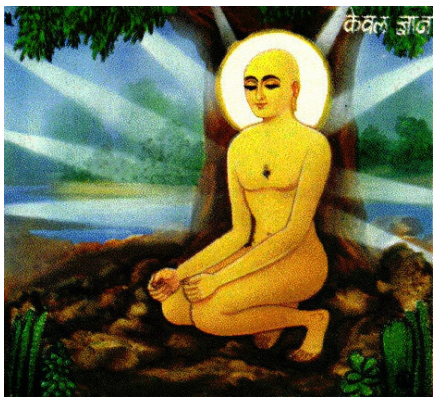
Earliest of Jain canonical literature like Acarangasutra and texts like Niyamasara, Tattvarthasutra etc. had many references on yoga as a way of life for laymen and ascetics. The later texts that further elaborated on the Jain concept of yoga are as follows:

- Pujyapada (5th century CE)
  - *Ishtopadesh*
- Acarya Haribhadra Suri(8th century CE)
  - *Yogabindu*
  - *Yogadristisamuccaya*
  - *Yogasataka*
  - *Yogavimisika*
- Acarya Joindu (8th century CE)
  - *Yogasara*
- Acarya Hemacandra (11th century CE)
  - *Yogasastra*
- Acarya Amitagati (11th century CE)
  - *Yogasaraprabhrta*

Tirthankara Parsva in Yogic meditation in the Kayotsarga posture.

Bhakti movement

The Bhakti movement was a development in medieval Hinduism advocating the concept of a personal God (or "Supreme Personality of Godhead"), initated by the Alvars of South India in the 6th to 9th centuries, and gaining influence throughout India by the 12th to 15th centuries, giving rise to sects such as Gaudiya Vaishnavism.[60] The Bhagavata Purana is an important text of the Bhakti movement within Vaishnavism. It focusses on the concept of bhakti (devotion to God) in the theological framework of Krishnaism.



Kevala Jñāna of Mahavira in "mulabandhasana" posture

The Bhagavata Purana discusses religious devotion as a kind of *yoga*, called *bhaktiyoga*. It also emphasizes *kriyāyoga*, i.e. the devotion to the deity in everday life (4.13.3).

The Bhagavata Purana is a commentary and elaboration on the Bhagavadgita, an older text of the Mahabharata epic which rose to great importance in Vaishnavism during the Bhakti movement. In the Bhagavadgita (3.3), *jñānayoga* is the acquisition of true knowledge, as opposed to *karmayoga*, the performance of the proper religious rites.

This terminology involving various *yogas* has given rise to the concept of the Four Yogas in modern Hinduism from the 1890s. These are

1. Karma Yoga
2. Bhakti Yoga
3. Raja Yoga
4. Jnana Yoga

In this usage, the term "Yoga" ceases to translate to "a system of meditation" and takes on the much more general sense of "religious path". Thus, Karma Yoga is "the Path of Action", Bhakti Yoga "the Path of Devotion" and Jnana Yoga "the Path of Knowledge", all standing alongside Raja Yoga, "the Path of Meditation" as alternative possibilities towards religious fulfillment.

Hatha Yoga

Hatha Yoga, sometimes referred to as the “psychophysical yoga",[61] is a particular system of Yoga described by Yogi Swatmarama, compiler of the Hatha Yoga Pradipika in 15th century India. Hatha Yoga differs substantially from the Raja Yoga of Patanjali in that it focuses on "shatkarma," the purification of the physical body as leading to the purification of the mind ("ha"), and "prana," or vital energy (*tha*).[62] [63] Compared to the seated asana, or sitting meditation posture, of Patanjali's Raja yoga,[64] it marks the development of *asanas* (plural) into the full body 'postures' now in popular usage [65] and, along with its many modern variations, is the style that many people associate with the word "Yoga" today.[66]

Modern history

Hindu revivalism

New schools of Yoga were introduced in the context of Hindu revivalism towards the end of the 19th century.

The physical poses of Hatha Yoga have a tradition that goes back to the 15th century, but they were not widely practiced in India prior to the early 20th century. Hatha Yoga was advocated by a number of late 19th to early 20th century gurus in India, including Sri Tirumalai Krishnamacharya in south India, Swami Sivananda in the north, Sri Yogendra in Bombay, and Swami Kuvalyananda in Lonavala.

In 1946, Paramahansa Yogananda in his *Autobiography of a Yogi* introduced the term Kriya Yoga for the tradition of Yoga transmitted by his lineage of gurus, deriving it via Yukteswar Giri and Lahiri Mahasaya from Mahavatar Babaji (fl. 1860s). Also influential in the development of modern Yoga were Tirumalai Krishnamacharya, and his disciple K. Pattabhi Jois, who introduced his style of Ashtanga Vinyasa Yoga in 1948. Most systems of Hatha Yoga which developed from the 1960s in the "yoga boom" in the West are derived from Jois' system.

Nirmala Devi

Reception in the West

A western style Hatha Yoga class.

Yoga came to the attention of an educated western public in the mid 19th century along with other topics of Hindu philosophy. The first Hindu teacher to actively advocate and disseminate aspects of Yoga to a western audience was Swami Vivekananda, who toured Europe and the United States in the 1890s.[67]

In the West, the term "yoga" is today typically associated with Hatha Yoga and its asanas (postures) or as a form of exercise.[68] In the 1960s, western interest in Hindu spirituality reached its peak, giving rise to a great number of Neo-Hindu schools specifically advocated to a western public. Among the teachers of Hatha yoga who were active in the west in this period were B.K.S. Iyengar, K. Pattabhi Jois, and Swami Vishnu-devananda, and Swami Satchidananda. [69] [70] [71] A second "yoga boom" followed in the 1980s, as Dean Ornish, a follower of Swami Satchidananda, connected yoga to heart health, legitimizing yoga as a purely physical system of health exercises outside of counter culture or esotericism circles, and unconnected to a religious denomination.[67]

Kundalini Yoga, considered an advanced form of yoga and meditation, was on the whole a secretive and misunderstood technology – it was not widely taught by any master teachers outside of India until Yogi Bhajan(Siri Singh Sahib) brought his understanding of the teachings to the United States in 1969.[72]

There has been an emergence of studies investigating yoga as a complementary intervention for cancer patients. Yoga is used for treatment of cancer patients to decrease depression, insomnia, pain, and fatigue and increase anxiety control.[73] Mindfulness Based Stress Reduction (MBSR) programs include yoga as a mind-body technique to reduce stress. A study found that after seven weeks the group treated with yoga reported significantly less mood disturbance and reduced stress compared to the control group. Another study found that MBSR had showed positive effects on sleep anxiety, quality of life, and spiritual growth.[74]

Yoga has also been studied as a treatment for schizophrenia. Yoga is found to improve cognitive functions and reduce stress in schizophrenia, a condition associated with cognitive deficits and stress-related relapse. In one study, at the end of four months those patients treated with yoga were better in their social and occupational functions and quality of life.[75]

The three main focuses of Hatha yoga (exercise, breathing, and meditation) make it beneficial to those suffering from heart disease. Overall, studies of the effects of yoga on heart disease suggest that yoga may reduce high blood pressure, improve symptoms of heart failure, enhance cardiac rehabilitation, and lower cardiovascular risk factors.[76]

Long-term yoga practitioners in the United States have reported musculoskeletal and mental health improvements, as well reduced symptoms of asthma in asthmatics.[77] Regular yoga practice increases brain GABA levels and is shown to improve mood and anxiety more than other metabolically matched exercises, such as jogging or walking.[78] Implementation of the Kundalini Yoga Lifestyle has shown to help substance abuse addicts increase their quality of life according to psychological questionnaires like the Behavior and Symptom Identification Scale and the Quality of Recovery Index.[79]

Yoga compared with other systems of meditation

Tantra

Tantrism is a practice that is supposed to alter the relation of its practitioners to the ordinary social, religious, and logical reality in which they live. Through Tantric practice, an individual perceives reality as maya, illusion, and the individual achieves liberation from it.[80] Both Tantra & Yoga offer paths that relieve a person from depending on the world. Where Yoga relies on progressive restriction of inputs from outside; Tantra relies on transmutation of all external inputs so that one is no longer dependent on them, but can take them or leave them at will. They both make a person independent.[81] This particular path to salvation among the several offered by Hinduism, links Tantrism to those practices of Indian religions, such as yoga, meditation, and social renunciation, which are based on temporary or permanent withdrawal from social relationships and modes.[80]

As Robert Svoboda attempts to summarize the three major paths of the Vedic knowledge, he exclaims:

> Because every embodied individual is composed of a body, a mind and a spirit, the ancient Rishis of India who developed the Science of Life organized their wisdom into three bodies of knowledge: Ayurveda, which deals mainly with the physical body; Yoga, which deals mainly with spirit; and Tantra, which is mainly concerned with the mind. The philosophy of all three is identical; their manifestations differ because of their differing emphases. Ayurveda is most concerned with the physical basis of life, concentrating on its harmony of mind and spirit. Yoga controls body and mind to enable them to harmonize with spirit, and Tantra seeks to use the mind to balance the demands of body and spirit.[81]

During tantric practices and studies, the student is instructed further in meditation technique, particularly chakra meditation. This is often in a limited form in comparison with the way this kind of meditation is known and used by Tantric practitioners and yogis elsewhere, but is more elaborate than the initiate's previous meditation. It is considered to be a kind of Kundalini Yoga for the purpose of moving the Goddess into the chakra located in the "heart", for meditation and worship.[82]

Buddhism

Further information: Dhyana

Even though the roots of Yoga date back to a period of time contemporaneous with early Buddhism and its interaction with Vedanta, Buddhist meditation or dhyana in the medieval period took a separate development from Yoga as laid down by Patanjali and its descendants.

Zen Buddhism

A Falun Gong practitioner depicted in yogic meditation in the Lotus position

Zen (the name of which derives from the Sanskrit "dhyaana" via the Chinese "ch'an"[83]) is a form of Mahayana Buddhism. The Mahayana school of Buddhism is noted for its proximity with Yoga.[84] In the west, Zen is often set alongside Yoga; the two schools of meditation display obvious family resemblances.[85] This phenomenon merits special attention since yogic practices have some of their roots in the Zen Buddhist school.[86] Certain essential elements of Yoga are important both for Buddhism in general and for Zen in particular.[87]

Tibetan Buddhism

Yoga is central to Tibetan Buddhism. In the Nyingma tradition, the path of meditation practice is divided into nine *yanas*, or vehicles, which are said to be increasingly profound.[88] The last six are described as "yoga yanas": "Kriya yoga," "Upa yoga," "Yoga yana," "Mahā yoga," "Anu yoga" and the ultimate practice, "Ati yoga." [89] The Sarma traditions also include Kriya, Upa (called "Charya"), and Yoga, with the Anuttara yoga class substituting for Mahayoga and Atiyoga.[90]

Other tantra yoga practices include a system of 108 bodily postures practiced with breath and heart rhythm. The Nyingma tradition also practices Yantra yoga (Tib. "Trul khor"), a discipline that includes breath work (or pranayama), meditative contemplation and precise dynamic movements to centre the practitioner.[91] The body postures of Tibetan ancient yogis are depicted on the walls of the Dalai Lama's summer temple of Lukhang. A semi-popular account of Tibetan Yoga by Chang (1993) refers to caṇḍalī (Tib. "tummo"), the generation of heat in one's own body, as being "the very foundation of the whole of Tibetan Yoga." [92] Chang also claims that Tibetan Yoga involves reconciliation of apparent polarities, such as prana and mind, relating this to theoretical implications of tantrism.

Christian meditation

Some Christians integrate yoga and other aspects of Eastern spirituality with prayer and meditation. This has been attributed to a desire to experience God in a more complete way.[93] The Roman Catholic Church, and some other Christian organizations have expressed concerns and disapproval with respect to some eastern and New Age practices that include yoga and meditation.[94] [95] [96]

In 1989 and 2003, the Vatican issued two documents: *Aspects of Christian meditation* and "A Christian reflection on the New Age," that were mostly critical of eastern and New Age practices. The 2003 document was published as a 90 page handbook detailing the Vatican's position.[97] The Vatican warned that concentration on the physical aspects of meditation "can degenerate into a cult of the body" and that equating bodily states with mysticism "could also lead to psychic disturbance and, at times, to moral deviations." Such has been compared to the early days of Christianity, when the church opposed the gnostics' belief that salvation came not through faith but through a mystical inner knowledge.[93]

The letter also says, "one can see if and how [prayer] might be enriched by meditation methods developed in other religions and cultures"[98] but maintains the idea that "there must be some fit between the nature of [other approaches to] prayer and Christian beliefs about ultimate reality."[93]

Some fundamentalist Christian organizations consider yoga to be incompatible with their religious background, considering it a part of the New Age movement inconsistent with Christianity.[99]

Sufism

The development of Sufism was considerably influenced by Indian yogic practises, where they adapted both physical postures (asanas) and breath control (pranayama).[100] The ancient Indian yogic text Amritakunda ("Pool of Nectar)" was translated into Arabic and Persian as early as the 11th century. Several other yogic texts were appropriated by Sufi tradition, but typically the texts juxtapose yoga materials alongside Sufi practices without any real attempt at integration or synthesis. Yoga became known to Indian Sufis gradually over time, but engagement with yoga is not found at the historical beginnings of the tradition.[101]

Malaysia's top Islamic body in 2008 passed a fatwa, which is legally non-binding, against Muslims practicing yoga, saying it had elements of "Hindu spiritual teachings" and that its practice was blasphemy and is therefore haraam. Muslim yoga teachers in Malaysia criticized the decision as "insulting."[102] Sisters in Islam, a women's rights group in Malaysia, also expressed disappointment and said that its members would continue with their yoga classes.[103]

The fatwa states that yoga practiced only as physical exercise is permissible, but prohibits the chanting of religious mantras,[104] and states that teachings such as the uniting of a human with God is not consistent with Islamic philosophy.[105] In a similar vein, the Council of Ulemas, an Islamic body in Indonesia, passed a fatwa banning yoga on the grounds that it contains "Hindu elements"[106] These fatwas have, in turn, been criticized by Darul Uloom Deoband, a Deobandi Islamic seminary in India.[107]

In May 2009, Turkey's head of the Directorate of Religious Affairs, Ali Bardakoğlu, discounted personal development techniques such as yoga as commercial ventures that could lead to extremism. His comments were made in the context of yoga possibly competing with and eroding participation in Islamic practice.[108]

The only sect of the Islam community that has successfully incorporated yoga into its practice is the Jogi Faqir, whose followers are Muslim converts from the Hindu Jogicaste.

References

Notes

[1] Baptiste, Sherri; Scott, Megan (2005-12-16). *Yoga with Weights for Dummies* (http://books.google.com/?id=J6tEKjkY6WYC&pg=PA325&dq=yoga+originates#v=onepage&q=yoga originates&f=false). ISBN 9780471749370. .

[2] Yogani (2010-12-01). *Advanced Yoga Practices - Easy Lessons for Ecstatic Living* (http://books.google.com/?id=pWDZorvxl1sC&pg=PA50&dq=yoga+ancient+india#v=onepage&q=yoga ancient india&f=false). ISBN 9780981925523. .

[3] For the uses of the word in Pāli literature, see Thomas William Rhys Davids, William Stede, *Pali-English dictionary.* Reprint by Motilal Banarsidass Publ., 1993, page 558: (http://books.google.com/books?id=xBgIKfTjxNMC&pg=RA1-PA558&dq=yoga+pali+term&lr=#PRA1-PA558,M1)

[4] Denise Lardner Carmody, John Carmody, *Serene Compassion.* Oxford University Press US, 1996, page 68.

[5] Stuart Ray Sarbacker, *Samādhi: The Numinous and Cessative in Indo-Tibetan Yoga.* SUNY Press, 2005, pages 1–2.

[6] Tattvarthasutra [6.1], see Manu Doshi (2007) Translation of Tattvarthasutra, Ahmedabad: Shrut Ratnakar p. 102

[7] "Yoga has five principal meanings: 1) yoga as a disciplined method for attaining a goal; 2) yoga as techniques of controlling the body and the mind; 3) yoga as a name of one of the schools or systems of philosophy (*darśana*); 4) yoga in connection with other words, such as "hatha-, mantra-, and laya-," referring to traditions specialising in particular techniques of yoga; 5) yoga as the goal of yoga practice." Jacobsen, p. 4.

[8] Monier-Williams includes "it is the second of the two Sāṃkhya systems," and "abstraction practised as a system (as taught by Patañjali and called the Yoga philosophy)" in his definitions of "yoga."

[9] Sarvepalli Radhakrishnan, Indian Philosophy, London, George Allen & Unwin Ltd., 1971 edition, Volume II, pp. 19–20.

[10] Pandit Usharbudh Arya (1985). The philosophy of hatha yoga. Himalayan Institute Press; 2nd ed.

[11] Sri Swami Rama (2008) The royal path: Practical lessons on yoga. Himalayan Institute Press; New Ed edition.

[12] Swami Prabhavananda (Translator), Christopher Isherwood (Translator), Patanjali (Author). (1996). Vedanta Press; How to know god: The yoga aphorisms of Patanjali. New Ed edition.
[13] American Heritage Dictionary: "Yogi, One who practices yoga." Websters: "Yogi, A follower of the yoga philosophy; an ascetic."
[14] Jacobsen, p. 10.
[15] Jacobsen, p. 9.
[16] "Vaishnavism" (http://concise.britannica.com/ebc/article-9381693/Vaishnavism) *Britannica Concise* "Characterized by an emphasis on bhakti, its goal is to escape the cycle of birth and death in order to enjoy the presence of Vishnu."
[17] Feuerstein, Georg. Encyclopedic Dictionary of Yoga. New York: Paragon House, 1990. Print.
[18] Possehl (2003), pp. 144–145
[19] See:

- Jonathan Mark Kenoyer describes one figure as "seated in yogic position." "Around the Indus in 90 Slides" by Jonathan Mark Kenoyer (http://www.harappa.com/indus/33.html)
- Karel Werner writes that "Archeological discoveries allow us therefore to speculate with some justification that a wide range of Yoga activities was already known to the people of pre-Aryan India." Werner, Karel (1998). *Yoga and Indian Philosophy* (http://books.google.com/?id=c6b3lH0-OekC&pg=PA103). Motilal Banarsidass Publ.. p. 103. ISBN 9788120816091. ..
- Heinrich Zimmer describes one seal as "seated like a yogi." Zimmer, Heinrich (1972). *Myths and Symbols in Indian Art and Civilization*. Princeton University Press, New Ed edition. p. 168. ISBN 978-0691017785.
- Thomas McEvilley writes that "The six mysterious Indus Valley seal images...all without exception show figures in a position known in hatha yoga as *mulabhandasana* or possibly the closely related "utkatasana" or "baddha konasana...." McEvilley, Thomas (2002). *The shape of ancient thought* (http://books.google.com/?id=Vpqr1vNWQhUC&pg=PA219). Allworth Communications. pp. 219–220. ISBN 9781581152036. .
- Dr. Farzand Masih, Punjab University Archaeology Department Chairman, describes a recently discovered seal as depicting a "yogi." Rare objects discovery points to ruins treasure (http://www.dawn.com/2007/05/08/nat7.htm)
- Gavin Flood disputes the idea regarding one of the seals, the so-called "Pashupati seal," writing that it isn't clear the figure is seated in a yoga posture, or that the shape is intended to represent a human figure. Flood, pp. 28–29.
- Geoffrey Samuel, regarding the Pashupati seal, believes that we "do not actually "know" how to interpret the figure, nor do we know what he or she represent."Samuel, Geoffrey (2008). *The Origins of Yoga and Tantra* (http://books.google.com/?id=JAvrTGrbpf4C&pg=PA4). Cambridge University Press. p. 4. ISBN 9780521695343. .

[20] Flood, pp. 94–95.
[21] Alexander Wynne, "The Origin of Buddhist Meditation." Routledge, 2007, page 51.
[22] Alexander Wynne, "The Origin of Buddhist Meditation." Routledge, 2007, page 56.
[23] Flood, p. 94.
[24] Flood, p. 95. For the date of this Upanishad see also e.g. Helmuth von Glasenapp, from the 1950 Proceedings of the "Akademie der Wissenschaften und Literatur", (http://www.accesstoinsight.org/lib/authors/vonglasenapp/wheel002.html). Some have argued that it is post-Buddhist, see for example Arvind Sharma's review of Hajime Nakamura's "A History of Early Vedanta Philosophy," Philosophy East and West, Vol. 37, No. 3 (Jul., 1987), pp. 325–331. For a comprehensive examination of the uses of the Pali word "yoga" in early Buddhist texts, see Thomas William Rhys Davids, William Stede, "Pali-English dictionary." Reprint by Motilal Banarsidass Publ., 1993, page 558: (http://books.google.com/books?id=xBgIKfTjxNMC&pg=RA1-PA558&dq=yoga+pali+term&lr=#PRA1-PA558,M1). For the use of the word in the sense of "spiritual practice" in the Dhammapada, see Gil Fronsdal, "The Dhammapada", Shambhala, 2005, pages 56, 130.
[25] Shvetashvatara Upanishad (http://www.bharatadesam.com/spiritual/upanishads/svetasvatara_upanishad.php)
[26] Alexander Wynne, "The Origin of Buddhist Meditation." Routledge, 2007, page 50.
[27] Richard Gombrich, "Theravada Buddhism: A Social History from Ancient Benares to Modern Colombo." Routledge and Kegan Paul, 1988, page 44.
[28] Barbara Stoler Miller, "Yoga: Discipline of Freedom: the Yoga Sutra Attributed to Patanjali; a Translation of the Text, with Commentary, Introduction, and Glossary of Keywords." University of California Press, 1996, page 8.
[29] Alexander Wynne, "The Origin of Buddhist Meditation." Routledge, 2007, page 73
[30] Alexander Wynne, "The Origin of Buddhist Meditation." Routledge, 2007, page 105.
[31] Alexander Wynne, "The Origin of Buddhist Meditation." Routledge, 2007, page 96.
[32] Alexander Wynne, "The Origin of Buddhist Meditation." Routledge, 2007, page 109.
[33] Stiles 2001, p. x.
[34] For an overview of the six orthodox schools, with detail on the grouping of schools, see: Radhakrishnan and Moore, "Contents," and pp. 453–487.
[35] For a brief overview of the Yoga school of philosophy see: Chatterjee and Datta, p. 43.
[36] For close connection between Yoga philosophy and Samkhya, see: Chatterjee and Datta, p. 43.
[37] For Yoga acceptance of Samkhya concepts, but with addition of a category for God, see: Radhakrishnan and Moore, p. 453.
[38] For Yoga as accepting the 25 principles of Samkhya with the addition of God, see: Chatterjee and Datta, p. 43.
[39] Müller (1899), Chapter 7, "Yoga Philosophy," p. 104.
[40] Zimmer (1951), p. 280.
[41] For Patanjali as the founder of the philosophical system called Yoga see: Chatterjee and Datta, p. 42.

[42] For "raja yoga" as a system for control of the mind and connection to Patanjali's Yoga Sutras as a key work, see: Flood (1996), pp. 96–98.
[43] For text and word-by-word translation as "Yoga is the inhibition of the modifications of the mind." See: Taimni, p. 6.
[44] Barbara Stoler Miller, "Yoga: Discipline of Freedom: the Yoga Sutra Attributed to Patanjali; a Translation of the Text, with Commentary, Introduction, and Glossary of Keywords." University of California Press, 1996, page 9.
[45] Vivekanada, p. 115.
[46] Stephen H. Phillips, "Classical Indian Metaphysics: Refutations of Realism and the Emergence of "New Logic." Open Court Publishing, 1995., pages 12–13.
[47] Radhankrishnan, Indian Philosophy, London, George Allen & Unwin Ltd., 1971 edition, Volume II, p. 342.
[48] Radhankrishnan, Indian Philosophy, London, George Allen & Unwin Ltd., 1971 edition, Volume II, p. 344.
[49] "...Bhagavad Gita, including a complete chapter (ch. 6) devoted to traditional yoga practice. The Gita also introduces the famous three kinds of yoga, 'knowledge' (jnana), 'action' (karma), and 'love' (bhakti)." Flood, p. 96.
[50] "Ch. 2.48" (http://www.asitis.com/2/48.html) *"Bhagavad-Gita As It Is" by A.C. Bhaktivedanta Swami Prabhupada, courtesy of the Bhaktivedanta Book Trust International, www.Krishna.com.*
[51] Gambhirananda, p. 16.
[52] Jacobsen, p. 46.
[53] Tattvarthasutra [6.2]
[54] Niyamasara [134-40]
[55] Zydenbos, Robert. "Jainism Today and Its Future." München: Manya Verlag, 2006. p.66
[56] Zydenbos (2006) p.66
[57] "A History of Yoga" by Vivian Worthington (1982) Routledge ISBN 071009258X p. 29. "Yoga fully acknowledges its debt to Jainism, and Jainism reciprocates by making the practice of yoga part and parcel of life." Vivian Worthington (1982) p. 35
[58] Dan Lusthaus. Buddhist Phenomenology: A Philosophical Investigation of Yogacara Buddhism and the Ch'eng Wei-shih Lun. Published 2002 (Routledge). ISBN 0700711864. pg 533
[59] Simple Tibetan Buddhism: A Guide to Tantric Living By C. Alexander Simpkins, Annellen M. Simpkins. Published 2001. Tuttle Publishing. ISBN 0804831998
[60] Cutler, Norman (1987). *Songs of Experience* (http://books.google.com/books?id=veSItWingx8C&pg=PA1). Indiana University Press. pp. 1. ISBN 9780253353344. .
[61] Raub, James A.. Psychophysiologic Effects of Hatha Yoga on Musculoskeletal and Cardiopulmonary Function: A Literature Review.
[62] Living Yoga: Creating a Life Practice – Page 42 by Christy Turlington (page 42)
[63] "Guiding Yoga's Light: Yoga Lessons for Yoga Teachers" – Page 10 by Nancy Gerstein
[64] "Mindfulness Yoga: The Awakened Union of Breath Body & Mind" – Page 6 by Frank Jude Boccio
[65] "Hatha Yoga: Its Context, Theory and Practice" by Mikel Burley (page 16)
[66] Feuerstein, Georg. (1996). "The Shambhala Guide to Yoga." Boston & London: Shambhala Publications, Inc.
[67] Shaw, Eric. *35 mOMents*, *Yoga Journal*, 2010-09.
[68] Title: A History of Modern Yoga. Author: Elizabeth De Michelis. Published: Continuum, 2005
[69] Cushman, Cushman (Jan/Feb 2000). "The New Yoga" (http://www.yogajournal.com/lifestyle/281). *Yoga Journal.com*. pp. 68. . Retrieved 05-02-2011.
[70] Silva, Mira, and Mehta, Shyam. (1995). *Yoga the Iyengar Way*, p. 9. Alfred A. Knopf, New York. ISBN 0-89381-731-7
[71] Desikachar, T. K. V. (2005). *Health, healing and beyond: Yoga and the living tradition of Krishnamacharya*, (cover jacket text). Aperture, USA. ISBN 9780893817312
[72] Congressional Honorary Resolution 521 (http://thomas.loc.gov/cgi-bin/query/z?c108:H.CON.RES.521:) US Library of Congress
[73] DeStasio, Susan A. Integrating Yoga Into Cancer Care. Clinical Journal of Oncology Nursing. Feb 2008, Volume 12 Issue 1. p125-130
[74] Smith K, Pukall C. An evidence-based review of yoga as a complementary intervention for patients with cancer. Psycho-Oncology [serial online]. May 2009;18(5):465-475.
[75] Duraiswamy, G. G., Thirthalli, J. J., Nagendra, H. R., & Gangadhar, B. N. (2007). Yoga therapy as an add-on treatment in the management of patients with schizophrenia – a randomized controlled trial. Acta Psychiatrica Scandinavica, 116(3), 226-232. doi:10.1111/j.1600-0447.2007.01032.x
[76] Yoga could be good for heart disease. Simultaneous focus on body, breathing, and mind may be just what the doctor ordered. (2010). Harvard Heart Letter: From Harvard Medical School, 21(3), 5. Retrieved from EBSCOhost.
[77] Birdee, Gurjeet S. et al. "Characteristics of Yoga Users: Results of a National Survey." Journal of General Internal Medicine. Oct 2008, Volume 23 Issue 10. p1653-1658
[78] Streeter, Chris C. et al. "Effects of Yoga Versus Walking on Mood, Anxiety, and Brain GABA Levels: A Randomized Controlled MRS Study." Journal of Alternative & Complementary Medicine. Nov 2010, Volume 16 Issue 11, p1145-115
[79] Khalsa, Sat Bir S. et al. Evaluation of a Residential Kundalini Yoga Lifestyle Pilot Program for Addiction in India. Journal of Ethnicity in Substance Abuse. 2008, Volume 7 Issue 1. p67-79
[80] Title: Mesocosm: Hinduism and the Organization of a Traditional Newar City in Nepal. Author: Robert I. Levy. Published: University of California Press, 1991. pp 313
[81] Your ayurvedic constitution: Prakruti by Robert Svoboda Motilal Banarsidass Publication,2005; ISBN 9788120818408 Google Books (http://books.google.com/books?id=gRrZvsVTSqEC)

[82] Title: Mesocosm: Hinduism and the Organization of a Traditional Newar City in Nepal. Author: Robert I. Levy. Published: University of California Press, 1991. pp 317
[83] The Buddhist Tradition in India, China, and Japan. Edited by William Theodore de Bary. Pgs. 207–208. ISBN 0-394-71696-5 – "The Meditation school, called 'Ch'an' in Chinese from the Sanskrit 'dhyāna,' is best known in the West by the Japanese pronunciation 'Zen' "
[84] *Zen Buddhism: A History (India and China)* by Heinrich Dumoulin, James W. Heisig, Paul F. Knitter (page 22)
[85] *Zen Buddhism: A History (India and China)* by Heinrich Dumoulin, James W. Heisig, Paul F. Knitter (Page xviii)
[86] "Zen Buddhism: A History (India and China)" by Heinrich Dumoulin, James W. Heisig, Paul F. Knitter (page 13). Translated by James W. Heisig, Paul F. Knitter. Contributor John McRae. Published 2005 World Wisdom. 387 pages. ISBN 0941532895 [Exact quote: "This phenomenon merits special attention since yogic roots are to be found in the Zen Buddhist school of meditation."]
[87] *Zen Buddhism: A History (India and China)* by Heinrich Dumoulin, James W. Heisig, Paul F. Knitter (page 13)
[88] *The Lion's Roar: An Introduction to Tantra* by Chogyam Trungpa. Shambhala, 2001 ISBN 1570628955
[89] "Secret of the Vajra World: The Tantric Buddhism of Tibet" by Ray, Reginald A. Shambhala: 2002. ISBN 157062917X pg 37–38
[90] "Secret of the Vajra World: The Tantric Buddhism of Tibet" by Ray, Reginald A. Shambhala: 2002. ISBN 157062917X pg 57
[91] "Yantra Yoga: The Tibetan Yoga of Movement" by Chogyal Namkhai Norbu. Snow Lion, 2008. ISBN 1559393084
[92] Chang, G.C.C. (1993). "Tibetan Yoga." New Jersey: Carol Publishing Group. ISBN 0-8065-1453-1, p.7
[93] Steinfels, Peter (1990-01-07). "Trying to Reconcile the Ways of the Vatican and the East" (http://query.nytimes.com/gst/fullpage.html?res=9C0CE1D61531F934A35752C0A966958260&sec=&spon=). *New York Times*. . Retrieved 2008-12-05.
[94] BBC News Feb 4, 2003 "Vatican sounds New Age alert" (http://news.bbc.co.uk/2/hi/europe/2722743.stm)
[95] "Catholicism in dialogue: conversations across traditions" by Wayne Teasdale 2004 ISBN 0742531783 Page 74
[96] Dr. R. Albert Mohler, Jr. "The Subtle Body – Should Christians Practice Yoga?" Accessed Jan 14 2011 (http://www.albertmohler.com/2010/09/20/the-subtle-body-should-christians-practice-yoga/)
[97] *Handbook of vocational psychology* by W. Bruce Walsh, Mark Savickas 2005 ISBN 0805845178 page 358
[98] 1989 Letter from Vatican to Bishops on Some Aspects of Christian Meditation (http://www.ewtn.com/library/curia/cdfmed.htm)
[99] Dr Ankerberg, John & Dr Weldon, John, *Encyclopedia of New Age Beliefs*, Harvest House Publishers, 1996
[100] Ernst, C. W. (2005). "Situating Sufism and Yoga". *Journal of the Royal Asiatic Society* **15**: 15. doi:10.1017/S1356186304004675.
[101] "Situating Sufism and Yoga" (http://www.unc.edu/~cernst/pdf/jras2.pdf) (PDF). . Retrieved 2010-09-05.
[102] Top Islamic body: Yoga is not for Muslims (http://www.cnn.com/2008/WORLD/asiapcf/11/22/malaysia.yoga.banned.ap/index.html) – CNN
[103] "Mixed reactions to yoga ban" (http://thestar.com.my/news/story.asp?file=/2008/11/23/nation/2625368&sec=nation). Thestar.com.my. 2008-11-23. . Retrieved 2010-09-05.
[104] " Malaysia leader: Yoga for Muslims OK without chant (http://www.google.com/hostednews/ap/article/ALeqM5gkepLWOtoRT7YiTChjyOPSjkVtzAD94MIV500)," Associated Press
[105] "Laman Web Rasmi Jabatan Kemajuan Islam Malaysia" (http://www.islam.gov.my/portal/lihat.php?jakim=3600). Islam.gov.my. . Retrieved 2010-09-05.
[106] "Indonesian clerics issue yoga ban" (http://news.bbc.co.uk/2/hi/asia-pacific/7850079.stm). *BBC News*. 2009-01-25. . Retrieved 2010-04-06.
[107] "rediff.com: Why give yoga religious connotation: Deoband" (http://specials.rediff.com/news/2009/jan/29video-islam-allows-yoga-deoband.htm). Specials.rediff.com. 2009-01-29. . Retrieved 2010-09-05.
[108] "It's OK to stretch, just don't believe" (http://www.hurriyet.com.tr/english/domestic/11692086.asp?gid=244). Hurriyet.com.tr. . Retrieved 2010-09-05.

Bibliography

- Apte, Vaman Shivram (1965). *The Practical Sanskrit Dictionary* (http://books.google.com/books?id=viCLcBdaPAEC). Delhi: Motilal Banarsidass Publishers. ISBN 81-208-0567-4. (fourth revised & enlarged edition).
- Chang, G.C.C. (1993). *Tibetan Yoga.* New Jersey: Carol Publishing Group. ISBN 0-8065-1453-1
- Chapple, Christopher.(1993) *Nonviolence to Animals, Earth, and Self in Asian Traditions* (http://books.google.com/books?id=MXrOseia6W0C). New York: SUNY Press, 1993 p. 7
- Eliade, Mircea (1958). *Yoga: Immortality and Freedom*. Princeton: Princeton University Press. ISBN 978-0691142036.
- Feuerstein, Georg (1996). *The Shambhala Guide to Yoga. 1st ed.*. Boston & London: Shambhala Publications.
- Flood, Gavin (1996). *An Introduction to Hinduism* (http://books.google.com/books?id=KpIWhKnYmF0C). Cambridge: Cambridge University Press. ISBN 0-521-43878-0.
- Gambhirananda, Swami (1998). *Madhusudana Sarasvati Bhagavad_Gita: With the annotation Gūḍhārtha Dīpikā*. Calcutta: Advaita Ashrama Publication Department. ISBN 81-7505-194-9.

- Jacobsen, Knut A. (Editor); Larson, Gerald James (Editor) (2005). *Theory And Practice of Yoga: Essays in Honour of Gerald James Larson*. Brill Academic Publishers. ISBN 9004147578. (Studies in the History of Religions, 110 | url = http://books.google.com/books?id=TDGFFNYvrokC)
- Maehle, Gregor (2006). *Ashtanga Yoga: Practice and Philosophy* (http://books.google.com/books?id=f9ygWu2xM3QC). Novato: New World Library. ISBN 978-1-57731-606-0.
- Müller, Max (1899). *Six Systems of Indian Philosophy; Samkhya and Yoga, Naya and Vaiseshika* (http://books.google.com/books?id=hiH57a0tGpcC). Calcutta: Susil Gupta (India) Ltd.. ISBN 0-7661-4296-5. Reprint edition; Originally published under the title of "The Six Systems of Indian Philosophy."
- Possehl, Gregory (2003). *The Indus Civilization: A Contemporary Perspective* (http://books.google.com/books?id=pmAuAsi4ePIC). AltaMira Press. ISBN 978-0759101722.
- Radhakrishnan, S.; Moore, CA (1967). *A Sourcebook in Indian Philosophy*. Princeton. ISBN 0-691-01958-4.
- Taimni, I. K. (1961). *The Science of Yoga*. Adyar, India: The Theosophical Publishing House. ISBN 81-7059-212-7.
- Worthington, Vivian (1982). *A History of Yoga* (http://books.google.com/books?id=5aI9AAAAIAAJ). Routledge. ISBN 071009258X.
- Zimmer, Heinrich (1951). *Philosophies of India* (http://books.google.com/books?id=bRQ5fpTmwoAC). New York, New York: Princeton University Press. ISBN 0-691-01758-1. Bollingen Series XXVI; Edited by Joseph Cambell.
- Zydenbos, Robert. *Jainism Today and Its Future*. München: Manya Verlag, 2006. p. 66

Further reading

- Baba, Meher (2000). The Path of Love (http://www.ambppct.org/meherbaba/Book_Files/POL.pdf). Myrtle Beach, S.C.: Sheriar Press. ISBN 1880619237.
- Chatterjee, Satischandra; Datta, Dhirendramohan (1984). *An Introduction to Indian Philosophy* (Eighth Reprint ed.). Calcutta: University of Calcutta. ISBN 8129111950.
- Donatelle, Rebecca J. *Health: The Basics*. 6th ed. San Francisco: Pearson Education, Inc. 2005.
- Harinanda, Swami. *Yoga and The Portal* (http://books.google.com/books?id=rpamu1q0vxEC). Jai Dee Marketing. ISBN 0978142950.
- Keay, John (2000). *India: A History* (http://books.google.com/books?id=ibLUu6RlvqwC). New York: Grove Press. ISBN 0-8021-3797-0.
- Marshall, John (1931). *Mohenjodaro and the Indus Civilization: Being an Official Account of Archaeological Excavations at Mohenjodaro Carried Out by the Government of India Between the Years 1922–27* (http://books.google.com/books?id=Tpc7FjVk0BMC). Delhi: Indological Book House.
- Michaels, Axel (2004). *Hinduism: Past and Present* (http://books.google.com/books?id=PD-flQMc1ocC). Princeton, New Jersey: Princeton University Press. ISBN 0-691-08953-1.
- Mittra, Dharma Sri. (2003). *Asanas: 608 Yoga Poses.* California: New World Library.
- Mohan, A. G. (2010). *Krishnamacharya: His Life and Teachings*. Boston: Shambhala. ISBN 978-1-59030-800-4.
- Saraswati, Swami Satyananda (2002). *Asana Pranayama Mudra Bandha*. ISBN 81-86336-14-1
- Schnäbele, Verena (2010). *Yoga in Modern Society*. Bewegungskultur, Vol. 7. Hamburg: Verlag Dr. Kovac. ISBN 978-3-8300-5096-4.
- Usharabudh, Arya Pandit. *Philosophy of Hatha Yoga.* 2nd ed. Pennsylvania: Himalayan Institute Press 1977, 1985.
- Vivekananda, Swami (1994). *Raja Yoga* (http://books.google.com/books?id=vWipfV9zHJgC). Calcutta: Advaita Ashrama Publication Department. ISBN 81-85301-16-6. 21st reprint edition.
- Weber, Hans-Jörg L. (2007). *Yogalehrende in Deutschland: eine humangeographische Studie unter besonderer Berücksichtigung von netzwerktheoretischen, bildungs- und religionsgeographischen Aspekten*. Heidelberg: University of Heidelberg. http://archiv.ub.uni-heidelberg.de/savifadok/volltexte/2008/121/

- Wood, Ernest (1959). *Yoga.* London, UK: Penguin Books

Alexander technique

The **Alexander Technique** teaches the ability to improve physical postural habits, particularly those that have become ingrained and conditioned responses. The technique is purported to improve performance, self observation and impulse control and relieve chronic stiffness, tension and stress.

The technique is named after Frederick Matthias Alexander, who, in the 1890s,[1] developed its principles as a personal tool to alleviate breathing problems and hoarseness during public speaking. He credited the technique with allowing him to pursue his passion for Shakespearean acting.

History

Alexander was a Shakespearean orator who developed voice loss during his performances. After doctors of the era informed him they could find no physical cause, Alexander reasoned that he was doing something to himself while speaking to cause his problem. His self-observation in multiple mirrors revealed that he was contracting his whole body prior to phonation in preparation for all verbal response. He developed the hypothesis that this habitual pattern of pulling the head backwards and downwards needlessly disrupted the normal working of the total postural, breathing and vocal mechanisms. After experimenting to develop his ability to stop the unnecessary and habitual contracting in his neck, he found that his problem with recurrent voice loss was resolved. While on a recital tour in New Zealand (1895) he began to realise the wider significance of head carriage for overall physical functioning. Further, Alexander observed that many individuals commonly tightened the musculature of the upper torso as he had done, in anticipation of many other activities besides speech.

Alexander believed his work could be applied to improve individual health and well being. He further refined his technique of self-observation and re-training to teach his discoveries to others. He explained his reasoning in four books published in 1918, 1923, 1931 (1932 in the UK) and 1942. He also trained teachers to teach his work from 1930 until his death in 1955. Teacher training was interrupted during World War II between 1941 and 1943, when Alexander accompanied children and teachers of the Little School to Stow, Massachusetts to join his brother. A.R. Alexander also taught his brother's technique, despite being in a wheelchair.

The Technique

The Teaching Process

F.M. Alexander's approach emphasizes the use of freedom to choose beyond conditioning in every action. The technique is applied dynamically to everyday movements, as well as actions selected by students.

Because of a change in balance, actions such as sitting, squatting, lunging or walking are often selected by the teacher. Other actions may be selected by the student, tailored to their interests or work activities such as hobbies, computer use, lifting, driving or performance in acting, sports, speech or music. Alexander teachers often use themselves as examples. They demonstrate, explain, and analyze a student's moment to moment responses as well as using mirrors, video feedback or classmate observations. Guided modeling with light hand contact is the primary tool for detecting and guiding the way past unnecessary effort. Suggestions for improvements are often student-specific.[2]

Exercise as a teaching tool is deliberately omitted because of a common mistaken assumption there exists a "correct" position. There are only two specific exercises practiced separately; the first is lying semi-supine. Resting in this way uses "mechanical advantage" as a means of releasing cumulative muscular tension. It's also a specific time to practice Alexander's principle of conscious "Directing" without "doing." The second exercise is the "Whispered Ah," which

is used to coordinate and free breathing & vocal production.

Freedom, efficiency and patience are the prescribed values. Proscribed are unnecessary effort, self-limiting habits as well as mistaken perceptual assumptions. Students are led to change their largely automatic routines that are interpreted by the teacher to currently or cumulatively be physically limiting, inefficient or not in keeping with anatomical structure. The Alexander teacher provides verbal coaching while monitoring, guiding and preventing unnecessary habits at their source with a specialized hands-on assistance. This specialized hands-on requires Alexander teachers to demonstrate on themselves the improved physical coordination they are communicating to the student.[3]

Alexander developed his own terminology to talk about his methods, outlined in his four books. These terms were created to describe the sometimes paradoxical experience of learning and substituting new improvements.

Sensory appreciation

F. M. Alexander insisted on the need for strategic reasoning and "Constructive Conscious Control" because kinesthetic sensory awareness is a relative sense, not a truthful indicator of factual bodily relationship in space. The current postural attitude is sensed internally as customarily normal, however inefficient. Alexander's term, "debauched sensory appreciation" describes how the repetition of a circumstance encourages habit design as a person adapts to circumstances or builds skills. Once trained and forgotten, completed habits may be activated without feedback sensations that these habits are in effect, just by thinking about them.[4] Short-sighted habits that have become harmfully exaggerated over time, such as restricted breathing or other habitually assumed adaptations to past circumstances, will stop after learning to perceive and prevent them.

End-gaining

Another example is the term "end-gaining". This term means to focus on a goal so as to lose sight of the "means-whereby" the goal could be most appropriately achieved. According to Alexander teachers, "end-gaining" increases the likelihood of selecting older or multiple conflicting coping strategies. End-gaining is usually carried out because an imperative priority of impatience or frustration justifies it.

Inhibition

In the Alexander technique lexicon, the principle of "inhibition" is considered by teachers to be the most important to gaining improved "use." F.M. Alexander's selection of this word pre-dates the modern meaning of the word originated by Sigmund Freud. Inhibition describes a moment of conscious awareness of a choice to interrupt, stop or entirely prevent an unnecessary habitual "misuse". As unnecessary habits are prevented or interrupted, a freer capacity and range of motion resumes, experienced by the student as a state of "non-doing" or "allowing."

Primary control

This innate coordination that emerges is also described more specifically as "Primary Control". This is a key head, neck and spinal relationship. The body's responses are determined by the qualities of head and eye movement at the inception of head motion. What expands the qualities of further bodily response is a very subtle nod forward to counteract a common backward startle pattern, coupled with an upward movement of the head away from the body that lengthens the spine. Students gradually learn to include their whole body toward their new means of initiating motion.

Directions

To continue to select and reinforce the often less dominant "good use", it is recommended to repeatedly suggest, by thinking to oneself, a tailored series of "Orders" or "Directions." "Giving Directions" is the term for thinking and projecting an anatomically ideal map of how one's body may be used effortlessly. "Directing" is suggestively thought, rather than willfully accomplished, because the physical responses to "Directing" often occur underneath one's ability to perceive. As freedom of expression or movement is the objective, the most appropriate responses cannot be anticipated, but are observed and chosen in the moment.

Psycho-physical unity

Global concepts such as "Psycho-physical Unity" and "Use" describe how thinking strategies and attention work together during preparation for action. They connote the general sequence of how intention joins together with execution to directly affect the perception of events and the outcome of intended results. [5]

Disadvantages

In the United Kingdom, there is some insurance coverage of the costs for Alexander lessons through the Complementary and Alternative Practitioners Directory. Otherwise, individuals must pay for their Alexander Technique education out of pocket. Private lessons usually cost in a similar rate compared to private music lessons, depending on the reputation and available time of the teacher.

Inexpensive classes are rarely available. Workshops do exist, but usually do not last long enough to fulfill educational requirements for most students, who must then attend additional private lessons if they want to gain proficiency. Consumers who have been sold on the benefits of instant results may hesitate giving the required commitment of twenty to forty private lessons. This is the duration most Alexander teachers recommend to gain proficiency.

Lessons may result in changes of height and posture, which call for a new wardrobe or require other costs for new ergonomic adjustments in the daily environment. Practicing the Alexander technique cannot affect skeletal deformities once they occur (such as arthritis, osteoporosis) or halt the progress of other diseases affecting movement ability, (such as Parkinson's, etc.) However, Alexander Technique can augment the ability to cope with these issues, which may be a significant help.

Benefits

The Alexander technique is used in three main ways. Originally, it was used to address the nuisance habits of actors and musicians. As remedial movement education, it teaches freedom of movement, improving specific self-imposed limitations brought about by unconscious postural habits. It offers a means of aware self-observation and holistic impulse control.

The remedial application includes alleviating pain and limitation as a result of poor posture or repetitive physical demands. The Technique improves pain management for chronic disability. It offers rehabilitation following surgery or injury where compensatory habits were designed to avoid former pain that needs to be eliminated after healing for complete recovery. The Alexander technique has been proved to be an effective treatment for chronic or recurrent back pain in a randomized study published by the British Medical Journal Aug. 19, 2008.[6]

As an example among performance art applications, the work is used and taught by classically trained vocal coaches and musicians. Its advocates claim that it allows for the free alignment of all aspects of the vocal tract by consciously increasing air flow, allowing improved vocal technique and tone. Because the technique has allegedly been used to improve breathing and stamina in general, advocates also claim that athletes, people with asthma, tuberculosis, and panic attacks have also found improvements.

It has also been informally reputed to allow height retention in older adults. Some adults gain height.

Along the application of impulse control, proponents of the technique suggest that it can eliminate stage fright, allow more spontaneity, and to expand skill repertoire. It is suggested that it can be an adjunct to psychotherapy for people with disabilities, Post-traumatic Stress Disorder, panic attacks, stuttering, and chronic pain because using its principles can improve stress management abilities.[7] [8]

Influences of Alexander's work

The English novelist Aldous Huxley was influenced by F. M. Alexander and the technique to the extent he included him as a character in the pacifist theme novel *Eyeless in Gaza*.[9]

The American philosopher and educator John Dewey became impressed with the Alexander technique after his headaches, neck pains, blurred vision, and stress symptoms largely improved during the time he used Alexander's advice to change his posture.[10] [11] In 1923, Dewey wrote the introduction to Alexander's *Constructive Conscious Control of the Individual*.[12]

Since Alexander's work in the field came at the turn of the century, his ideas influenced many originators in the field of mind-body improvement. Fritz Perls, who originated Gestalt Therapy, credited Alexander as an inspiration for his psychological work.[13] The Feldenkrais Method and the Mitzvah Technique were both influenced by the Alexander technique, in the form of study previous to the originators founding their own disciplines.

Teaching

The technique is most commonly taught privately in a series of twenty to forty private lessons which may last from thirty minutes to an hour. Its principles have also been adapted to be taught in groups and workshops. This often uses short individual lessons demonstrated in turn which act as examples to the class, along with other group activities about principles. To qualify as a teacher of Alexander Technique, completion is required of at least 1600 hours, spanning at least three years of supervised teacher training. The result must be satisfactory to qualified peers to gain membership in professional societies.[2]

Scientific evidence

In 2011, a study of postural tone concluded that the Alexander Technique alters the muscular tension along the spine and hips that supports the body against gravity, reducing stiffness in these areas.[14]

A 2008 randomised controlled trial published in the British Medical Journal found marked improvement in addressing back pain with this technique. Those receiving 24 lessons had 3 days of back pain in a four week period, 18 days less than the control median of 21 days. The cohort receiving 6 lessons had a reduction of ten days in days-of-pain reported. Outcomes were also measured by Roland disability scores, a measure of the number of activities impaired by pain, with a control baseline of 8.1. 24 lessons reduced this by 4.14 points, while six lessons combined with exercise produced a reduction of 2.98.[] A subsequent analysis and comparative study of the economic implications concluded that "a series of six lessons in Alexander technique combined with an exercise prescription seems the most effective and cost effective option for the treatment of back pain in primary care."[15]

In 2004, Maher concluded that "Physical treatments, such as acupuncture, backschool, hydrotherapy, lumbar supports, magnets, TENS, traction, ultrasound, Pilates therapy, Feldenkrais therapy, Alexander technique, and craniosacral therapy are either of unknown value or ineffective and so should not be considered" when treating lower back pain with an evidence-based approach.[16]

In 2002, Stalibrass et al. published the results of a significant controlled study into the effectiveness of the technique in treating Parkinson's disease. Four different measures were used to assess the change in severity of the disease. By all four measures, Alexander technique was better than no treatment, to a statistically significant degree (both P-values < 0.04). However, when compared to a control group given massage sessions, Alexander technique was only significantly better by two of the measures. The other two measures gave statistically insignificant improvements (P-values of approximately 0.1 and 0.6). This appears to lend some weight to the effectiveness of the technique, but more studies and data are required.[17]

In 1999, Dennis ran a controlled study of the effect of Alexander technique on the "Functional Reach" (associated with balance) of women older than 65. He observed a significant improvement in performance after 8 sessions, but this improvement was not maintained in a one-month follow-up.[18] With regard to the claims made for reducing the

need for medication in patients with asthma, Dennis concluded that additional "robust, well-designed randomized controlled trials are needed."[19] (Note that Alexander technique teachers recommend more than three times or more as many lessons than 8 to retain educational benefits.)

In 1973 Nikolaas Tinbergen referenced scientific evaluations of the Alexander technique in his Nobel prize acceptance speech.[20]

References

[1] Rootberg, Ruth (September 2007). Mandy Rees. ed. "Voice and Gender and other contemporary issues in professional voice and speech training". *Voice and Speech Review, Voice and Speech Trainers Association, Inc, Cincinnati, OH* **35** (1): 164–170.

[2] Arnold, Joan; Hope Gillerman (1997). "Frequently Asked Questions" (http://www.alexandertech.org/misc/faq.html). American Society for the Alexander Technique. . Retrieved 2007-05-02.

[3] Improvement in Automatic Postural Coordination Following Alexander Technique Lessons in a Person With Low Back Pain - W Cacciatore et al. 85 (6): 565 - Physical Therapy (http://www.ptjournal.org/cgi/content/full/85/6/565)

[4] *Body_Learning - An_Introduction to the Alexander Technique*, Macmillan, 1996 ISBN_0805042067, quote p. 74, an article in New Scientist by Professor John Basmajian entitled "Conscious Control of Single Nerve Cells"

[5] McEvenue, Kelly (2002). *The Actor and the Alexander Technique* (http://books.google.com/books?id=ixvTPRlcSMoC) (1st Palgrave Macmillan ed.). New York: Macmillan. pp. 14. ISBN 0312295154. .

[6] Paul Little et al., Randomized controlled trial of Alexander technique (AT) lessons, exercise, and massage (ATEAM) for chronic and recurrent back pain (http://www.bmj.com/cgi/content/full/337/aug19_2/a884), *British Medical Journal*, August 19, 2008.

[7] Aronson, AE (1990). *Clinical Voice Disorders: An Interdisciplinary Approach,*. Thieme Medical Publishers. ISBN 0865773378.

[8] Vigeland, C (December 2000). "The Answer to a Stress Test". *Sports Illustrated Golf Plus* **35** (1): 57.

[9] Aldous Huxley, *Eyeless in Gaza*, Harper and Brothers, 1936

[10] Ryan, Alan (1997). *John Dewey and the high tide of American liberalism*. New York: W.W. Norton. pp. 187–188. ISBN 0-393-31550-9.

[11] John Dewey vs. The Alexander Technique (http://dewey.area24.net)

[12] F. M. Alexander, *Constructive Conscious Control of the Individual*, E. P. Dutton & Co., 1923, ISBN 0-913111-11-2

[13] http://www3.interscience.wiley.com/journal/112411834/abstract?CRETRY=1&SRETRY=0 A note on the influence of F. M. Alexander on the development of gestalt therapy by Roger Tengwall, School of Social Sciences, University of California, Irvine

[14] Cacciatore, T.W.; Gurfinkel, V.S., Horak, F.B., Cordo, P.J., Ames, K.E. (1 February 2011). "Increased dynamic regulation of postural tone through Alexander Technique training". *Human Movement Science* **30** (1): 74–89. doi:10.1016/j.humov.2010.10.002.

[15] Sandra Hollinghurst et al., Randomised controlled trial of Alexander technique lessons, exercise, and massage (ATEAM) for chronic and recurrent back pain: economic evaluation (http://www.bmj.com/cgi/content/full/337/dec11_2/a2656), British Medical Journal, 11 December 2008.

[16] Maher CG (January 2004). "Effective physical treatment for chronic low back pain". *Orthop. Clin. North Am.* **35** (1): 57–64. doi:10.1016/S0030-5898(03)00088-9. PMID 15062718.

[17] Stallibrass, C; P Sissons, C Chalmers (July 2002). "Randomised Controlled Trial of the Alexander Technique for Idiopathic Parkinson's Disease" (http://www.londonalexander.co.uk/CR544[1].pdf) (PDF). *Clinical Rehabilitation* **16** (7): 695–708. doi:10.1191/0269215502cr544oa. PMID 12428818. . Retrieved 2007-05-01.

[18] Dennis, RJ (1999). "Functional reach improvement in normal older women after Alexander Technique instruction" (http://biomed.gerontologyjournals.org/cgi/content/abstract/54/1/M8). *Journals of Gerontology Series a : Biological Sciences and Medical Sciences* **54** (1): M8–11. doi:10.1093/gerona/54.1.M8. PMID 10026656. .

[19] Dennis, J; Cates, Christopher J; Dennis, Jane A (2000). "Alexander technique for chronic asthma" (http://www.cochrane.org/reviews/en/ab000995.html). *Cochrane Database of Systematic Reviews* (2): CD000995. doi:10.1002/14651858.CD000995. PMID 10796574. .

[20] http://nobelprize.org/nobel_prizes/medicine/laureates/1973/tinbergen-lecture.pdf, see p. 123

Further reading

- Alexander, FM *Man's Supreme Inheritance*, Methuen (London, 1910), revised and enlarged (New York, 1918), later editions 1941, 1946, 1957, Mouritz (UK, 1996), reprinted 2002. ISBN 0-9525574-0-1
- Alexander, FM *Constructive Conscious Control of the Individual*, Centerline Press (USA,1923), revised 1946, Mouritz (UK, 2004) ISBN 0-9543522-6-2, ISBN 978-9543522-6-4
- Alexander, FM *The Use of the Self*, E. P. Dutton (New York, 1932), republished by Orion Publishing, 2001, ISBN 0-7528-4391, ISBN 978-0752843919
- Alexander, FM *The Universal Constant In Living*, Dutton (New York, 1941), Chaterson (London, 1942), later editions 1943, 1946, Centerline Press (USA, 1941, 1986), Mouritz (UK, 2000) ISBN 091311118X, ISBN 978-0913111185, ISBN 0-9525574-4-4
- Brennan, Richard (May 1997). *The Alexander Technique Manual*. London: Connections UK. ISBN 1-85906-163-x.
- Jones, Frank Pierce (May 1997). *Freedom to Change; The Development and Science of the Alexander Technique*. London: Mouritz. ISBN 0-9525574-7-9.
- Jones, Frank Pierce (1999). ed. Theodore Dimon, Richard Brown. ed. *Collected Writings on the Alexander Technique*. Massachusetts: Alexander Technique Archives. ISBN ATBOOKS058.

External links

- Mouritz: F.M. Alexander Bibliography (http://www.mouritz.co.uk/5.01.FMA.Bibliography.html)
- The Monkey Squat (Position of Mechanical Advantage) (http://www.easyvigour.net.nz/fitness/h_monkey.htm)

Martial arts

Martial arts are extensive systems of codified practices and traditions of combat, practiced for a variety of reasons, including self-defense, competition, physical health and fitness, as well as mental and spiritual development.

The term *martial art* has become heavily associated with the fighting arts of eastern Asia, but was originally used in regard to the combat systems of Europe as early as the 1550s. An English fencing manual of 1639 used the term in reference specifically to the "Science and Art" of swordplay. The term is ultimately derived from Latin, martial arts being the "Arts of Mars," the Roman god of war.[1]

Some martial arts are considered 'traditional' and tied to an ethnic, cultural or religious background, while others are modern systems developed either by a founder or an association.

Variation and scope

Martial arts may be categorized along a variety of criteria, including:

- Traditional or historical arts and contemporary styles of folk wrestling vs. modern hybrid martial arts.
- Regional origin, especially Eastern Martial Arts vs. Western Martial Arts
- Techniques taught: Armed vs. unarmed, and within these groups by type of weapon (swordsmanship, stick fighting etc.) and by type of combat (grappling vs. striking; stand-up fighting vs. ground fighting)
- By application or intent: self-defense, combat sport, choreography or demonstration of forms, physical fitness, meditation, etc.
- Within Chinese tradition: "external" vs. "internal" styles

By technical focus

Unarmed

Unarmed martial arts can be broadly grouped into focusing on strikes, and those focusing on grappling, and in addition those combining these two fields, usually described as "hybrid".

Strikes

- Punching: Boxing (Western), Wing Chun
- Kicking: Capoeira, Kickboxing, Tae Kwon Do,
- Other strikes: Kung Fu, Muay Thai, Choi Kwang Do

Grappling

- Throwing: Glima, Judo, Sambo, Sumo
- Joint lock/Chokes/Submission holds: Aikido, Brazilian Jiu-Jitsu, Hapkido, Jujutsu, Judo
- Pinning Techniques: Judo, Shuai Jiao, Wrestling, Sambo

Weapons-based

Those traditional martial arts which train armed combat often encompass a wide spectrum of melee weapons, including bladed weapons and polearms. Such traditions include eskrima, silat, Kalarippayattu, kobudo, and historical European martial arts, especially those of the German Renaissance. Many forms of Chinese martial arts also feature weapons as part of their curriculum.

Sometimes, training with one specific weapon will be considered a style of martial arts in its own right. This is especially the case in Japanese martial arts with disciplines such as kenjutsu and kendo (sword), bojutsu (staff), and kyudo (archery). Similarly, modern Western martial arts and sports include modern fencing, stick-fighting systems like canne de combat or singlestick, and modern competitive archery.

By application or intent

Combat-oriented

Many martial arts, especially those from Asia, also teach side disciplines which pertain to medicinal practices. This is particularly prevalent in traditional Indian martial arts which may teach bone-setting, and other aspects of traditional Indian medicine.[2]

Martial arts can also be linked with religion and spirituality. Numerous systems are reputed to have been founded, disseminated, or practiced by monks or nuns.

For example, gatka is a weapon-based Indian martial art created by the Sikhs of the Punjab region of India and the Kshatriya caste of Hindus have another ancient martial art named Shastra vidhya.

Japanese styles, when concerning non-physical qualities of the combat, are strongly influenced by Zen philosophy. Concepts like "empty mind" and "beginner's mind" are recurrent. Aikido, for instance, has a strong philosophical belief of the flow of energy and peace fostering, as idealised by its founder Morihei Ueshiba.

Systema draws upon breathing and relaxation techniques, as well as elements of Russian Orthodox thought, to foster self-conscience and calmness, and to benefit the practicioner in different levels: the physical, the psychological and the spiritual.[3]

Some martial arts in various cultures can be performed in dance-like settings for various reasons, such as for evoking ferocity in preparation for battle or showing off skill in a more stylized manner. Many such martial arts incorporate music, especially strong percussive rhythms. See also war dance

History

Further information: Martial arts timeline

Historical martial arts

Further information: History of boxing and History of fencing

While evidence show that martial arts have roots in prehistory, the earliest evidence of systematic training in specific martial arts traditions emerges in antiquity (late 1st millennium BC) in both Asia and Europe.

The foundation of modern Asian martial arts is likely a blend of early Chinese and Indian martial arts. During the Warring States period of Chinese history (480-221 BC) extensive development in martial philosophy and strategy emerged, as described by Sun Tzu in *The Art of War* (c. 350 BC).[4] Legendary accounts link the origin of Shaolinquan to the spread of Buddhism from India during the early 5th century AD, with the figure of Bodhidharma, to China.[5]

Boxing was practiced in the ancient Mediterranean.

In Europe, the earliest sources of martial arts traditions date to Classical Antiquity. Boxing (*pygme*, *pyx*), Wrestling (*pale*) and Pankration were represented in the Ancient Olympic Games. The Romans produced gladiatorial combat as a public spectacle.

During the Middle Ages, the development of the cossacks as self-governing warrior communities in the current region of Ukraine and Southern Russia resulted in a accumulation of fighting skills passed through generations. Due to a wide variety of climate and enemies, these people developed versatile and fast-learning martial habilities, which are considered to be the roots of systema.[6] [7]

Systema has its roots in the combat skills of the medieval Russian warriors

A number of historical combat manuals have survived from the European Middle Ages. This includes such styles as sword and shield, two-handed swordfighting and other types of melee weapons besides unarmed combat. The most famous of these is Johannes Lichtenauer's *Fechtbuch* (Fencing book) of the 14th century, which today forms the basis of the German school of swordsmanship. Likewise, Asian martial arts become well-documented during the medieval period, Japanese martial arts beginning with the establishment of the samurai nobility in the 12th century, Chinese martial arts with Ming era treatises such as Ji Xiao Xin Shu, Indian martial arts in medieval texts such as the Agni Purana and the Malla Purana, and Korean martial arts with Joseon era texts such as Muyejebo (1598). "Historical martial arts" in both Asia and Europe are mostly based on such records of the late medieval to early modern period (15th to 17th centuries; see also Koryū).

European swordsmanship was trained for duels until the Napoleonic era, and developed into sport fencing during the 19th century. Modern boxing originates with Jack Broughton's rules in the 18th century, and reaches its present form with the Marquess of Queensberry Rules of 1867. Europe's colonization of Asian countries also brought about a decline in local martial arts, especially with the introduction of firearms. This can clearly be seen in India after the full establishment of British Raj in the 19th century.[8] Similar phenomena occurred in Southeast Asian colonies such as Malaysia, Indonesia, Vietnam and the Philippines.

Folk styles

All over the world, there are traditional styles of folk wrestling, and in some cases also stick fighting, rooted in local culture and folklore. In East and Southeast Asia, these are forms such as Korean, Khmer or Mongolian wrestling and Japanese Sumo, in South and Southwest Asia Indo-Persian Pehlwani, in Central and Western Asia Turkic (Uzbek, Tatar) styles; in Europe, there are Icelandic, Swiss and various English wrestling traditions. African folk wrestling includes the West African style of Lutte Traditionnelle.

While these arts are based on historical traditions of folklore, they are not "historical" in the sense that they reconstruct or preserve a historical system from a specific era. They are rather contemporary regional sports that coexist with the modern forms of martial arts sports as they have developed since the 19th century, often including cross-fertilization between sports and folk styles; thus, the traditional Thai style of Muay Boran developed into the modern national sport of Muay Thai, which in turn came to be practiced worldwide and contributed significantly to modern hybrid styles like kickboxing and mixed martial arts.

Modern history

Further information: Modern history of East Asian martial arts

late 19th to early 20th century

The mid to late 19th century marks the beginning of the history of martial arts as modern sports developed out of earlier traditional fighting systems. In Europe, this concerns the developments of boxing and fencing as sports. In Japan, the same period marks the formation of the modern forms of judo, jujitsu, karate, and kendo (among others) based on revivals of old schools of Edo period martial arts which had been suppressed during the Meiji Restoration. Modern Muay Thai rules date to the 1920s. In China, the modern history of martial arts begins in the Nanjing decade (1930s) following the foundation of the Central Guoshu Institute in 1928 under the Kuomintang government.

Western interest in Asian martial arts arises towards the end of the 19th century, due to the increase in trade between the United States with China and Japan. Relatively few Westerners actually practiced the arts, considering it to be mere performance. Edward William Barton-Wright, a railway engineer who had studied jujitsu while working in Japan between 1894–97, was the first man known to have taught Asian martial arts in Europe. He also founded an eclectic style named Bartitsu which combined jujutsu, judo, boxing, savate and stick fighting.

Fencing and Greco-Roman wrestling was included in the 1896 Summer Olympics. FILA Wrestling World Championships and Boxing at the Summer Olympics were introduced in 1904. The tradition of awarding championship belts in wrestling and boxing can be traced to the Lonsdale Belt, introduced in 1909.

20th century (1914 to 1989)

The International Boxing Association was established in 1920. World Fencing Championships have been held since 1921.

Brazilian Jiu-Jitsu, or Gracie Jiu-Jitsu, is an adaptation of pre–World War II judo developed by the brothers Carlos and Hélio Gracie, who restructured the art into a sport with a large focus on groundwork. Jiu-Jitsu gained fame quickly in Brazil because of the popular fights with Capoeira fighters.[9]

As Western influence grew in Asia a greater number of military personnel spent time in China, Japan, and South Korea during World War II and the Korean War and were exposed to local fighting styles. Jujutsu, judo and karate first became popular among the mainstream from the 1950s-60s. Due in part to Asian and Hollywood martial arts movies, most modern American martial arts are either Asian-derived or Asian influenced.[10] The term kickboxing (キックボクシング) was created by the Japanese boxing promoter Osamu Noguchi for a variant of Muay Thai and Karate that he created in the 1950s. American kickboxing was developed in the 1970s, as a combination of boxing and karate. Taekwondo was developed in the context of the Korean War in the 1950s.

The later 1960s and 1970s witnessed an increased media interest in the Chinese fighting systems, influenced by martial artist and Hollywood actor Bruce Lee. Jeet Kune Do, the system he founded, has its roots in Wing Chun, western boxing, savate and fencing. Bruce Lee is credited as one of the first instructors to openly teach Chinese martial arts to Westerners. World Judo Championships have been held since 1956, Judo at the Summer Olympics was introduced in 1964. Karate World Championships were introduced in 1970.

Following the "kung fu wave" in Hong Kong action cinema in the 1970s, a number of mainstream films produced during the 1980s contributed significantly to the perception of martial arts in western popular culture. These include *The Karate Kid* (1984) and *Bloodsport* (1988). This era produced some Hollywood action stars with martial arts background, such as Jean-Claude Van Damme and Chuck Norris.

Also during the 20th century, a number of martial arts systems were adapted for self-defense purposes for military hand-to-hand combat. World War II combatives, *Kapap* (1930s) and *Krav Maga* (1950s) in Israel, *Systema* (Soviet era Russia), *San Shou* (People's Republic of China). The US military de-emphasized hand-to-hand combat training during the Cold War period, but revived it with the introduction of LINE in 1989.

1990 to present

During the 1990s Brazilian Jiu-Jitsu became popular and proved to be effective in mixed martial arts competitions such as the UFC and PRIDE.[11]

The K-1 rules of kickboxing were introduced in 1993, based on 1980s Seidokaikan karate.

Jackie Chan and Jet Li are prominent movie figures who have been responsible for promoting Chinese martial arts in recent years.

With the continual discovery of "new" Medieval and Renaissance fighting manuals, the practice of Historical European Martial Arts and other Western Martial Arts are growing in popularity across the United States and Europe.

Testing and competition

Testing or evaluation is important to martial art practitioners of many disciplines who wish to determine their progression or own level of skill in specific contexts. Students within individual martial art systems often undergo periodic testing and grading by their own teacher in order to advance to a higher level of recognized achievement, such as a different belt color or title. The type of testing used varies from system to system but may include forms or sparring.

Various forms and sparring are commonly used in martial art exhibitions and tournaments. Some competitions pit practitioners of different disciplines against each other using a common set of rules, these are referred to as mixed martial arts competitions. Rules for sparring vary between art and organization but can generally be divided into *light-contact*, *medium-contact*, and *full-contact* variants, reflecting the amount of force that should be used on an opponent.

Steven Ho executing a Jump Spin Hook Kick

Light- and medium-contact

These types of sparring restrict the amount of force that may be used to hit an opponent, in the case of light sparring this is usual to 'touch' contact, e.g. a punch should be 'pulled' as soon as or before contact is made. In medium-contact (sometimes referred to as semi-contact) the punch would not be 'pulled' but not hit with full force. As the amount of force used is restricted, the aim of these types of sparring is not to knock out an opponent; a point system is used in competitions.

A referee acts to monitor for fouls and to control the match, while judges mark down scores, as in boxing. Particular targets may be prohibited , certain techniques may be forbidden (such as headbutting or groin hits), and fighters may be required to wear protective equipment on their head, hands, chest, groin, shins or feet. In grappling arts aikido uses a similar method of compliant training that is equivalent to light or medium contact.

In some styles (such as fencing and some styles of Taekwondo sparring), competitors score points based on the landing of a single technique or strike as judged by the referee, whereupon the referee will briefly stop the match, award a point, then restart the match. Alternatively, sparring may continue with the point noted by the judges. Some critics of point sparring feel that this method of training teaches habits that result in lower combat effectiveness. Lighter-contact sparring may be used exclusively, for children or in other situations when heavy contact would be inappropriate (such as beginners), medium-contact sparring is often used as training for full contact

Full-contact

Further information: Full-contact

Full-contact sparring or competition, where strikes are not pulled but thrown with full force as the name implies, has a number of tactical differences from light and medium-contact sparring. It is considered by some to be requisite in learning realistic unarmed combat.[12]

In full-contact sparring, the aim of a competitive match is either to knock out the opponent or to force the opponent to submit. Where scoring takes place it may be a subsidiary measure, only used if no clear winner has been established by other means; in some competitions, such as the UFC 1, there was no scoring, though most now use some form of judging as a backup.[13] Due to these factors, full-contact matches tend to be more aggressive in character, but rule sets may still mandate the use of protective equipment, or limit the techniques allowed.

Nearly all mixed martial arts organizations such as UFC, Pancrase, Shooto use a form of full-contact rules, as do professional boxing organizations and K-1. Kyokushin karate requires advanced practitioners to engage in bare-knuckled, full-contact sparring while wearing only a karate *gi* and groin protector but does not allow punches to the face, only kicks and knees. Brazilian Jiu-Jitsu and judo matches do not allow striking, but are full-contact in the sense that full force is applied in the permitted grappling and submission techniques.

Martial Sport

Martial arts have crossed over into sports when forms of sparring become competitive, becoming a sport in its own right that is dissociated from the original combative origin, such as with western fencing. The Summer Olympic Games includes JuDo, TaeKwonDo, western archery, boxing, javelin, wrestling and fencing as events, while Chinese Wushu recently failed in its bid to be included, but is still actively performed in tournaments across the world. Practitioners in some arts such as kickboxing and Brazilian Jiu-Jitsu often train for sport matches, whereas those in other arts such as aikido and Wing Chun generally spurn such competitions. Some schools believe that competition breeds better and more efficient practitioners, and gives a sense of good sportsmanship. Others believe that the rules under which competition takes place have diminished the combat effectiveness of martial arts or encourage a kind of practice which focuses on winning trophies rather than a focus such as cultivating a particular moral character.

Several martial arts, such as Judo, are Olympic sports.

The question of "which is the best Martial Art" has led to new forms of competition; the original Ultimate Fighting Championship in the U.S. was fought under very few rules allowing all fighting styles to enter and be less limited by the rule set. This has now become one of many combat "sports" known as mixed Martial Arts (MMA). Similar competitions such as Pancrase, DREAM, and Shooto have also taken place in Japan.

Some martial artists compete in non-sparring competitions such as breaking or choreographed routines of techniques such as poomse, kata and aka, or modern variations of the martial arts which include dance-influenced competitions such as tricking. Martial traditions have been influenced by governments to become more sport-like for political purposes; the central impetus for the attempt by the People's Republic of China in transforming Chinese martial arts into the committee-regulated sport of wushu was suppressing what they saw as the potentially subversive aspects of martial training, especially under the traditional system of family lineages.[14]

Health and fitness benefits

Training in martial arts imparts many benefits to the trainee, physical, mental, emotional and spiritual.[15]

Through systematic practice in the martial arts a person's physical fitness may be boosted (strength, stamina, flexibility, movement coordination, etc.,) as the whole body is exercised and the entire muscular system is activated. Beyond contributing to physical fitness, martial arts training also has benefits for mental health, contributing to self-esteem, self-control, emotional and spiritual well-being. For this reason, a number of martial arts schools have focused purely on therapeutic aspects, de-emphasizing the historical aspect of self-defense or combat completely.

According to Bruce Lee, martial arts also have the nature of an art, since there is emotional communication and complete emotional expression.

Self-defense, military and law enforcement applications

Some traditional martial concepts have seen new use within modern military training. Perhaps the most recent example of this is point shooting which relies on muscle memory to more effectively utilize a firearm in a variety of awkward situations, much the way an iaidoka would master movements with their sword.

U.S. Army Combatives instructor Matt Larsen demonstrates a chokehold.

During the World War II era William E. Fairbairn and Eric A. Sykes were recruited by the Special Operations Executive (SOE) to teach their martial art of defendu (itself drawing on jujutsu and Western boxing) and pistol shooting to UK, US, and Canadian special forces. The book *Kill or Get Killed*, written by Colonel Rex Applegate, was based on the defendu taught by Sykes and Fairbairn. Both Fairbairn's *Get Tough* and Appelgate's *Kill or Get Killed* became classic works on hand-to-hand combat.

Traditional hand-to-hand, knife, and spear techniques continue to see use in the composite systems developed for today's wars. Examples of this include European Unifight, the US Army's Combatives system developed by Matt Larsen, the Israeli army's kapap and Krav Maga, and the US Marine Corps's *Marine Corps Martial Arts Program* (MCMAP).

Unarmed dagger defenses identical to those found in the manual of Fiore dei Liberi and the Codex Wallerstein were integrated into the U.S. Army's training manuals in 1942[16] and continue to influence today's systems along with other traditional systems such as eskrima and silat.

The rifle-mounted bayonet, which has its origin in the spear, has seen use by the United States Army, the United States Marine Corps, and the British Army as recently as the Iraq War.[17]

Martial arts industry

Martial arts since the 1970s has become a significant industry, a subset of the wider sport industry (including cinema and sports television).

Hundreds of millions of people worldwide practice some form of martial art. Web Japan (sponsored by the Japanese Ministry of Foreign Affairs) claims there are 50 million karate practitioners worldwide.[18] The South Korean government in 2009 published an estimate that Taekwondo is practiced by 70 million people in 190 countries.[19]

The wholesale value of martial arts related sporting equipment shipped in the United States was estimated at 314 million USD in 2007; participation in the same year was estimated at 6.9 million (ages 6 or older, 2% of US population).[20] R. A. Court, CEO of Martial Arts Channel, stated the total revenue of the US martial arts industry at USD 40 billion and the number of US practitioners at 30 million in 2003.[21] Ultimate Fighting Championship generated a revenue of about USD 250 million in 2008, about 90% of the entire Mixed Martial Arts industry. World Wrestling Entertainment had a revenue of USD 1.4 billion.[22]

Asian martial arts experienced a surge of popularity in the west during the 1970s, and the rising demand resulted in numerous low quality or fraudulent schools. Fueled by fictional depictions in martial arts movies, this led to the "ninja craze" of the 1980s United States.[23] The rank system introduced for judo in the 1880s proved commercially viable, and "colored belt" systems were adopted in many martial arts degree mills (also known as "McDojos"; parodied in Penn & Teller: Bullshit! episode "Martial Arts", June 2010).

References

[1] Clements, John (January 2006). "A Short Introduction to Historical European Martial Arts" (http://www.meibukanmagazine.org/Downloads/MMSpecialEdition1.pdf). *Meibukan Magazine* (Special Edition No. 1): 2–4. .

[2] "Internal Kung Fu" (http://www.chiflow.com/html/gas_kungfu.htm). Chiflow.com. . Retrieved 2010-11-07.

[3] "Philosophy aspects of Systema" (http://www.russianmartialart.com/main.php?page=philosophy). Russian Martial Art - Systema Headquarters. . Retrieved 2011-09-29.

[4] "Sun Tzu Biography and Introduction: Sun Tzu The Art of War and Strategy Site by" (http://www.sonshi.com/why.html). Sonshi.Com. . Retrieved 2010-11-07.

[5] Reid, Howard and Croucher, Michael. *The Way of the Warrior-The Paradox of the Martial Arts" New York. Overlook Press: 1983.*

[6] "Russian Martial Arts History" (http://www.ermaa.com/history.php). European Russian Martial Arts Association. . Retrieved 2011-09-29.

[7] "The Cossacks" (http://systema.romanhords.com/cossacks.html). Systema Review. . Retrieved 2008-11-03.

[8] Zarrilli, Phillip B. (1998). When the Body Becomes All Eyes: Paradigms, Discourses and Practices of Power in Kalarippayattu, a South Indian Martial Art. Oxford: Oxford University Press, India. ISBN 0-19-563940-5

[9] "African Braziliain Martial Art Capoeira" (http://seattlecapoeiracenter.com/). *Jiu-jitsu Vs. Capoeira*. July 8, 2011. . Retrieved 2011-07-08.

[10] Berreby, David (1988-08-28). "The Martial Arts as Moneymakers" (http://www.nytimes.com/1988/08/28/business/the-martial-arts-as-moneymakers.html?scp=84&sq=chuck norris&st=cse). The New York Times. . Retrieved 2010-12-04.

[11] "fighting art used in the UFC" (http://www.ufc.com/index.cfm?fa=LearnUFC.Styles). Ufc.com. . Retrieved 2010-11-07.

[12] "[[Aliveness (http://www.straightblastgym.com/aliveness101.html)] 101"]. Straight Blast gym. . Retrieved 2008-11-03. – An essay on contact levels in training

[13] Dave Meltzer, (November 12, 2007). "First UFC forever altered combat sports" (http://sports.yahoo.com/mma/news;_ylt=AuvUi2TrSN_ILBVsuNLmsjk9Eo14?slug=dm-earlyufc111207&prov=yhoo&type=lgns). Yahoo! Sports. . Retrieved 2008-11-03.

[14] Fu, Zhongwen (1996, 2006). *Mastering Yang Style Taijiquan*. Berkeley, California: Blue Snake Books. ISBN (trade paper).

[15] Effects of martial arts on health status: A systematic review (http://onlinelibrary.wiley.com/doi/10.1111/j.1756-5391.2010.01107.x/abstract)

[16] Vail, Jason (2006). *Medieval and Renaissance Dagger Combat*. Paladin Press. pp. 91–95.

[17] Sean Rayment (12/06/2004). "British battalion 'attacked every day for six weeks'" (http://web.archive.org/web/20080103232432/http://www.telegraph.co.uk/news/main.jhtml?xml=/news/2004/06/13/wirq113.xml). *The Daily Telegraph* (London: Telegraph Media Group Limited). Archived from the original (http://www.telegraph.co.uk/news/main.jhtml?xml=/news/2004/06/13/wirq113.xml) on Jan 03, 2008. . Retrieved 11 December 2008.

[18] Web Japan (http://web-japan.org/factsheet/en/pdf/e16_martial_art.pdf)

[19] Kim, H.-S. (2009): Taekwondo: A new strategy for Brand Korea (http://www.mcst.go.kr/english/issue/issueView.jsp?pSeq=1401) (21 December 2009). Retrieved on 8 January 2010.

[20] ,Jack W. Plunkett, *Plunkett's Sports Industry Almanac 2009*, ISBN 978-1-59392-140-8.

[21] Black Belt Magazine (http://books.google.ca/books?id=FtwDAAAAMBAJ&lpg=PA1&hl=fr&rview=1&pg=PA20#v=onepage&q&f=false) September 2003, p. 20.
[22] Forbes: Ultimate Cash Machines (http://www.mmafacts.com/main.cfm?actionId=globalShowStaticContent&screenKey=cmpNews&show=forbes&s=MMA)
[23] see e.g. Black Belt Magazine, June 1999, p. 78.

External links

- Martial arts (http://www.dmoz.org//Sports/Martial_Arts/) at the Open Directory Project
- World Martial Arts Community (http://www.intermartialarts.com/)
- Martial art books and resources (http://www.encyclopedia-of-kicks.com/)

John Neulinger

John Neulinger	
John Neulinger circa 1989	
Born	26 April 1924 Dresden, Germany
Died	20 June 1991 (aged 67) Dolgeville, New York, USA
Nationality	German-American
Fields	Social psychology Leisure studies
Institutions	City College of New York
Alma mater	Hunter College New York University
Known for	Theory of leisure Perceived freedom Leisure society

John Neulinger (April 26, 1924 - June 20, 1991) was a noted German-American psychologist and Professor Emeritus of psychology at City College of New York. Neulinger is best known for contributing a social psychological theory of leisure to the field of leisure studies.[1] Neulinger's theory of leisure is defined by a psychological state of mind that requires two criteria for leisure: perceived freedom and intrinsic motivation. In Neulinger's theory, individuals can be said to be in a state of leisure if they simply perceive that they have the freedom to choose activities and are motivated by an activity for its own sake, not just for its consequences. Neulinger first popularized his ideas in the 1974 book, *The Psychology of Leisure*.

Early life

Neulinger was born in Dresden, Germany to Rudolf and Julie Neulinger *née* Konirsch. At least two siblings are known, a brother named Kurt and a sister, Liselotte. Neulinger attended the Staatsoberrealgymnasium in Děčín, Czechoslovakia as a child,[2] but was taken to a Nazi concentration camp during World War II. His experience in Nazi Germany influenced his psychological theories regarding the connection between freedom and leisure in the same way as psychologist Viktor Frankl.[3]

Having survived the war, Neulinger moved to the United States and became a naturalized citizen. Neulinger attended Hunter College and graduated in 1960. He received his doctorate in psychology from New York University in 1965. Neulinger married Josephine Levitus on July 22, 1950, and later had one child, a son named Ronald. In 1970, the marriage ended in divorce, and he later married fellow psychologist Gabrielle Stutman.[4]

Career

From 1964-1965, Neulinger was a research associate for the Russell Sage Foundation in New York City. After 1967, he spent the rest of his life working at the City College of the City University of New York: first as an assistant professor from 1967–1971; an associate professor from 1972–1976; and finally as a professor of psychology from 1977-1986. Neulinger was a member of the International Sociological Association, the American Psychological Association, the Gerontological Society, and Phi Beta Kappa.[4] He helped found the Academy of Leisure Sciences and was president of the Academy from 1982-1983.[5] Neulinger was also Director of the Leisure Institute in his home town of Dolgeville, New York, and he helped found the Society for the Reduction of Human Labor and acted

as its Chair.[1]

Leisure theory

"Leisure is a state of mind; it is a way of being, of being at peace with oneself and what one is doing...Leisure has one and only one essential criterion, and that is the condition of perceived freedom. Any activity carried out freely without constraint or compulsion, may be considered to be leisure. To leisure implies being engaged in an activity as a free agent, and of one's own choice."

John Neulinger, in *The Psychology of Leisure* (1974)[6]

Neulinger's leisure theory, sometimes referred to as the Neulinger paradigm,[7] was first published in the 1974 book, *The Psychology of Leisure*. The theory is a continuum model of leisure, with the criterion a condition Neulinger calls *perceived freedom*. This perceived freedom is a state of mind where one freely chooses to perform an activity—any activity—because one "wants to do it".[8] If an individual is involved in an activity where there is only intrinsic reward and perceived freedom, that person is said to be engaged in leisure. However, if the activity involves only extrinsic reward and the absence of perceived freedom, an individual is said to be in a state of non-leisure. There are six stages from one extreme to the other: Pure leisure, leisure-work, leisure-job, pure work, work-job, and pure job.[7]

Neulinger's theory of leisure shows that intrinsic motivation and perceived freedom can directly change the perception of leisure.[9] But, like other social psychological theories of leisure, Neulinger's theory has been criticized for its lack of "discriminant power". The criterion of perceived freedom is not exclusive to leisure activities, and the failure of the theory to account for the differences between real freedom and the illusion of freedom is often challenged. Nevertheless, Neulinger's theory has exerted considerable influence on social psychology and leisure, and perceived freedom is still a popular concept in leisure studies.[8]

Neulinger believed that human civilization could one day look forward to a society *based* on leisure, a leisure society where modern technology and science frees the average person from focusing on providing merely for subsistence needs and the worry associated with meeting those needs. Neulinger envisioned a world where the very concept of a "job" was no longer plausible, where work would be leisure-oriented. Unlike the past, Neulinger's vision was of a society where non-leisure activities form a *minimum* part of our day, where work would be carried out with meaning and without coercion, freely chosen, self-rewarding, and intrinsically motivating.[2] [3] In his last publication before his death, Neulinger advocated for a societal transformation to that of a "universal leisure society instead of more centuries of useless destruction and worldwide conflicts".[1]

Death

Neulinger died at home of a heart attack at the age of 67 on June 20, 1991, in Dolgeville, New York.[10] Since his death, colleagues in the field of leisure studies have referred to Neulinger as a "leisure visionary".[11]

Publications

Books

- Neulinger, John (1981) [1974]. *The Psychology of Leisure*. Springfield, IL: Charles C. Thomas. ISBN 0398031061.
- Neulinger, John (1986) [1977]. *What Am I Doing? The WAID*. Dolgeville, NY: Leisure Institute.
- Neulinger, John (1981). *To Leisure: An Introduction*. Boston: Allyn and Bacon. ISBN 0205069363.
- Neulinger, John (1990). *Road to Eden After All: A Human Metamorphosis*. Leisure Institute. ISBN 9050130143.

Articles

- Brim, Orville G.; John Neulinger; D. C. Glass (1965). "Experiences and Attitudes of American Adults concerning Standardized Intelligence Tests" [12]. *Technical Report No. 1 on the Social Consequences of Testing* (New York: Russell Sage Foundation).
- Neulinger, John; Miranda Breit (Summer 1969). "Attitude Dimensions of Leisure". *Journal of Leisure Research* **1** (3): 255–261.
- Neulinger, John; Miranda Breit (Spring 1971). "Attitude Dimensions of Leisure: A Replication Study". *Journal of Leisure Research* **3** (2): 108–115.
- Neulinger, John (Jul., 1971). "Leisure and Mental Health: A Study in a Program of Leisure Research" [13]. *The Pacific Sociological Review* (University of California Press) **14** (3): 288–300.**(subscription required)**
- Glass, David C.; John Neulinger; Orville G. Brim, Jr. (1974). "Birth Order, Verbal Intelligence, and Educational Aspiration" [14]. *Child Development* (Blackwell Publishing) **45** (3): 807–811. doi:10.2307/1127851. PMID 4143834.**(subscription required)**
- Neulinger, John (1979). "Leisure: A State of Mind That All Desire but Few Achieve" [15]. In Hillel Ruskin. *Leisure, Toward a Theory and Policy: Proceedings of the International Seminar on Leisure Policies, Jerusalem, 11–14 June 1979*. Fairleigh Dickinson University Press. pp. 172–181. ISBN 0838631347.
- Neulinger, John; Steven Kopor (Spring/Summer 1981). "Leisure Experienced by an Intellectual Elite: A Survey of the Mensa Society". *Mensa Research Journal* (Mensa Education and Research Foundation) **10** (17): 25–33.
- Neulinger, John (Jan., 1982). "Leisure Lack and the Quality of Life: The Broadening Scope of the Leisure Professional". *Leisure Studies* (Routledge) **1** (1): 53–63. doi:10.1080/02614368200390051.

References

[1] Parker, Stan (Jan., 1991). "Appreciation: John Neulinger, 1925–91". *Leisure Studies* (Routledge) **11** (1): 93. doi:10.1080/02614369100390341. ISSN 02614367.

[2] Neulinger, John (Oct., 1990). "A Leisure Society: Idle Dream or Viable Alternative, Encroaching Menace or Golden Opportunity (1989-04-22)" (http://www.eric.ed.gov/ERICWebPortal/detail?accno=ED324312). In Howard R. Gray; Larry L. Neal; S. Harold Smith. *J. B. Nash Lecture Series*. Boston: American Association for Leisure and Recreation. pp. 161–173. .

[3] "Memoriam" (http://www.academyofleisuresciences.com/memory.htm). Academy of Leisure Sciences. . Retrieved 2009-03-10. "In his final years, he came to believe that society was rapidly moving toward a post-industrial phase in which technology would provide the means to minimize human labor and that human beliefs and values needed to be developed that would embrace such a change."

[4] "John Neulinger 1924-1991" (http://galenet.galegroup.com/servlet/BioRC). *Contemporary Authors Online*. Thomson Gale. 2003. .

[5] Sourced to *Contemporary Authors Online*. For the official record, see: "Members of the Academy of Leisure Sciences" (http://academyofleisuresciences.com/alsmembs.htm). Academy of Leisure Sciences. . Retrieved 2009-03-10.

[6] Torkildsen, George (2005). "Leisure and Recreation: A Variety of Meanings". *Leisure and Recreation Management*. Routledge. pp. 49. ISBN 0415309956.

[7] Leitner, Michael J. (2004). "Concepts of Leisure". *Leisure Enhancement*. Haworth Press. pp. 2–20. ISBN 078901534X. See also: Ross, Craig M. "HPER R160: Foundation of Recreation and Leisure" (http://www.indiana.edu/~r160/questions.htm#work). *Questions From the Past Week: Explain Neulinger's Paradigm*. Indiana University Dept of Recreation & Park Administration. . Retrieved 2009-03-10.

[8] "Social Psychological Theories of Leisure". *Encyclopedia of Recreation and Leisure in America*. Charles Scribner's Sons. 2004. pp. 521–522. ISBN 0684312654.

[9] Holt, Marieke; Candace Ashton-Shaeffer (May 2001). "Therapeutic Recreation's Role in Meeting the Needs of Heart Transplant Patients". *Parks and Recreation* (National Recreation and Park Association) **36** (5): 58–64.

[10] "John Neulinger, 67, Psychology Professor" (http://query.nytimes.com/gst/fullpage.html?res=9D0CE7DA113CF931A15755C0A967958260&sec=&spon=). *Obituaries* (*The New York Times*): pp. 21. 1991-06-22. . Retrieved 2009-03-05.

[11] Spigner, C.; Havitz, M. E (1993-11-01). "Social marketing or social justice: A dialogue on access to recreation for the unemployed" (http://www.thefreelibrary.com/Social+marketing+or+social+justice:+a+dialogue+on+access+to...-a014517888). *Parks and Recreation* (National Recreation and Park Association) **28** (11): 51–57. .

[12] http://www.eric.ed.gov/ERICWebPortal/detail?accno=ED018209

[13] http://www.jstor.org/stable/1388643

[14] http://jstor.org/stable/1127851

[15] http://books.google.com/books?id=CvUH1idJ3X4C&pg=PA172#v=onepage&q&f=false

Further reading

- Rojek, Chris; Susan M. Shaw, Anthony James Veal (2007). *A Handbook of Leisure Studies*. Palgrave Macmillan. ISBN 140390278X.
- Wearing, S.; A. Deville; K. Lyons (2008). "The Volunteer's Journey through Leisure to the Self". In Kevin D. Lyons, Stephen Wearing. *Journeys of Discovery in Volunteer Tourism*. CABI. pp. 63–71. ISBN 184593380X.

Experience sampling method

This research methodology, developed by Larson and Csikszentmihalyi (1983)[1] asks participants to stop at certain times and make notes of their experience in real time. The point is for them to record temporal things like feelings while in the moment (right then, not later; right there, not elsewhere). They can be given a journal with many identical pages. Each page can have a psychometric scale, open-ended questions, or anything else used to assess their condition in that place and time.

There are different ways[2] to signal participants when to take notes in their journal, like using preprogrammed stopwatches. An observer can have an identically programmed stopwatch (the Timex Data Link USB is easy to program for this with a PC), so the observer can record specific events as the participants are recording their feelings or other behaviors. It is best to avoid letting subjects know in advance when they will record their feelings, so they can't anticipate the event, and will just be "acting naturally" when they stop and take notes on their current condition.

Validity in these studies comes from repetition, so you can look for patterns like participants reporting greater happiness right after meals. These correlations can then be tested by other means for cause and effect, since ESM just shows correlation.

Free software

Various free software packages are available for computerized experience sampling.

- ESP, the Experience Sampling Program [3], created by Lisa Feldman Barrett and Daniel J. Barrett, runs on Palm Pilots. It is available under the GNU Public License.

References

[1] Larson, R., & Csikszentmihalyi, M. (1983). The experience sampling method. *New Directions for Methodology of Social and Behavioral Science*, 15, 41-56.

[2] Hektner, J.M., Schmidt, J.A., Csikszentmihalyi, M. (Eds.). (2006). Experience Sampling Method: Measuring the Quality of Everyday Life. Sage Publications, Inc. ISBN 978-1412925570

[3] http://www.experience-sampling.org/

Cognitive science

Cognitive science is the interdisciplinary scientific study of mind and its processes. It examines what cognition is, what it does and how it works. It includes research on intelligence and behavior, especially focussing on how information is represented, processed, and transformed (in faculties such as perception, language, memory, reasoning, and emotion) within nervous systems (human or other animal) and machines (e.g. computers). Cognitive science consists of multiple research disciplines, including psychology, artificial intelligence, philosophy, neuroscience, linguistics, anthropology, sociology, and education.[1] It spans many levels of analysis, from low-level learning and decision mechanisms to high-level logic and planning; from neural circuitry to modular brain organization.

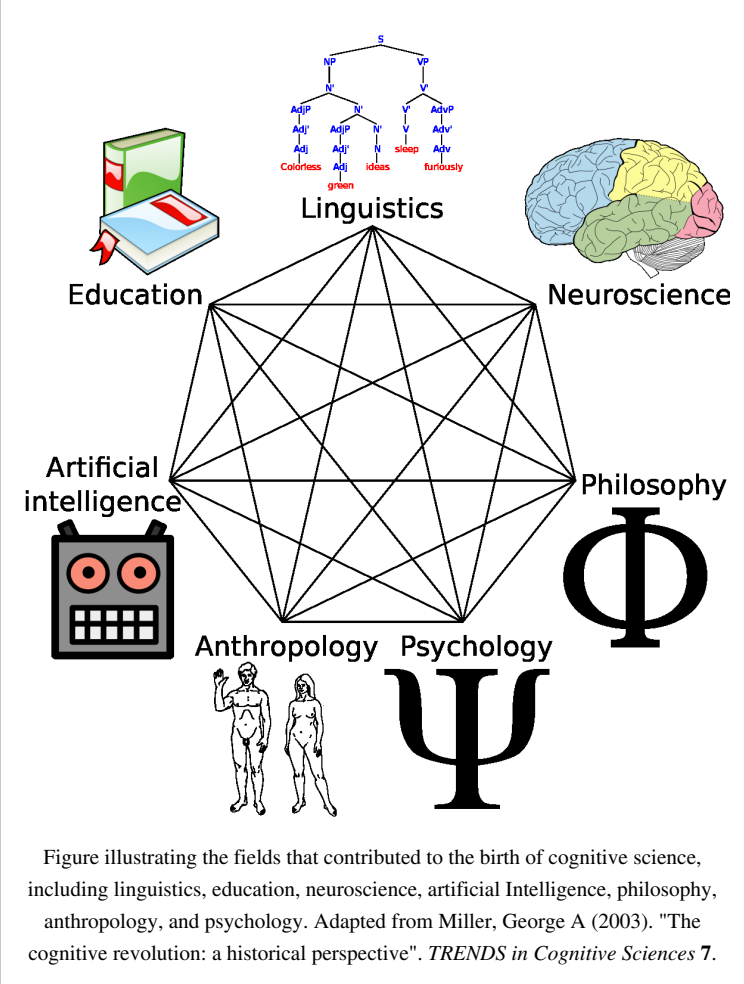


Figure illustrating the fields that contributed to the birth of cognitive science, including linguistics, education, neuroscience, artificial Intelligence, philosophy, anthropology, and psychology. Adapted from Miller, George A (2003). "The cognitive revolution: a historical perspective". *TRENDS in Cognitive Sciences* **7**.

History

Cognitive science has a pre-history traceable back to ancient Greek philosophical texts (see Plato's Meno); and certainly must include writers such as Descartes, David Hume, Immanuel Kant, Benedict de Spinoza, Nicolas Malebranche, Pierre Cabanis, Leibniz and John Locke. But, although these early writers contributed greatly to the philosophical discovery of mind and this would ultimately lead to the development of psychology, they were working with an entirely different set of tools and core concepts than those of the cognitive scientist.

The modern culture of cognitive science can be traced back to the early cyberneticists in the 1930s and 1940s, such as Warren McCulloch and Walter Pitts, who sought to understand the organizing principles of the mind. McCulloch and Pitts developed the first variants of what are now known as artificial neural networks, models of computation inspired by the structure of biological neural networks.

Another precursor was the early development of the theory of computation and the digital computer in the 1940s and 1950s. Alan Turing and John von Neumann were instrumental in these developments. The modern computer, or Von Neumann machine, would play a central role in cognitive science, both as a metaphor for the mind, and as a tool for investigation.

In 1959, Noam Chomsky published a scathing review of B. F. Skinner's book Verbal Behavior. At the time, Skinner's behaviorist paradigm dominated psychology: Most psychologists focused on functional relations between stimulus and response, without positing internal representations. Chomsky argued that in order to explain language, we needed a theory like generative grammar, which not only attributed internal representations but characterized their underlying order.

The term *cognitive science* was coined by Christopher Longuet-Higgins in his 1973 commentary on the Lighthill report, which concerned the then-current state of Artificial Intelligence research.[2] In the same decade, the journal *Cognitive Science* and the Cognitive Science Society were founded.[3] In 1982, Vassar College became the first institution in the world to grant an undergraduate degree in Cognitive Science.[4]

In the 1970s and early 1980s, much cognitive science research focused on the possibility of artificial intelligence. Researchers such as Marvin Minsky would write computer programs in languages such as LISP to attempt to formally characterize the steps that human beings went through, for instance, in making decisions and solving problems, in the hope of better understanding human thought, and also in the hope of creating artificial minds. This approach is known as "symbolic AI".

Eventually the limits of the symbolic AI research program became apparent. For instance, it seemed to be unrealistic to comprehensively list human knowledge in a form usable by a symbolic computer program. The late 80s and 90s saw the rise of neural networks and connectionism as a research paradigm. Under this point of view, often attributed to James McClelland and David Rumelhart, the mind could be characterized as a set of complex associations, represented as a layered network. Critics argue that there are some phenomena which are better captured by symbolic models, and that connectionist models are often so complex as to have little explanatory power. Recently symbolic and connectionist models have been combined, making it possible to take advantage of both forms of explanation.[5]

Principles

Levels of analysis

A central tenet of cognitive science is that a complete understanding of the mind/brain cannot be attained by studying only a single level. An example would be the problem of remembering a phone number and recalling it later. One approach to understanding this process would be to study behavior through direct observation. A person could be presented with a phone number, asked to recall it after some delay. Then the accuracy of the response could be measured. Another approach would be to study the firings of individual neurons while a person is trying to remember the phone number. Neither of these experiments on their own would fully explain how the process of remembering a phone number works. Even if the technology to map out every neuron in the brain in real-time were available, and it were known when each neuron was firing, it would still be impossible to know how a particular firing of neurons translates into the observed behavior. Thus an understanding of how these two levels relate to each other is needed. This can be provided by a functional level account of the process. Studying a particular phenomenon from multiple levels creates a better understanding of the processes that occur in the brain to give rise to a particular behavior. Marr[6] gave a famous description of three levels of analysis:

1. the *computational theory*, specifying the goals of the computation;
2. *representation and algorithm*, giving a representation of the input and output and the algorithm which transforms one into the other; and
3. the *hardware implementation*, how algorithm and representation may be physically realized.

(See also the entry on functionalism.)

Interdisciplinary nature

Cognitive science is an interdisciplinary field with contributors from various fields, including psychology, neuroscience, linguistics, philosophy of mind, computer science, anthropology, sociology, and biology. Cognitive science tends to view the world outside the mind much as other sciences do. Thus it too has an objective, observer-independent existence. The field is usually seen as compatible with the physical sciences, and uses the scientific method as well as simulation or modeling, often comparing the output of models with aspects of human behavior. Some doubt whether there is a unified cognitive science and prefer to speak of the cognitive sciences in plural.[7]

Many, but not all, who consider themselves cognitive scientists have a functionalist view of the mind—the view that mental states are classified functionally, such that any system that performs the proper function for some mental state is considered to be in that mental state. According to some versions of functionalism, even non-human systems, such as other animal species, alien life forms, or advanced computers can, in principle, have mental states.

Cognitive science: the term

The term "cognitive" in "cognitive science" is "used for any kind of mental operation or structure that can be studied in precise terms" (Lakoff and Johnson, 1999). This conceptualization is very broad, and should not be confused with how "cognitive" is used in some traditions of analytic philosophy, where "cognitive" has to do only with formal rules and truth conditional semantics.

The earliest entries for the word "*cognitive*" in the OED take it to mean roughly *pertaining "to the action or process of knowing"*. The first entry, from 1586, shows the word was at one time used in the context of discussions of Platonic theories of knowledge. Most in cognitive science, however, presumably do not believe their field is the study of anything as certain as the knowledge sought by Plato.

Scope

Cognitive science is a large field, and covers a wide array of topics on cognition. However, it should be recognized that cognitive science is not equally concerned with every topic that might bear on the nature and operation of the mind or intelligence. Social and cultural factors, emotion, consciousness, animal cognition, comparative and evolutionary approaches are frequently de-emphasized or excluded outright, often based on key philosophical conflicts. Another important mind-related subject that the cognitive sciences tend to avoid is the existence of qualia, with discussions over this issue being sometimes limited to only mentioning qualia as a philosophically-open matter. Some within the cognitive science community, however, consider these to be vital topics, and advocate the importance of investigating them.[8]

Below are some of the main topics that cognitive science is concerned with. This is not an exhaustive list, but is meant to cover the wide range of intelligent behaviors. See List of cognitive science topics for a list of various aspects of the field.

Artificial intelligence

"... One major contribution of AI and cognitive science to psychology has been the information processing model of human thinking in which the metaphor of brain-as-computer is taken quite literally. ." AAAI Web pages [9].

Artificial intelligence (AI) involves the study of cognitive phenomena in machines. One of the practical goals of AI is to implement aspects of human intelligence in computers. Computers are also widely used as a tool with which to study cognitive phenomena. Computational modeling uses simulations to study how human intelligence may be structured.[10] (See the section on computational modeling in the Research Methods section.)

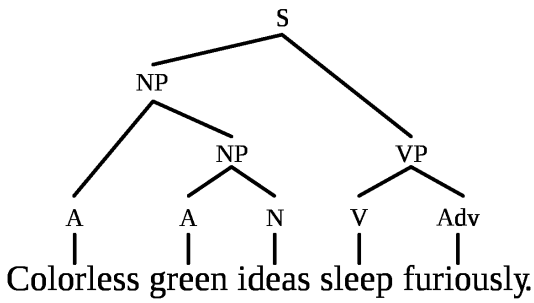
There is some debate in the field as to whether the mind is best viewed as a huge array of small but individually feeble elements (i.e. neurons), or as a collection of higher-level structures such as symbols, schemas, plans, and rules. The former view uses connectionism to study the mind, whereas the latter emphasizes symbolic computations. One way to view the issue is whether it is possible to accurately simulate a human brain on a computer without accurately simulating the neurons that make up the human brain.

Attention

Attention is the selection of important information. The human mind is bombarded with millions of stimuli and it must have a way of deciding which of this information to process. Attention is sometimes seen as a spotlight, meaning one can only shine the light on a particular set of information. Experiments that support this metaphor include the dichotic listening task (Cherry, 1957) and studies of inattentional blindness (Mack and Rock, 1998). In the dichotic listening task, subjects are bombarded with two different messages, one in each ear, and told to focus on only one of the messages. At the end of the experiment, when asked about the content of the unattended message, subjects cannot report it.

Knowledge, and Processing, of Language

The ability to learn and understand language is an extremely complex process. Language is acquired within the first few years of life, and all humans under normal circumstances are able to acquire language proficiently. A major driving force in the theoretical linguistic field is discovering the nature that language must have in the abstract in order to be learned in such a fashion. Some of the driving research questions in studying how the brain itself processes language include: (1) To what extent is linguistic knowledge innate or learned?, (2) Why is it more difficult for adults to acquire a second-language than it is for infants to acquire their first-language?, and (3) How are humans able to understand novel sentences?



A well known example of a Phrase structure tree. This is one way of representing human language that shows how different components are organized hierarchically.

The study of language processing ranges from the investigation of the sound patterns of speech to the meaning of words and whole sentences. Linguistics often divides language processing into orthography, phonology and phonetics, morphology, syntax, semantics, and pragmatics. Many aspects of language can be studied from each of these components and from their interaction.

The study of language processing in **cognitive science** is closely tied to the field of linguistics. Linguistics was traditionally studied as a part of the humanities, including studies of history, art and literature. In the last fifty years or so, more and more researchers have studied knowledge and use of language as a cognitive phenomenon, the main problems being how knowledge of language can be acquired and used, and what precisely it consists of. Linguists have found that, while humans form sentences in ways apparently governed by very complex systems, they are remarkably unaware of the rules that govern their own speech. Thus linguists must resort to indirect methods to determine what those rules might be, if indeed rules as such exist. In any event, if speech is indeed governed by rules, they appear to be opaque to any conscious consideration.

Learning and development

Learning and development are the processes by which we acquire knowledge and information over time. Infants are born with little or no knowledge (depending on how knowledge is defined), yet they rapidly acquire the ability to use language, walk, and recognize people and objects. Research in learning and development aims to explain the mechanisms by which these processes might take place.

A major question in the study of cognitive development is the extent to which certain abilities are innate or learned. This is often framed in terms of the nature versus nurture debate. The nativist view emphasizes that certain features are innate to an organism and are determined by its genetic endowment. The empiricist view, on the other hand, emphasizes that certain abilities are learned from the environment. Although clearly both genetic and environmental input is needed for a child to develop normally, considerable debate remains about *how* genetic information might guide cognitive development. In the area of language acquisition, for example, some (such as Steven Pinker)[11] have argued that specific information containing universal grammatical rules must be contained in the genes, whereas others (such as Jeffrey Elman and colleagues in Rethinking Innateness) have argued that Pinker's claims are biologically unrealistic. They argue that genes determine the architecture of a learning system, but that specific "facts" about how grammar works can only be learned as a result of experience.

Memory

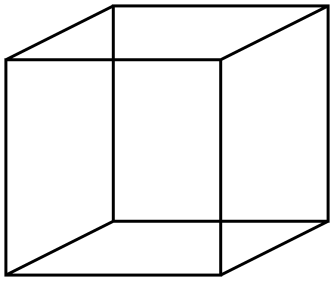
Memory allows us to store information for later retrieval. Memory is often thought of consisting of both a long-term and short-term store. Long-term memory allows us to store information over prolonged periods (days, weeks, years). We do not yet know the practical limit of long-term memory capacity. Short-term memory allows us to store information over short time scales (seconds or minutes).

Memory is also often grouped into declarative and procedural forms. Declarative memory--grouped into subsets of semantic and episodic forms of memory--refers to our memory for facts and specific knowledge, specific meanings, and specific experiences (e.g., Who was the first president of the U.S.A.?, or "What did I eat for breakfast four days ago?). Procedural memory allows us to remember actions and motor sequences (e.g. how to ride a bicycle) and is often dubbed implicit knowledge or memory .

Cognitive scientists study memory just as psychologists do, but tend to focus in more on how memory bears on cognitive processes, and the interrelationship between cognition and memory. One example of this could be, what mental processes does a person go through to retrieve a long-lost memory? Or, what differentiates between the cognitive process of recognition (seeing hints of something before remembering it, or memory in context) and recall (retrieving a memory, as in "fill-in-the-blank")?

Perception and action

Perception is the ability to take in information via the senses, and process it in some way. Vision and hearing are two dominant senses that allow us to perceive the environment. Some questions in the study of visual perception, for example, include: (1) How are we able to recognize objects?, (2) Why do we perceive a continuous visual environment, even though we only see small bits of it at any one time? One tool for studying visual perception is by looking at how people process optical illusions. The image on the right of a Necker cube is an example of a bistable percept, that is, the cube can be interpreted as being oriented in two different directions.



The Necker cube, an example of an optical illusion

The study of haptic (tactile), olfactory, and gustatory stimuli also fall into the domain of perception.

Action is taken to refer to the output of a system. In humans, this is accomplished through motor responses. Spatial planning and movement, speech production, and complex motor movements are all aspects of action.

Research methods

Many different methodologies are used to study cognitive science. As the field is highly interdisciplinary, research often cuts across multiple areas of study, drawing on research methods from psychology, neuroscience, computer science and systems theory.

Behavioral experiments

In order to have a description of what constitutes intelligent behavior, one must study behavior itself. This type of research is closely tied to that in cognitive psychology and psychophysics. By measuring behavioral responses to different stimuli, one can understand something about how those stimuli are processed. Lewandowski and Strohmetz (2009) review a collection of innovative uses of behavioral measurement in psychology including behavioral traces, behavioral observations, and behavioral choice.[12] Behavioral traces are pieces of evidence that indicate behavior occurred, but the actor is not present (e.g., litter in a parking lot or readings on an electric meter). Behavioral observations involve the direct witnessing of the actor engaging in the behavior (e.g., watching how close a person sits next to another person). Behavioral choices are when a person selects between two or more options (e.g., voting behavior, choice of a punishment for another participant).

- *Reaction time.* The time between the presentation of a stimulus and an appropriate response can indicate differences between two cognitive processes, and can indicate some things about their nature. For example, if in a search task the reaction times vary proportionally with the number of elements, then it is evident that this cognitive process of searching involves serial instead of parallel processing.
- *Psychophysical responses.* Psychophysical experiments are an old psychological technique, which has been adopted by cognitive psychology. They typically involve making judgments of some physical property, e.g. the loudness of a sound. Correlation of subjective scales between individuals can show cognitive or sensory biases as compared to actual physical measurements. Some examples include:
  - sameness judgments for colors, tones, textures, etc.
  - threshold differences for colors, tones, textures, etc.
- *Eye tracking.* This methodology is used to study a variety of cognitive processes, most notably visual perception and language processing. The fixation point of the eyes is linked to an individual's focus of attention. Thus, by monitoring eye movements, we can study what information is being processed at a given time. Eye tracking allows us to study cognitive processes on extremely short time scales. Eye movements reflect online decision making during a task, and they provide us with some insight into the ways in which those decisions may be processed.

Brain imaging

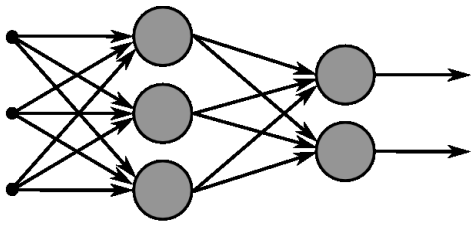
Brain imaging involves analyzing activity within the brain while performing various cognitive tasks. This allows us to link behavior and brain function to help understand how information is processed. Different types of imaging techniques vary in their temporal (time-based) and spatial (location-based) resolution. Brain imaging is often used in cognitive neuroscience.

Image of the human head with the brain. The arrow indicates the position of the hypothalamus.

- *Single photon emission computed tomography* and *Positron emission tomography*. SPECT and PET use radioactive isotopes, which are injected into the subject's bloodstream and taken up by the brain. By observing which areas of the brain take up the radioactive isotope, we can see which areas of the brain are more active than other areas. PET has similar spatial resolution to fMRI, but it has extremely poor temporal resolution.
- *Electroencephalography*. EEG measures the electrical fields generated by large populations of neurons in the cortex by placing a series of electrodes on the scalp of the subject. This technique has an extremely high temporal resolution, but a relatively poor spatial resolution.
- *Functional magnetic resonance imaging*. fMRI measures the relative amount of oxygenated blood flowing to different parts of the brain. More oxygenated blood in a particular region is assumed to correlate with an increase in neural activity in that part of the brain. This allows us to localize particular functions within different brain regions. fMRI has moderate spatial and temporal resolution.
- *Optical imaging*. This technique uses infrared transmitters and receivers to measure the amount of light reflectance by blood near different areas of the brain. Since oxygenated and deoxygenated blood reflects light by different amounts, we can study which areas are more active (i.e., those that have more oxygenated blood). Optical imaging has moderate temporal resolution, but poor spatial resolution. It also has the advantage that it is extremely safe and can be used to study infants' brains.
- *Magnetoencephalography.* MEG measures magnetic fields resulting from cortical activity. It is similar to EEG, except that it has improved spatial resolution since the magnetic fields it measures are not as blurred or attenuated by the scalp, meninges and so forth as the electrical activity measured in EEG is. MEG uses SQUID sensors to detect tiny magnetic fields.

Computational modeling

Computational models require a mathematically and logically formal representation of a problem. Computer models are used in the simulation and experimental verification of different specific and general properties of intelligence. Computational modeling can help us to understand the functional organization of a particular cognitive phenomenon. There are two basic approaches to cognitive modeling. The first is focused on abstract mental functions of an intelligent mind and operates using symbols, and the second, which follows the neural and associative properties of the human brain, and is called subsymbolic.



A Neural network with two layers.

- *Symbolic modeling* evolved from the computer science paradigms using the technologies of Knowledge-based systems, as well as a philosophical perspective, see for example "Good Old-Fashioned Artificial Intelligence" (GOFAI). They are developed by the first cognitive researchers and later used in information engineering for

expert systems . Since the early 1990s it was generalized in systemics for the investigation of functional human-like intelligence models, such as personoids, and, in parallel, developed as the SOAR environment. Recently, especially in the context of cognitive decision making, symbolic cognitive modeling is extended to socio-cognitive approach including social and organization cognition interrelated with a sub-symbolic not conscious layer.

- *Subsymbolic modeling* includes *Connectionist/neural network models.* Connectionism relies on the idea that the mind/brain is composed of simple nodes and that the power of the system comes primarily from the existence and manner of connections between the simple nodes. Neural nets are textbook implementations of this approach. Some critics of this approach feel that while these models approach biological reality as a representation of how the system works, they lack explanatory powers because complicated systems of connections with even simple rules are extremely complex and often less interpretable than the system they model.

Other approaches gaining in popularity include the use of Dynamical systems theory and also techniques putting symbolic models and connectionist models into correspondence (Neural-symbolic integration). Bayesian models, often drawn from machine learning, are also gaining popularity.

All the above approaches tend to be generalized to the form of integrated computational models of a synthetic/abstract intelligence, in order to be applied to the explanation and improvement of individual and social/organizational decision-making and reasoning.

Neurobiological methods

Research methods borrowed directly from neuroscience and neuropsychology can also help us to understand aspects of intelligence. These methods allow us to understand how intelligent behavior is implemented in a physical system.

- Single-unit recording
- Direct brain stimulation
- Animal models
- Postmortem studies

Key findings

Cognitive science has much to its credit. Among other accomplishments, it has given rise to models of human cognitive bias and risk perception, and has been influential in the development of behavioral finance, part of economics. It has also given rise to a new theory of the philosophy of mathematics, and many theories of artificial intelligence, persuasion and coercion. It has made its presence firmly known in the philosophy of language and epistemology - a modern revival of rationalism - as well as constituting a substantial wing of modern linguistics. Fields of cognitive science have been influential in understanding the brain's particular functional systems (and functional deficits) ranging from speech production to auditory processing and visual perception. It has made progress in understanding how damage to particular areas of the brain affect cognition, and it has helped to uncover the root causes and results of specific disfunction, such as dyslexia, anopia, and hemispatial neglect.

Criticism

In a paper written shortly before his death, B.F. Skinner stated that "cognitive science is the creation science of psychology."[13]

Notable researchers

Some of the more recognized names in cognitive science are usually either the most controversial or the most cited. Within philosophy familiar names include Daniel Dennett who writes from a computational systems perspective, John Searle known for his controversial Chinese Room, Jerry Fodor who advocates functionalism, and Douglas Hofstadter, famous for writing *Gödel, Escher, Bach*, which questions the nature of words and thought. In the realm of linguistics, Noam Chomsky and George Lakoff have been influential (both have also become notable as political commentators). In Artificial intelligence Marvin Minsky, Herbert Simon, Allen Newell, and Kevin Warwick are prominent. Popular names in the discipline of psychology include James McClelland and Steven Pinker. Anthropologists Dan Sperber, Edwin Hutchins, Scott Atran, Pascal Boyer and Joseph Henrich have been involved in collaborative projects with cognitive and social psychologists, political scientists and evolutionary biologists in attempts to develop general theories of culture formation, religion and political association.

References

[1] Thagard, Paul, Cognitive Science (http://plato.stanford.edu/archives/fall2008/entries/cognitive-science/), The Stanford Encyclopedia of Philosophy (Fall 2008 Edition), Edward N. Zalta (ed.).

[2] Longuet-Higgins, H. C. (1973). "Comments on the Lighthill Report and the Sutherland Reply", in *Artificial Intelligence: a paper symposium*, Science Research Council, 35-37

[3] Cognitive Science Society (http://www.cognitivesciencesociety.org/about_description.html)

[4] http://cogsci.vassar.edu/about/index.html

[5] Artur S. d'Avila Garcez, Luis C. Lamb and Dov M. Gabbay. Neural-Symbolic Cognitive Reasoning. Cognitive Technologies. Springer, 2008, ISBN 978-3-540-73245-7, 2008.

[6] Marr, D. (1982). *Vision: A Computational Investigation into the Human Representation and Processing of Visual Information*. W. H. Freeman.

[7] Miller, G. A. (2003). The cognitive revolution: a historical perspective. Trends in Cognitive Sciences, 7, 141-144.

[8] A number of authors consider the qualia problem to be part of the cognitive science field, e.g. Some philosophical issues in cognitive science: qualia, intentionality, and the mind-body problem (http://portal.acm.org/citation.cfm?id=166791.166844), Qualia: The Hard Problem (http://chil.rice.edu/byrne/Pubs/cogsci96.pdf), and indeed the entire discipline of philosophy as being part of the cog sci field, e.g. What is Cognitive Science? (http://ls.berkeley.edu/ugis/cogsci/major/about.php), while other reputable sources that cover both qualia and cog sci do not draw any obvious connection between them, e.g. the Stanford encyclopedia of philosophy (http://plato.stanford.edu) (Jan 2008 online edition) does have full-size articles on both qualia (http://plato.stanford.edu/entries/qualia/) and cog sci (http://plato.stanford.edu/entries/cognitive-science/), but qualia are not even mentioned in the cog sci article while cog sci is not mentioned in the qualia article.

[9] http://www.aaai.org/AITopics/html/cogsci.html#simon

[10] Sun, Ron (ed.) (2008). The Cambridge Handbook of Computational Psychology. Cambridge University Press, New York.

[11] Pinker S., Bloom P. (1990). "Natural language and natural selection". *Behavioral and Brain Sciences* **13** (4): 707–784. doi:10.1017/S0140525X00081061.

[12] Lewandowski, Gary; Strohmetz, David (2009). "Actions can speak as loud as words: Measuring behavior in psychological science". *Social and Personality Psychology Compass* **3** (6): 992–1002. doi:10.1111/j.1751-9004.2009.00229.

[13] B. F. Skinner, "Can Psychology be a Science of Mind?", *American Psychologist*, November 1990, page 1209, At the APA Web Site (http://psycnet.apa.org/journals/amp/45/11/1206.html) Successfully accessed 29 December 2009

Further reading

Introductory literature

- Eckardt, Barbara Von (2003): *Cognitive Science: Philosophical Issues*. In: Lynn Nadel (Ed.): Encyclopedia of Cognitive Science, Vol. 1, London: Nature Publishing Group, pp. 552–559.
- Thagard, Paul (2nd, 2005). *Mind : Introduction to Cognitive Science*. Cambridge, MA: The MIT Press.

General

- Bechtel, W. et al. Ed. (1999). *A Companion to Cognitive Science. Blackwell Companions to Philosophy*. Malden, MA: Blackwell Publishers.
- Gardner, Howard (1987). *The Minds New Science: A History of the Cognitive Revolution*. New York: Basic Books.
- Gleitman, Lila R.; Mark Liberman (Eds.) (1995). *An Invitation to Cognitive Science, Vol. 1: Language*. The MIT Press. ISBN 978-0262650441.
- Isac, Daniela; Charles Reiss (2008). *I-language: An Introduction to Linguistics as Cognitive Science* (http://linguistics.concordia.ca/i-language/). Oxford University Press. ISBN 978-0199534203.
- Hutto, Daniel D. (2008). *Folk Psychological Narratives: The Sociocultural Basis of Understanding Reasons*. MIT Press. ISBN 978-0-262-08367-6.
- Sun, Ron (2008). *The Cambridge Handbook of Computational Psychology*. Cambridge University Press, New York. ISBN 0521857414.

Classic texts

- Chomsky, Noam (1965). *Aspects of the Theory of Syntax*. The MIT Press. ISBN 978-0-262-53007-1.
- Churchland, Patricia Smith (1986). *Neurophilosophy: Toward a Unified Science of the Mind-Brain*. The MIT Press. ISBN 978-0-262-03116-5.
- Dennett, Daniel C. (1981). *Brainstorms: Philosophical Essays on Mind and Psychology*. The MIT Press. ISBN 978-0-262-54037-7.
- Fodor, Jerry A. (1983). *The Modularity of Mind*. The MIT Press. ISBN 978-0-262-56025-2.
- Gazzaniga (ed.), Michael S. (2004). *The Cognitive Neurosciences III*. The MIT Press. ISBN 978-0-262-07254-0.
- Glimcher, Paul W. (2003). *Decision, Uncertainty, and the Brain*. The MIT Press. ISBN 978-0-262-57227-9.
- Minsky, Marvin L.; Seymour A. Papert (1969). *Perceptrons: An Introduction to Computational Geometry*. The MIT Press. ISBN 0-262-63111-2.
- Noe, Alva (2005). *Action in Perception*. The MIT Press. ISBN 978-0-262-14088-1.
- Putnam, Hilary (1988). *Representation and Reality*. The MIT Press. ISBN 978-0-262-66074-7.
- Pylyshyn, Zenon (1986). *Computation and Cognition: Toward a Foundation for Cognitive Science*. The MIT Press. ISBN 978-0-262-66058-7.
- Rumelhart, David E.; James L. McClelland and the PDP Research Group (1987). *Parallel Distributed Processing: Explorations in the Microstructure of Cognition*. The MIT Press. ISBN 0-262-63112-9.
- Searle, John (1992). *The Rediscovery of the Mind*. The MIT Press. ISBN 978-0-262-69154-3.
- Simon, Herbert A. (1970). *The Sciences of the Artificial*. The MIT Press. ISBN 978-0-262-69191-8.
- Van Orman Quine, Willard (1964). *Word and Object*. The MIT Press. ISBN 978-0-262-67001-2.
- Vygotsky, Lev (1962). *Thought and Language*. The MIT Press. ISBN 978-0-262-72010-6.
- Wiener, Norbert (1948). *Cybernetics or Control and Communication in the Animal and the Machine*. The MIT Press. ISBN 978-0-262-73009-9.
- Wilson, Robert Andrew; Keil, Frank C. (Eds.) (2001). *The MIT Encyclopedia of the Cognitive Sciences (MITECS)* (http://books.google.com/?id=-wt1aZrGXLYC&printsec=frontcover). Cambridge, Massachusetts: The MIT Press. ISBN 0-262-73144-7.

Definitions

- Cognitive Science (http://plato.stanford.edu/entries/cognitive-science) entry by Paul Thagard in the *Stanford Encyclopedia of Philosophy*
- Cognitive Science - American Assoc. for Artificial Intelligence (http://www.aaai.org/AITopics/html/cogsci.html#simon)
- aiKnow: Cognitive Artificial Intelligence (http://www.aiknow.net)
- MIT CogNet (http://cognet.mit.edu/)

Miscellaneous

- Baumgartner, P., et al. Eds. (1995). *Speaking Minds: Interviews With Twenty Eminent Cognitive Scientists.* Princeton, NJ: Princeton University Press.
- Damasio, A. R. (1994). *Descartes' Error: Emotion, Reason and the Human Brain.* New York: Grosset/Putnam.
- Gazzaniga, M. S. Ed. (1996). *Conversations in the Cognitive Neurosciences.* New York: The MIT Press.
- Hunt, M. (1982). *The Universe Within: A New Science Explores the Human Mind.* Brighton: The Harvester Press.
- Lakoff, G and Johnson, M. (1999). *Philosophy In The Flesh.* New York: Basic Books.
- Port, Robert F. and vanGelder, Tim (1995). *Mind as Motion: Explorations in the Dynamics of Cognition*. Cambridge, MA: The MIT Press. ISBN 0262161508 .
- Sun, Ron & L. Bookman, (eds.), Computational Architectures Integrating Neural and Symbolic Processes. Kluwer Academic Publishers, Needham, MA. 1994.
- Thelen, Esther and Smith, Linda B. (1996). *A Dynamic Systems Approach to the Development of Cognition and Action*. Cambridge, MA: The MIT Press. ISBN 026270059X .
- Tsakiridis, George. Evagrius Ponticus and Cognitive Science: A Look at Moral Evil and the Thoughts. Eugene, OR: Pickwick Publications, 2010.

Publications & publishers

- The Journal of Cognitive Science (http://www.cognitivesciencesociety.org/)
- Cognitive Science Journal Archive (http://www.cogsci.rpi.edu/CSJarchive/): Archive of the *Cognitive Science* journal, plus conference proceedings and supplemental materials
- Cognitive Systems Research (http://www.elsevier.com/locate/cogsys)
- WIREs Cognitive Science (http://wires.wiley.com/WileyCDA/WiresJournal/wisId-WCS.html) - publication addressing the topic of cognitive science from a range of multi-disciplinary perspectives, combining the features of a review journal with an online reference work

External links

- Cognitive Science Society (http://www.cognitivesciencesociety.org)
- University of California San Diego, Department of Cognitive Science (http://www.cogsci.ucsd.edu)
- iCogSci: An online information portal of everything Cognitive Science (http://www.cogs.indiana.edu/iacs/)
- Cognitive Science Movie Index: A broad list of movies showcasing themes in the Cognitive Sciences (https://www.indiana.edu/~cogfilms)
- Piero Scaruffi's annotated bibliography on the mind (http://www.scaruffi.com/mind.html)
- List of leading thinkers in cognitive science (http://carbon.ucdenver.edu/~mryder/itc/cogsci.html)
- Dr. Roy Ruddle's history page at the University of Leeds (http://www.comp.leeds.ac.uk/ai12/history.html)
- Dr. Carl Stahmer's history page at the University of Santa Barbara (http://www.carlstahmer.com/cogsci/index.php)
- Department of Cognitive Science at the Hebrew University of Jerusalem (http://www.hum.huji.ac.il/english/units.php?cat=3046&incat=3045)
- Cognitive Science Center Amsterdam (http://www.csca.nl)

Attention

In 1890, William James, in his textbook *Principles of Psychology*, remarked:

> *Everyone knows what attention is. It is the taking possession by the mind, in clear and vivid form, of one out of what seem several simultaneously possible objects or trains of thought. Focalization, concentration, of consciousness are of its essence. It implies withdrawal from some things in order to deal effectively with others, and is a condition which has a real opposite in the confused, dazed, scatterbrained state which in French is called distraction, and Zerstreutheit in German.*[1]

Other authors have argued against this approach, claiming that 'There is no such thing as attention' [2] . They argue that much research studying attention makes the mistake of "treating it as a cause, when it is an effect" [3] , and that attention cannot and should not be studied independent of the specific perceptual or other cognitive processes that are influenced by the presence or absence of attention.

Over the past hundred years attention, loosely defined as the cognitive process of paying attention to one aspect of the environment while ignoring others, has become one of the most intensely studied topics within psychology and cognitive neuroscience. Attention remains a major area of investigation within education, psychology and neuroscience. Areas of active investigation involve determining the source of the signals that generate attention, the effects of these signals on the tuning properties of sensory neurons, and the relationship between attention and other cognitive processes like working memory. Another ongoing line of research involves studying how attention is disrupted early in the development of different disorders, and how abnormalities in the allocation of attention can affect subsequent learning[4] .

History of the study of attention

1850s to 1900s

In William James' time, the method more commonly used to study attention was introspection. However, as early as 1858, Franciscus Donders used mental chronometry to study attention and it was considered a major field of intellectual inquiry by authors such as Sigmund Freud. One major debate in this period was whether it was possible to attend to two things at once (split attention). Walter Benjamin described this experience as "reception in a state of distraction." This disagreement could only be resolved through experimentation.

1950s to present

In the 1950s, research psychologists renewed their interest in attention when the dominant epistemology shifted from positivism (i.e., behaviorism) to realism during what has come to be known as the "cognitive revolution".[5] The cognitive revolution admitted unobservable cognitive processes like attention as legitimate objects of scientific study.

Modern research on attention began with the analysis of the "cocktail party problem" by Colin Cherry in 1953. At a cocktail party how do people select the conversation that they are listening to and ignore the rest? This problem is at times called "focused attention", as opposed to "divided attention". Cherry performed a number of experiments which became known as dichotic listening and were extended by Donald Broadbent and others.[6] In a typical experiment, subjects would use a set of headphones to listen to two streams of words in different ears and selectively attend to one stream. After the task, the experimenter would question the subjects about the content of the unattended stream. Experiments by Gray and Wedderburn and later Anne Treisman pointed out various problems in Broadbent's early model and eventually led to the Deutsch-Norman model in 1968. In this model, no signal is filtered out, but all are processed to the point of activating their stored representations in memory. The point at which attention becomes "selective" is when one of the memory representations is selected for further processing. At any time, only one can be selected, resulting in the *attentional bottleneck*.[7]

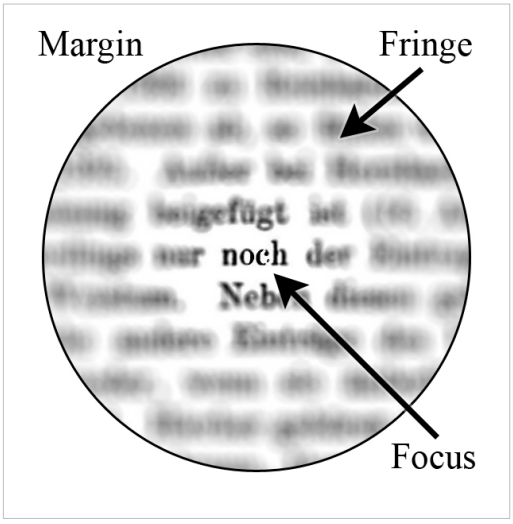
This debate became known as the early-selection vs late-selection models. In the early selection models (first proposed by Donald Broadbent and Anne Treisman), attention shuts down or attenuates processing in the unattended ear before the mind can analyze its semantic content. In the late selection models (first proposed by J. Anthony Deutsch and Diana Deutsch), the content in both ears is analyzed semantically, but the words in the unattended ear cannot access consciousness.[8] This debate has still not been resolved.

Anne Treisman developed the highly influential feature integration theory.[9] According to this model, attention binds different features of an object (e.g., color and shape) into consciously experienced wholes. Although this model has received much criticism, it is still widely cited and spawned similar theories with modification, such as Jeremy Wolfe's Guided Search Theory.[10]

In the 1960s, Robert Wurtz at the National Institutes of Health began recording electrical signals from the brains of macaques who were trained to perform attentional tasks. These experiments showed for the first time that there was a direct neural correlate of a mental process (namely, enhanced firing in the superior colliculus).

In the 1990s, psychologists began using PET and later fMRI to image the brain in attentive tasks. Because of the highly expensive equipment that was generally only available in hospitals, psychologists sought for cooperation with neurologists. Pioneers of brain imaging studies of selective attention are psychologist Michael I. Posner (then already renowned for his seminal work on visual selective attention) and neurologist Marcus Raichle. Their results soon sparked interest from the entire neuroscience community in these psychological studies, which had until then focused on monkey brains. With the development of these technological innovations neuroscientists became interested in this type of research that combines sophisticated experimental paradigms from cognitive psychology with these new brain imaging techniques. Although the older technique of EEG had long been used to study the brain activity underlying selective attention by cognitive psychophysiologists, the ability of the newer techniques to actually measure precisely localized activity inside the brain generated renewed interest by a wider community of researchers. The results of these experiments have shown a broad agreement with the psychological, psychophysiological and the experiments performed on monkeys.

Selective Attention



In cognitive psychology there are at least two models which describe how visual attention operates. These models may be considered loosely as metaphors which are used to describe internal processes and to generate hypotheses that are falsifiable. Generally speaking, visual attention is thought to operate as a two-stage process.[11] In the first stage, attention is distributed uniformly over the external visual scene and processing of information is performed in parallel. In the second stage, attention is concentrated to a specific area of the visual scene (i.e. it is focused), and processing is performed in a serial fashion.

The first of these models to appear in the literature is the spotlight model. The term "spotlight" was first used by David LaBerge,[12] and was inspired by the work of William James who described attention as having a focus, a margin, and a fringe.[13] The focus is an area that extracts information from the visual scene with a high-resolution, the geometric center of which being where visual attention is directed. Surrounding the focus is the fringe of attention which extracts information in a much more crude fashion (i.e. low-resolution). This fringe extends out to a specified area and this cut-off is called the margin.

The second model is called the zoom-lens model, and was first introduced in 1983.[14] This model inherits all properties of the spotlight model (i.e. the focus, the fringe, and the margin) but has the added property of changing in

size. This size-change mechanism was inspired by the zoom lens you might find on a camera, and any change in size can be described by a trade-off in the efficiency of processing.[15] The zoom-lens of attention can be described in terms of an inverse trade-off between the size of focus and the efficiency of processing: because attentional resources are assumed to be fixed, then it follows that the larger the focus is, the slower processing will be of that region of the visual scene since this fixed resource will be distributed over a larger area. It is thought that the focus of attention can subtend a minimum of 1° of visual angle,[13] [16] however the maximum size has not yet been determined.

Bottom-Up vs Top-Down

Attention Researchers have described two different aspects of how our minds select items present in the environment to attend to.

The first aspect is called bottom-up processing, also known as stimulus-driven attention or exogenous attention. These describe the aspects of our attentional processing that are thought to be driven by the properties of the objects themselves. These aspects of attention are thought to involve parietal and temporal cortices, as well as the brainstem[17] . Certain aspects of an object's properties, such as motion or a sudden loud noise, have the capacity to attract our attention in a pre-conscious, or non-volitional way. We attend to them whether we want to or not[18] .

The second aspects is called top-down processing, also known as goal-driven, endogenous attention, attentional control or executive attention. This refers to those aspects of our attentional orienting which are under the control of the person who is attending. In the brain, it is thought to be mediated primarily by the frontal cortex and basal ganglia[17] .

Attentional Control/Executive Attention

Attentional control, also known as endogenous or executive attention, refers to our capacity to choose what we pay attention to and what we ignore[19] . It is considered one of the executive functions[20] , mediated primarily by frontal areas of the brain[17] . Subcomponents of attentional control include conflict resolution and inhibition[21] . Individuals' capacity to exercise attentional control has been shown to relate to other aspects of the executive functions, such as working memory[22] .

Overt and covert attention

Attention may be differentiated according to its status as "overt" versus "covert".[23] Overt attention is the act of directing sense organs towards a stimulus source. Covert attention is the act of mentally focusing on one of several possible sensory stimuli. Covert attention is thought to be a neural process that enhances the signal from a particular part of the sensory panorama. (e.g. While reading, shifting overt attention would amount to movement of eyes to read different words, but covert attention shift would occur when you shift your focus from semantic processing of word to the font or color of the word you are reading.)

There are studies that suggest the mechanisms of overt and covert attention may not be as separate as previously believed. Though humans and primates can look in one direction but attend in another, there may be an underlying neural circuitry that links shifts in covert attention to plans to shift gaze. For example, if individuals attend to the right hand corner field of view, movement of the eyes in that direction may have to be actively suppressed.

The current view is that visual covert attention is a mechanism for quickly scanning the field of view for interesting locations. This shift in covert attention is linked to eye movement circuitry that sets up a slower saccade to that location.

Influence of Processing Load

One theory regarding selective attention is the load theory, which states that there are two mechanisms that affect attention: cognitive and perceptual. The perceptual considers the subject's ability to perceive or ignore stimuli, both task-related and non task-related. Studies show that if there are many stimuli present (especially if they are task-related), it is much easier to ignore the non-task related stimuli, but if there are few stimuli the mind will perceive the irrelevant stimuli as well as the relevant. The cognitive refers to the actual processing of the stimuli, studies regarding this showed that the ability to process stimuli decreased with age, meaning that younger people were able to perceive more stimuli and fully process them, but were likely to process both relevant and irrelevant information, while older people could process fewer stimuli, but usually processed only relevant information.[24]

Some people can process multiple stimuli, e.g. trained morse code operators have been able to copy 100% of a message while carrying on a meaningful conversation. This relies on the reflexive response due to "overlearning" the skill of morse code reception/detection/transcription so that it is an autonomous function requiring no specific attention to perform.

Neural correlates of attention

Most experiments show that one neural correlate of attention is enhanced firing. If a neuron has a certain response to a stimulus when the animal is not attending to the stimulus, then when the animal does attend to the stimulus, the neuron's response will be enhanced even if the physical characteristics of the stimulus remain the same.

In a recent review, Knudsen[25] describes a more general model which identifies four core processes of attention, with working memory at the center:

- Working memory temporarily stores information for detailed analysis.
- Competitive selection is the process that determines which information gains access to working memory.
- Through top-down sensitivity control, higher cognitive processes can regulate signal intensity in information channels that compete for access to working memory, and thus give them an advantage in the process of competitive selection. Through top-down sensitivity control, the momentary content of working memory can influence the selection of new information, and thus mediate voluntary control of attention in a recurrent loop (endogenous attention).[26]
- Bottom-up saliency filters automatically enhance the response to infrequent stimuli, or stimuli of instinctive or learned biological relevance (exogenous attention[26]).

Neurally, at different hierarchical levels spatial maps can enhance or inhibit activity in sensory areas, and induce orienting behaviors like eye movement.

- At the top of the hierarchy, the frontal eye fields (FEF) on the dorsolateral frontal cortex contain a retinocentric spatial map. Microstimulation in the FEF induces monkeys to make a saccade to the relevant location. Stimulation at levels too low to induce a saccade will nonetheless enhance cortical responses to stimuli located in the relevant area.
- At the next lower level, a variety of spatial maps are found in the parietal cortex. In particular, the lateral intraparietal area (LIP) contains a saliency map and is interconnected both with the FEF and with sensory areas.
- Certain automatic responses that influence attention, like orienting to a highly salient stimulus, are mediated subcortically by the superior colliculi.
- At the neural network level, it is thought that processes like lateral inhibition mediate the process of competitive selection.

In many cases attention produces changes in the EEG. Many animals, including humans, produce gamma waves (40–60 Hz) when focusing attention on a particular object or activity.[27]

References

[1] James, W. (1890). *The Principles of Psychology.* New York: Henry Holt, Vol. 1, pp. 403-404.

[2] Anderson, B. (2011). There is no Such Thing as Attention. Frontiers in psychology 2: 246.

[3] Anderson, B. (2011). There is no Such Thing as Attention. Frontiers in psychology 2: 246.

[4] Scerif, G. Attention trajectories, mechanisms and outcomes: at the interface between developing cognition and environment. Developmental Science 13(6): 805-812.

[5] Harré, Rom. *Cognitive science: A philosophical introduction*. London: SAGE Publications, 2002. ISBN 0761947469.

[6] *Understanding cognition* by Peter J. Hampson, Peter Edwin Morris 1996 ISBN 0631157514 page 112

[7] *Understanding cognition* by Peter J. Hampson, Peter Edwin Morris 1996 ISBN 0631157514 pages 115-116

[8] Deutsch, J.A.; Deutsch, D. (1963). "Attention: some theoretical considerations". *Psychological Review* **70**: 80–90. doi:10.1037/h0039515. PMID 14027390.

[9] Treisman, A.; Gelade, G. (1980). "A feature-integration theory of attention". *Cognitive Psychology* **12** (1): 97–136. doi:10.1016/0010-0285(80)90005-5. PMID 7351125.

[10] Wolfe, J.M. (1994). "Guided search 2.0: a revised model of visual search" (http://www.psychonomic.org/backissues/4180/0107.pdf). *Psychonomic Bulletin Review* **1** (2): 202–238. doi:10.3758/BF03200774. .

[11] Jonides J. (1983). "Further towards a model of the mind's eye's movement" (http://www-personal.umich.edu/~jjonides/pdf/1983_4.pdf) (PDF). *Bulletin of the Psychonomic Society* **21** (4): 247–250. .

[12] LaBerge D. (1983). "Spatial extent of attention to letters and words". *Journal of experimental psychology: Human perception and performance* **9** (3): 371–379. doi:10.1037/0096-1523.9.3.371.

[13] Eriksen, C; Hoffman, J. (1972). "Temporal and spatial characteristics of selective encoding from visual displays" (http://psycnet.apa.org/?fa=main.doiLanding&uid=1973-01584-001). *Perception & Psychophysics* **12** (2B): 201–204. doi:10.3758/BF03212870. .

[14] Eriksen, C; St James, J. (1986). "Visual attention within and around the field of focal attention: A zoom lens model". *Perception & Psychophysics* **40** (4): 225–240. doi:10.3758/BF03211502. PMID 3786090.

[15] Castiello, U; Umilta, C. (1990). "Size of the attentional focus and efficiency of processing". *Acta Psychologica* **73** (3): 195–209. doi:10.1016/0001-6918(90)90022-8. PMID 2353586.

[16] Eriksen, CW; Hoffman, JE. (1973). "The extent of processing of noise elements during selective encoding from visual displays" (http://www.psychonomic.org/backissues/21786//pp/vol14-1/pp-14-155.pdf) (PDF). *Perception & Psychophysics* **14** (1): 155–160. doi:10.3758/BF03198630. .

[17] Posner, M. I. & Petersen, S. E. (1990) The attention system of the human brain. Annual Review of Neuroscience 13: 25-42.

[18] Theeuwes, J. (1991 Exogenous and endogenous control of attention - the effect of visual onsets and offsets. Perception & Psychophysics 49(1): 83-90.

[19] Posner, M.I. & Rothbart, M.K. Attention, self-regulation and consciousness. Phil. Trans. R. Soc. Lond. B (1998) 353, 1915-1927

[20] Posner, M. I. (1980) ORIENTING OF ATTENTION. Quarterly Journal of Experimental Psychology 32(FEB): 3-25.

[21] Rueda, M. R., Rothbart, M. K., McCandliss, B. D., Saccomanno, L. & Posner, M. I. (2005) Training, maturation, and genetic influences on the development of executive attention. Proceedings of the National Academy of Sciences of the United States of America 102(41): 14931-14936.

[22] Astle, D. E. & Scerif, G. (2009) Using Developmental Cognitive Neuroscience to Study Behavioral and Attentional Control. Developmental Psychobiology 51(2): 107-118.

[23] Wright, R.D. & Ward, L.M. (2008). Orienting of Attention. Oxford University Press

[24] Lavie, Nilli; Hirst, Aleksandra; de Fockert, Jan W.; Viding, Essi (2004). "Load theory of selective attention and cognitive control" (http://www.icn.ucl.ac.uk/lavielab/reprints/Lavie-etal-04.pdf). *Journal of Experimental Psychology* **133** (3): 339–54. doi:10.1037/0096-3445.133.3.339. PMID 15355143. .

[25] Knudsen, Eric I (2007). "Fundamental Components of Attention". *Annual Review of Neuroscience* **30** (1): 57–78. doi:10.1146/annurev.neuro.30.051606.094256. PMID 17417935.

[26] Pattyn, N.; Neyt, X.; Henderickx, D.; Soetens, E. (2008). "Psychophysiological Investigation of Vigilance Decrement: Boredom or Cognitive Fatigue?". *Physiology & Behavior* **93**: 369–378. doi:10.1016/j.physbeh.2007.09.016.

[27] Kaiser J, Lutzenberger W (2003). "Induced gamma-band activity and human brain function". *Neuroscientist* **9** (6): 475–84. doi:10.1177/1073858403259137. PMID 14678580.

Creativity

Creativity refers to the phenomenon whereby a person creates something new (a product, a solution, a work of art, a novel, a joke, etc.) that has some kind of value. What counts as "new" may be in reference to the individual creator, or to the society or domain within which the novelty occurs. What counts as "valuable" is similarly defined in a variety of ways.

Scholarly interest in creativity ranges widely: Topics to which it is relevant include the relationship between creativity and general intelligence; the mental and neurological processes associated with creative activity; the relationship between personality type and creative ability; the relationship between creativity and mental health; the potential for fostering creativity through education and training, especially as augmented by technology; and the application of an individual's existing creative resources to improve the effectiveness of learning processes and of the teaching processes tailored to them.

Creativity and creative acts are therefore studied across several disciplines - psychology, cognitive science, education, philosophy (particularly philosophy of science), technology, theology, sociology, linguistics, business studies, and economics. As a result, there are a multitude of definitions and approaches.

Etymology

The lexeme in the English word *creativity* comes from the Latin term *creō* "to create, make" and its derivational suffixes also come from Latin. The word "create" appears in English as early as the 14th century, notably in Chaucer[1] (in The Parson's Tale[2]). However, its modern meaning as an act of human creation did not emerge until after the Enlightenment.[1]

Definition

In a summary of scientific research into creativity Michael Mumford suggested: ""Over the course of the last decade, however, we seem to have reached a general agreement that creativity involves the production of novel, useful products" (Mumford, 2003, p. 110).[3] Beyond this general commonality, authors have diverged dramatically in their precise definitions, with Peter Meusburger claiming that over a hundred different versions can be found in the literature.[4]

Aspects of creativity

Theories of creativity (in particular investigating why some people are more creative than others) have focused on a variety of aspects. The most dominant are usually identified as the four "Ps" - process, product, person and place.[5] A focus on *process* is shown in cognitive approaches that try to describe thought mechanisms and techniques for creative thinking. Theories invoking divergent rather than convergent thinking (such as Guilford), or those describing the staging of the creative process (such as Wallas) are primarily theories of creative process. A focus on creative *product* usually appears in attempts to measure creativity in people (psychometrics, see below), or in creative ideas framed as successful memes.[6] A focus on the nature of the creative *person* considers more general intellectual habits, such as openness, levels of ideation, autonomy, expertise, exploratory behaviour and so on. A focus on *place* considers the best circumstances in which creativity flourishes, including degrees of autonomy, access to resources and the nature of gatekeepers.

Historical and personal creativity

The product of "creativity" has typically been defined in one of two ways: either as something historically new (and relatively rare), such as scientific discoveries or great works of art; or as producing something new in a personal sense - an apparent innovation for the creator, regardless of whether others have made similar innovations, or whether others value the particular act of creation. In the former sense there are writers such as Mihály Csíkszentmihályi[7] have defined creativity in terms of rare individuals who have been judged by others to have made significant creative, often domain-changing contributions (and as such, the level of creativity of an individual can vary over historical time as perceptions change), and Simonton, who has analysed the career trajectories of the creatively eminent in order to map patterns and predictors of creative productivity.[8] In the latter sense, writers such as Ken Robinson,[9] and Anna Craft[10] have focussed on creativity in a general population, particularly with respect to education.

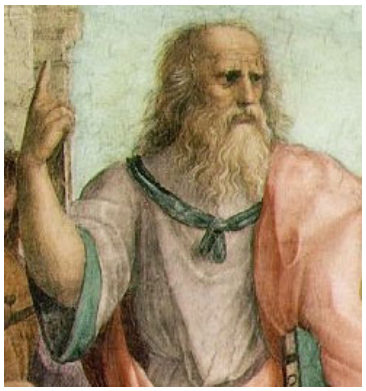
There are a variety of labels for the two sides of this dichotomy. Margaret Boden distinguishes between h-creativity (historical) and p-creativity (personal).[11] Craft makes a similar distinction between "high" and "little c" creativity.[10] while Craft cites Robinson referring to "high" and "democratic" creativity. Common also is the pairing of terms "Big C" and "Little C".

Kozbelt, Beghetto and Runco, use a little-c/Big-C model to review major theories of creativity [5] This approach was first introduced by James C. Kaufman and Beghetto into a four C model: *mini-c* (transformative learning), which are "personally meaningful interpretations of experiences, actions and insights"; *little-c* (everyday problem solving and creative expression); *Pro-C*, exhibited by people who are professionally or vocationally creative but not eminent, and *Big-C*, reserved for those who are considered truly great in their field. This was to help distinguish more clearly between the amateur unapprenticed in the particular creative domain (e.g. the visual arts, astrophysics etc.), the professional who was domain-competent, and creative genius. The four-c model was also intended to help accommodate models and theories of creativity that stressed domain-competence as an essential component, and domain transformation as the highest mark of creativity; it also, they argued, made a useful framework for analysing creative processes in individuals.[12]

History of the term and the concept

Ancient views

Most ancient cultures, including thinkers of Ancient Greece,[13] Ancient China, and Ancient India,[14] lacked the concept of creativity, seeing art as a form of discovery and not creation. The ancient Greeks had no terms corresponding to "to create" or "creator" except for the expression "*poiein*" ("to make"), which only applied to *poiesis* (poetry) and to the *poietes* (poet, or "maker") who made it. Plato did not believe in art as a form of creation. Asked in *The Republic*, "Will we say, of a painter, that he makes something?", he answers, "Certainly not, he merely imitates."[13]



Greek philosophers like Plato rejected the concept of creativity, preferring to see art as a form of discovery. Asked in *The Republic*, "Will we say, of a painter, that he makes something?", Plato answers, "Certainly not, he merely imitates."[13]

It is commonly argued that the notion of "creativity" originated in Western culture through Christianity, as a matter of divine inspiration.[1] According to the historian Daniel J. Boorstin, "the early Western conception of creativity was the Biblical story of creation given in the *Genesis*."[15] However, this is not creativity in the modern sense, which did not arise until the Renaissance. In the Judaeo-Christian tradition, creativity was the sole province of God;

humans were not considered to have the ability to create something new except as an expression of God's work.[16] A concept similar to that of Christianity existed in Greek culture, for instance, Muses were seen as mediating inspiration from the Gods.[17] Romans and Greeks invoked the concept of an external creative "daemon" (Greek) or "genius" (Latin), linked to the sacred or the divine. However, none of these views are similar to the modern concept of creativity, and the individual was not seen as the cause of creation until the Renaissance.[18] It was during the Renaissance that creativity was first seen, not as a conduit for the divine, but from the abilities of "great men".[18]

The Enlightenment and after

The rejection of creativity in favor of discovery and the belief that individual creation was a conduit of the divine would dominate the West probably until the Renaissance and even later.[16] The development of the modern concept of creativity begins in the Renaissance, when creation began to be perceived as having originated from the abilities of the individual, and not God. However, this shift was gradual and would not become immediately apparent until the Enlightenment.[18] By the 18th century and the Age of Enlightenment, mention of creativity (notably in art theory), linked with the concept of imagination, became more frequent.[19] In the writing of Thomas Hobbes, imagination became a key element of human cognition;[1] William Duff was one of the first to identify imagination as a quality of genius, typifying the separation being made between talent (productive, but breaking no new ground) and genius.[17]

As a direct and independent topic of study, creativity effectively received no attention until the 19th century.[17] Runco and Albert argue that creativity as the subject of proper study began seriously to emerge in the late 19th century with the increased interest in individual differences inspired by the arrival of Darwinism. In particular they refer to the work of Francis Galton, who through his eugenicist outlook took a keen interest in the heritability of intelligence,with creativity taken as an aspect of genius.[1]

In the late 19th and early 20th centuries, leading mathematicians and scientists such as Hermann von Helmholtz (1896) and Henri Poincaré (1908) began to reflect on and publicly discuss their creative processes.

Twentieth century to the present day

The insights of Poincaré and von Helmholtz were built on in early accounts of the creative process by pioneering theorists such as Graham Wallas[20] and Max Wertheimer. In his work *Art of Thought*, published in 1926, Wallas presented one of the first models of the creative process. In the Wallas stage model, creative insights and illuminations may be explained by a process consisting of 5 stages:

(i) *preparation* (preparatory work on a problem that focuses the individual's mind on the problem and explores the problem's dimensions),

(ii) *incubation* (where the problem is internalized into the unconscious mind and nothing appears externally to be happening),

(iii) *intimation* (the creative person gets a "feeling" that a solution is on its way),

(iv) *illumination* or insight (where the creative idea bursts forth from its preconscious processing into conscious awareness); and

(v) *verification* (where the idea is consciously verified, elaborated, and then applied).

Wallas' model is often treated as four stages, with "intimation" seen as a sub-stage.

Wallas considered creativity to be a legacy of the evolutionary process, which allowed humans to quickly adapt to rapidly changing environments. Simonton[21] provides an updated perspective on this view in his book, *Origins of genius: Darwinian perspectives on creativity*.

In 1927, Alfred North Whitehead gave the Gifford Lectures at the University of Edinburgh, later published as *Process and Reality.*[22] He is credited with having coined the term "creativity" to serve as the ultimate category of his metaphysical scheme: "Whitehead actually coined the term – our term, still the preferred currency of exchange

among literature, science, and the arts. . . a term that quickly became so popular, so omnipresent, that its invention within living memory, and by Alfred North Whitehead of all people, quickly became occluded".[23]

The formal psychometric measurement of creativity, from the standpoint of orthodox psychological literature, is usually considered to have begun with J. P. Guilford's 1950 address to the American Psychological Association, which helped popularize the topic[24] and focus attention on a scientific approach to conceptualizing creativity. (It should be noted that the London School of Psychology had instigated psychometric studies of creativity as early as 1927 with the work of H. L. Hargreaves into the Faculty of Imagination,[25] but it did not have the same impact.) Statistical analysis led to the recognition of creativity(as measured) as a separate aspect of human cognition to IQ-type intelligence, into which it had previously been subsumed. Guilford's work suggested that above a threshold level of IQ, the relationship between creativity and classically measured intelligence broke down.[5]

Creative Process

There has been much empirical study in psychology and cognitive science of the processes through which creativity occurs.

Incubation

Incubation is a temprorary break from creative problem solving that can result in insight.[26] There has been some empirical research looking at whether, as the concept of "incubation" in Wallas' model implies, a period of interruption or rest from a problem may aid creative problem-solving. Ward[27] lists various hypotheses that have been advanced to explain why incubation may aid creative problem-solving, and notes how some empirical evidence is consistent with the hypothesis that incubation aids creative problem-solving in that it enables "forgetting" of misleading clues. Absence of incubation may lead the problem solver to become fixated on inappropriate strategies of solving the problem.[28] This work disputes the earlier hypothesis that creative solutions to problems arise mysteriously from the unconscious mind while the conscious mind is occupied on other tasks.[29]

Convergent and Divergent thinking

J. P. Guilford[30] performed important work in the field of creativity, drawing a distinction between convergent and divergent production (commonly renamed convergent and divergent thinking). Convergent thinking involves aiming for a single, correct solution to a problem, whereas divergent thinking involves creative generation of multiple answers to a set problem. Divergent thinking is sometimes used as a synonym for creativity in psychology literature. Other researchers have occasionally used the terms *flexible* thinking or fluid intelligence, which are roughly similar to (but not synonymous with) creativity.

Creative Cognition Approach

In 1992, Finke et al. proposed the "Geneplore" model, in which creativity takes place in two phases: a generative phase, where an individual constructs mental representations called preinventive structures, and an exploratory phase where those structures are used to come up with creative ideas. Some evidence shows that when people use their imagination to develop new ideas, those ideas are heavily structured in predictable ways by the properties of existing categories and concepts.[31] Weisberg[32] argued, by contrast, that creativity only involves ordinary cognitive processes yielding extraordinary results.

The Explicit-Implicit Interaction (EII) theory

Helie and Sun[33] recently proposed a unified framework for understanding creativity in problem solving, namely the Explicit-Implicit Interaction (EII) theory of creativity. This new theory constitutes an attempt at providing a more unified explanation of relevant phenomena (in part by reinterpreting/integrating various fragmentary existing theories of incubation and insight). The EII theory relies mainly on five basic principles, namely 1) The co-existence of and the difference between explicit and implicit knowledge; 2) The simultaneous involvement of implicit and explicit processes in most tasks; 3) The redundant representation of explicit and implicit knowledge; 4) The integration of the results of explicit and implicit processing; and 5) The iterative (and possibly bidirectional) processing. A computational implementation of the theory was developed based on the CLARION cognitive architecture and used to simulate relevant human data. This work represents an initial step in the development of process-based theories of creativity encompassing incubation, insight, and various other related phenomena.

Conceptual blending

In *The Act of Creation*, Arthur Koestler introduced the concept of *bisociation*—that creativity arises as a result of the intersection of two quite different frames of reference.[34] This idea was later developed into conceptual blending. In the '90s, various approaches in cognitive science that dealt with metaphor, analogy and structure mapping have been converging, and a new integrative approach to the study of creativity in science, art and humor has emerged under the label conceptual blending.

Honing Theory

Honing theory posits that creativity arises due to the self-organizing, self-mending nature of a worldview, and that it is by way of the creative process the individual hones (and re-hones) an integrated worldview. Honing theory places equal emphasis on the externally visible creative outcome and the internal cognitive restructuring brought about by the creative process. Indeed one factor that distinguishes it from other theories of creativity is that it focuses on not just restructuring as it pertains to the conception of the task, but as it pertains to the worldview as a whole. When faced with a creatively demanding task, there is an interaction between the conception of the task and the worldview. The conception of the task changes through interaction with the worldview, and the worldview changes through interaction with the task. This interaction is reiterated until the task is complete, at which point not only is the task conceived of differently, but the worldview is subtly or drastically transformed. Thus another distinguishing feature of honing theory is that the creative process reflects the natural tendency of a worldview to attempt to resolve dissonance and seek internal consistency amongst its components, whether they be ideas, attitudes, or bits of knowledge; it mends itself as does a body when it has been injured.

Yet another central, distinguishing feature of honing theory is the notion of a potentiality state.[35] Honing theory posits that creative thought proceeds not by searching through and randomly 'mutating' predefined possibilities, but by drawing upon associations that exist due to overlap in the distributed neural cell assemblies that participate in the encoding of experiences in memory. Midway through the creative process one may have made associations between the current task and previous experiences, but not yet disambiguated which aspects of those previous experiences are relevant to the current task. Thus the creative idea may feel 'half-baked'. It is at that point that it can be said to be in a potentiality state, because how it will actualize depends on the different internally- or externally-generated contexts it interacts with.

Honing theory can account for many phenomena that are not readily explained by other theories of creativity. For example, creativity was commonly thought to be fostered by a supportive, nurturing, trustworthy environment conducive to self-actualization. However, research shows that creativity is actually associated with childhood adversity, which would stimulate honing. Honing theory also makes several predictions that differ from what would be predicted by other theories. For example, empirical support has been obtained using analogy problem solving experiments for the proposal that midway through the creative process one's mind is in a potentiality state. Other

experiments show that different works by the same creator exhibit a recognizable style or 'voice', and that this same recognizable quality even comes through in different creative outlets. This is not predicted by theories of creativity that emphasize chance processes or the accumulation of expertise, but it is predicted by honing theory, according to which personal style reflects the creator's uniquely structured worldview. This theory has been developed by Liane Gabora.

Creativity and everyday imaginative thought

In everyday thought, people often spontaneously imagine alternatives to reality when they think "if only...".[36] Their counterfactual thinking is viewed as an example of everyday creative processes.[37] It has been proposed that the creation of counterfactual alternatives to reality depends on similar cognitive processes to rational thought.[38]

Measuring creativity

Creativity quotient

Several attempts have been made to develop a *creativity quotient* of an individual similar to the intelligence quotient (IQ), however these have been unsuccessful.[39]

Psychometric approach

J. P. Guilford's group,[30] which pioneered the modern psychometric study of creativity, constructed several tests to measure creativity in 1967:

- Plot Titles, where participants are given the plot of a story and asked to write original titles.
- Quick Responses is a word-association test scored for uncommonness.
- Figure Concepts, where participants were given simple drawings of objects and individuals and asked to find qualities or features that are common by two or more drawings; these were scored for uncommonness.
- Unusual Uses is finding unusual uses for common everyday objects such as bricks.
- Remote Associations, where participants are asked to find a word between two given words (e.g. Hand _____ Call)
- Remote Consequences, where participants are asked to generate a list of consequences of unexpected events (e.g. loss of gravity)

Building on Guilford's work, Torrance[40] developed the Torrance Tests of Creative Thinking in 1966. They involved simple tests of divergent thinking and other problem-solving skills, which were scored on:

- **Fluency –** The total number of interpretable, meaningful and relevant ideas generated in response to the stimulus.
- **Originality –** The statistical rarity of the responses among the test subjects.
- **Elaboration –** The amount of detail in the responses.

The Creativity Achievement Questionnaire, a self-report test that measures creative achievement across 10 domains, was described in 2005 and shown to be reliable and valid when compared to other measures of creativity and to independent evaluation of creative output.[41]

Such tests, sometimes called *Divergent Thinking (DT)* tests have been both supported[42] and criticized.[43]

Social-personality approach

Some researchers have taken a social-personality approach to the measurement of creativity. In these studies, personality traits such as independence of judgement, self-confidence, attraction to complexity, aesthetic orientation and risk-taking are used as measures of the creativity of individuals.[24] Other researchers[44] have related creativity to the trait, *openness to experience*.

As the research into the relationship between personality traits and creativity continues to grow, a more complete picture has developed. Within the framework of the Big Five model of personality some consistent traits have emerged.[45] Openness to experience has been shown to be consistently related to a whole host of different assessments of creativity.[46] Among the other Big Five traits, research has demonstrated subtle differences between different domains of creativity. A meta-analysis by Gregory Feist showed that artists tend to have higher levels of neuroticism and introversion, while scientists are more conscientious.[47]

Other approaches to measurement

Howard Gruber insisted on a case-study approach that expresses the existential and unique quality of the creator. Creativity to Gruber was the product of purposeful work and this work could be described only as a confluence of forces in the specifics of the case.

Creativity and intelligence

There has been debate in the psychological literature about whether intelligence and creativity are part of the same process (the conjoint hypothesis) or represent distinct mental processes (the disjoint hypothesis). Evidence from attempts to look at correlations between intelligence and creativity from the 1950s onwards, by authors such as Barron, Guilford or Wallach and Kogan, regularly suggested that correlations between these concepts were low enough to justify treating them as distinct concepts.[45]

Some researchers believe that creativity is the outcome of the same cognitive processes as intelligence, and is only judged as creativity in terms of its consequences, i.e. when the outcome of cognitive processes happens to produce something novel, a view which Perkins has termed the "nothing special" hypothesis.[48]

An often cited model is what has come to be known as "the threshold hypothesis," proposed by Ellis Paul Torrance, which holds that a high degree of intelligence appears to be a necessary but not sufficient condition for high creativity.[30] That is, while there is a positive correlation between creativity and intelligence, this correlation disappears for IQs above a threshold of around 120. Such a model has found acceptance by many researchers, although it has not gone unchallenged.[49] A study in 1962 by Getzels and Jackson among high school students concluded that high IQ and high creativity tend to be mutually exclusive with a majority of the highest scoring students being either highly creative or highly intelligent, but not both. While this explains the threshold, the exact interaction between creativity and IQ remains unexplained.[50] A 2005 meta-Analysis found only small correlations between IQ and creativity tests and did not support the threshold theory.[51]

An alternative perspective, Renzulli's three-rings hypothesis, sees giftedness as based on both intelligence and creativity. More on both the threshold hypothesis and Renzulli's work can be found in O'Hara and Sternberg.[48]

Another view is that creativity may be particularly related to fluid intelligence.[52]

Neurobiology of creativity

The neurobiology of creativity has been addressed[53] in the article "Creative Innovation: Possible Brain Mechanisms." The authors write that "creative innovation might require coactivation and communication between regions of the brain that ordinarily are not strongly connected." Highly creative people who excel at creative innovation tend to differ from others in three ways:

- they have a high level of specialized knowledge,
- they are capable of divergent thinking mediated by the frontal lobe.
- and they are able to modulate neurotransmitters such as norepinephrine in their frontal lobe.

Thus, the frontal lobe appears to be the part of the cortex that is most important for creativity.

This article also explored the links between creativity and sleep, mood and addiction disorders, and depression.

In 2005, Alice Flaherty presented a three-factor model of the creative drive. Drawing from evidence in brain imaging, drug studies and lesion analysis, she described the creative drive as resulting from an interaction of the frontal lobes, the temporal lobes, and dopamine from the limbic system. The frontal lobes can be seen as responsible for idea generation, and the temporal lobes for idea editing and evaluation. Abnormalities in the frontal lobe (such as depression or anxiety) generally decrease creativity, while abnormalities in the temporal lobe often increase creativity. High activity in the temporal lobe typically inhibits activity in the frontal lobe, and vice versa. High dopamine levels increase general arousal and goal directed behaviors and reduce latent inhibition, and all three effects increase the drive to generate ideas.[54]

Working memory and the cerebellum

Vandervert[55] described how the brain's frontal lobes and the cognitive functions of the cerebellum collaborate to produce creativity and innovation. Vandervert's explanation rests on considerable evidence that all processes of working memory (responsible for processing all thought[56]) are adaptively modeled by the cerebellum.[57] The cerebellum (consisting of 100 billion neurons, which is more than the entirety of the rest of the brain[58]) is also widely known to adaptively model all bodily movement. The cerebellum's adaptive models of working memory processing are then fed back to especially frontal lobe working memory control processes[59] where creative and innovative thoughts arise.[60] (Apparently, creative insight or the "aha" experience is then triggered in the temporal lobe.[61])

According to Vandervert, the details of creative adaptation begin in "forward" cerebellar models which are anticipatory/exploratory controls for movement and thought. These cerebellar processing and control architectures have been termed Hierarchical Modular Selection and Identification for Control (HMOSAIC).[62] New, hierarchically arranged levels of the cerebellar control architecture (HMOSAIC) develop as mental mulling in working memory is extended over time. These new levels of the control architecture are fed forward to the frontal lobes. Since the cerebellum adaptively models all movement and all levels of thought and emotion,[63] Vandervert's approach helps explain creativity and innovation in sports, art, music, the design of video games, technology, mathematics, the child prodigy, and thought in general.

REM sleep

Creativity involves the forming of associative elements into new combinations that are useful or meet some requirement. Sleep aids this process.[64] REM rather than NREM sleep appears to be responsible.[65] [66] This has been suggested to be due to changes in cholinergic and noradrenergic neuromodulation that occurs during REM sleep.[65] During this period of sleep, high levels of acetylcholine in the hippocampus suppress feedback from the hippocampus to the neocortex, and lower levels of acetylcholine and norepinephrine in the neocortex encourage the spread of associational activity within neocortical areas without control from the hippocampus.[67] This is in contrast to waking consciousness, where higher levels of norepinephrine and acetylcholine inhibit recurrent connections in

the neocortex. It is proposed that REM sleep would add creativity by allowing "neocortical structures to reorganize associative hierarchies, in which information from the hippocampus would be reinterpreted in relation to previous semantic representations or nodes."[65]

Creativity and affect

Some theories suggest that creativity may be particularly susceptible to affective influence.

Creativity and positive affect relations

According to Alice Isen, positive affect has three primary effects on cognitive activity:

1. Positive affect makes additional cognitive material available for processing, increasing the number of cognitive elements available for association;
2. Positive affect leads to defocused attention and a more complex cognitive context, increasing the breadth of those elements that are treated as relevant to the problem;
3. Positive affect increases cognitive flexibility, increasing the probability that diverse cognitive elements will in fact become associated. Together, these processes lead positive affect to have a positive influence on creativity.

Barbara Fredrickson in her broaden-and-build model suggests that positive emotions such as joy and love broaden a person's available repertoire of cognitions and actions, thus enhancing creativity.

According to these researchers, positive emotions increase the number of cognitive elements available for association (attention scope) and the number of elements that are relevant to the problem (cognitive scope).

Various meta-analyses, such as Baas et al. (2008) of 66 studies about creativity and affect support the link between creativity and positive affect[68] [69]

Creativity and negative affect relations

On the other hand, some theorists have suggested that negative affect leads to greater creativity. A cornerstone of this perspective is empirical evidence of a relationship between affective illness and creativity. In a study of 1,005 prominent 20th century individuals from over 45 different professions, the University of Kentucky's Arnold Ludwig found a slight but significant correlation between depression and level of creative achievement. In addition, several systematic studies of highly creative individuals and their relatives have uncovered a higher incidence of affective disorders (primarily bipolar disorder and depression) than that found in the general population.

Creativity and affect at work

Three patterns may exist between affect and creativity at work: positive (or negative) mood, or change in mood, predictably precedes creativity; creativity predictably precedes mood; and whether affect and creativity occur simultaneously.

It was found that not only might affect precede creativity, but creative outcomes might provoke affect as well. At its simplest level, the experience of creativity is itself a work event, and like other events in the organizational context, it could evoke emotion. Qualitative research and anecdotal accounts of creative achievement in the arts and sciences suggest that creative insight is often followed by feelings of elation. For example, Albert Einstein called his 1907 general theory of relativity "the happiest thought of my life." Empirical evidence on this matter is still very tentative.

In contrast to the possible incubation effects of affective state on subsequent creativity, the affective consequences of creativity are likely to be more direct and immediate. In general, affective events provoke immediate and relatively-fleeting emotional reactions. Thus, if creative performance at work is an affective event for the individual doing the creative work, such an effect would likely be evident only in same-day data.

Another longitudinal research found several insights regarding the relations between creativity and emotion at work. Firstly, evidence shows a positive correlation between positive affect and creativity. The more positive a person's

affect on a given day, the more creative thinking they evidenced that day and the next day—even controlling for that next day's mood. There was even some evidence of an effect two days later.

In addition, the researchers found no evidence that people were more creative when they experienced both positive and negative affect on the same day. The weight of evidence supports a purely linear form of the affect-creativity relationship, at least over the range of affect and creativity covered in our study: the more positive a person's affect, the higher their creativity in a work setting.

Finally, they found four patterns of affect and creativity affect can operate as an antecedent to creativity; as a direct consequence of creativity; as an indirect consequence of creativity; and affect can occur simultaneously with creative activity. Thus, it appears that people's feelings and creative cognitions are interwoven in several distinct ways within the complex fabric of their daily work lives.

Creativity and mental health

A study by psychologist J. Philippe Rushton found creativity to correlate with intelligence and psychoticism.[70] Another study found creativity to be greater in schizotypal than in either normal or schizophrenic individuals. While divergent thinking was associated with bilateral activation of the prefrontal cortex, schizotypal individuals were found to have much greater activation of their *right* prefrontal cortex.[71] This study hypothesizes that such individuals are better at accessing both hemispheres, allowing them to make novel associations at a faster rate. In agreement with this hypothesis, ambidexterity is also associated with schizotypal and schizophrenic individuals. Three recent studies by Mark Batey and Adrian Furnham have demonstrated the relationships between schizotypal[72] [73] and hypomanic personality [74] and several different measures of creativity.

Particularly strong links have been identified between creativity and mood disorders, particularly manic-depressive disorder (a.k.a. bipolar disorder) and depressive disorder (a.k.a. unipolar disorder). In *Touched with Fire: Manic-Depressive Illness and the Artistic Temperament*, Kay Redfield Jamison summarizes studies of mood-disorder rates in **writers**, **poets** and **artists**. She also explores research that identifies mood disorders in such famous writers and artists as Ernest Hemingway (who shot himself after electroconvulsive treatment), Virginia Woolf (who drowned herself when she felt a depressive episode coming on), composer Robert Schumann (who died in a mental institution), and even the famed visual artist Michelangelo.

A study looking at 300,000 persons with schizophrenia, bipolar disorder or unipolar depression, and their relatives, found overrepresentation in creative professions for those with bipolar disorder as well as for undiagnosed siblings of those with schizophrenia or bipolar disorder. There was no overall overrepresenation, but overrepresentation for artistic occupations, among those diagnosed with schizophrenia. There was no association for those with unipolar depression or their relatives. [75]

Creativity in various contexts

Creativity has been studied from a variety of perspectives and is important in numerous contexts. Most of these approaches are undisciplinary, and it is therefore difficult to form a coherent overall view.[24] The following sections examine some of the areas in which creativity is seen as being important.

An electric wire reel reused as a center table in a Rio de Janeiro decoration fair. The creativity of this designer in reusing this waste was used with good effects to the environment.

Creativity Profiles

Creativity comes in different forms. A number of different theorists have suggested models of the creative person. One model suggests that there are kinds to produce growth, innovation, speed, etc. These are referred to as the four "Creativity Profiles" that can help achieve such goals.[76]

(i) *Incubate* (Long-term Development)

(ii) *Imagine* (Breakthrough Ideas)

(iii) *Improve* (Incremental Adjustments)

(iv) *Invest* (Short-term Goals)

Research by Dr Mark Batey of the Psychometrics at Work Research Group at Manchester Business School has suggested that the creative profile can be explained by four primary creativity traits with narrow facets within each

(i) "Idea Generation" (Fluency, Originality, Incubation and Illumination)

(ii) "Personality" (Curiosity and Tolerance for Ambiguity)

(iii) "Motivation" (Intrinsic, Extrinsic and Achievement)

(iv) "Confidence" (Producing, Sharing and Implementing)

This model was developed in a sample of 1000 working adults using the statistical techniques of Exploratory Factor Analysis followed by Confirmatory Factor Analysis by Structural Equation Modelling.[77]

An important aspect of the creativity profiling approach is to account for the tension between predicting the creative profile of an individual, as characterised by the psychometric approach, and the evidence that team creativity is founded on diversity and difference.[78]

Creativity in diverse cultures

Francois Jullien in "Process and Creation, 1989" invites us to look at that concept from a Chinese cultural point of view. Fangqi Xu[79] has reported creativity courses in a range of countries. Todd Lubart has studied extensively the cultural aspects of creativity and innovation.

Creativity in art and literature

Henry Moore's *Reclining Figure*

Most people associate creativity with the fields of art and literature. In these fields, *originality* is considered to be a sufficient condition for creativity, unlike other fields where both *originality* and *appropriateness* are necessary.[80]

Within the different modes of artistic expression, one can postulate a continuum extending from "interpretation" to "innovation". Established artistic movements and genres pull practitioners to the "interpretation" end of the scale, whereas original thinkers strive towards the "innovation" pole. Note that we conventionally expect some "creative" people (dancers, actors, orchestral members, etc.) to perform (interpret) while allowing others (writers, painters, composers, etc.) more freedom to express the new and the different.

Contrast alternative theories, for example:

- artistic inspiration, which provides the transmission of visions from divine sources such as the Muses; a taste of the Divine. Compare with invention.
- artistic evolution, which stresses obeying established ("classical") rules and imitating or appropriating to produce subtly different but unshockingly understandable work. Compare with crafts.
- artistic conversation, as in Surrealism, which stresses the depth of communication when the creative product is the language.

In the art practice and theory of Davor Dzalto, human creativity is taken as a basic feature of both the personal existence of human being and art production. For this thinker, creativity is a basic cultural and anthropological category, since it enables human manifestation in the world as a "real presence" in contrast to the progressive "virtualization" of the world.

Psychological examples from science and mathematics

Jacques Hadamard, in his book *Psychology of Invention in the Mathematical Field*, uses introspection to describe mathematical thought processes. In contrast to authors who identify language and cognition, he describes his own mathematical thinking as largely wordless, often accompanied by mental images that represent the entire solution to a problem. He surveyed 100 of the leading physicists of his day (ca. 1900), asking them how they did their work. Many of the responses mirrored his own.

Hadamard described the experiences of the mathematicians/theoretical physicists Carl Friedrich Gauss, Hermann von Helmholtz, Henri Poincaré and others as viewing entire solutions with "sudden spontaneity."[81]

The same has been reported in literature by many others, such as Denis Brian,[82] G. H. Hardy,[83] Walter Heitler,[84] B. L. van der Waerden,[85] and Harold Ruegg.[86]

To elaborate on one example, Einstein, after years of fruitless calculations, suddenly had the solution to the general theory of relativity revealed in a dream "like a giant die making an indelible impress, a huge map of the universe outlined itself in one clear vision."[82]

Hadamard described the process as having steps (i) preparation, (ii) incubation, (iv) illumination, and (v) verification of the five-step Graham Wallas creative-process model, leaving out (iii) intimation, with the first three cited by Hadamard as also having been put forth by Helmholtz:[87]

Marie-Louise von Franz, a colleague of the eminent psychiatrist Carl Jung, noted that in these unconscious scientific discoveries the "always recurring and important factor ... is the simultaneity with which the complete solution is intuitively perceived and which can be checked later by discursive reasoning." She attributes the solution presented "as an archetypal pattern or image."[88] As cited by von Franz,[89] according to Jung, "Archetypes ... manifest themselves only through their ability to *organize* images and ideas, and this is always an unconscious process which cannot be detected until afterwards."[90]

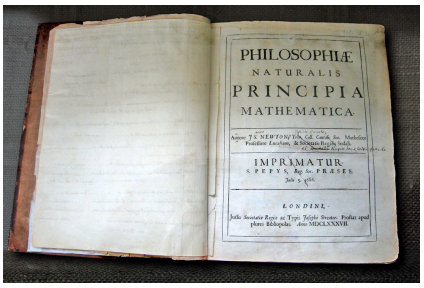
Creative industries and services

Today, creativity forms the core activity of a growing section of the global economy—the so-called "creative industries"—capitalistically generating (generally non-tangible) wealth through the creation and exploitation of intellectual property or through the provision of creative services. The Creative Industries Mapping Document 2001 [91] provides an overview of the creative industries in the UK. The creative professional workforce is becoming a more integral part of industrialized nations' economies.

Creative professions include writing, art, design, theater, television, radio, motion pictures, related crafts, as well as marketing, strategy, some aspects of scientific research and development, product development, some types of teaching and curriculum design, and more. Since many creative professionals (actors and writers, for example) are also employed in secondary professions, estimates of creative professionals are often inaccurate. By some estimates, approximately 10 million US workers are creative professionals; depending upon the depth and breadth of the definition, this estimate may be double.

Creativity in other professions

Creativity is also seen as being increasingly important in a variety of other professions. Architecture and industrial design are the fields most often associated with creativity, and more generally the fields of design and design research. These fields explicitly value creativity, and journals such as *Design Studies* have published many studies on creativity and creative problem solving.[92]



Isaac Newton's law of gravity is popularly attributed to a *creative leap* he experienced when observing a falling apple.

Fields such as science and engineering have, by contrast, experienced a less explicit (but arguably no less important) relation to creativity. Simonton[21] shows how some of the major scientific advances of the 20th century can be attributed to the creativity of individuals. This ability will also be seen as increasingly important for engineers in years to come.[93]

Accounting has also been associated with creativity with the popular euphemism *creative accounting*. Although this term often implies unethical practices, Amabile[80] has suggested that even this profession can benefit from the (ethical) application of creative thinking.

In a recent global survey of approximately 1600 CEO's, the leadership trait that was considered to be most crucial for success was creativity.[94] This suggests that the world of business is beginning to accept that creativity is of value in a diversity of industries, rather than being simply the preserve of the creative industries.

Creativity in organizations

It has been the topic of various research studies to establish that organizational effectiveness depends on the creativity of the workforce to a large extent. For any given organization, measures of effectiveness vary, depending upon its mission, environmental context, nature of work, the product or service it produces, and customer demands. Thus, the first step in evaluating organizational effectiveness is to understand the organization itself - how it functions, how it is structured, and what it emphasizes.

Amabile[80] argued that to enhance creativity in business, three components were needed:

- Expertise (technical, procedural and intellectual knowledge),
- Creative thinking skills (how flexibly and imaginatively people approach problems),
- and Motivation (especially intrinsic motivation).

There are two types of motivation:

- extrinsic motivation – external factors, for example threats of being fired or money as a reward,
- intrinsic motivation – comes from inside an individual, satisfaction, enjoyment of work etc.

Six managerial practices to encourage motivation are:

- Challenge – matching people with the right assignments;
- Freedom – giving people autonomy choosing means to achieve goals;
- Resources – such as time, money, space etc. There must be balance fit among resources and people;
- Work group features – diverse, supportive teams, where members share the excitement, willingness to help and recognize each other's talents;
- Supervisory encouragement – recognitions, cheering, praising;
- Organizational support – value emphasis, information sharing, collaboration.

Nonaka, who examined several successful Japanese companies, similarly saw creativity and knowledge creation as being important to the success of organizations.[95] In particular, he emphasized the role that tacit knowledge has to play in the creative process.

In business, originality is not enough. The idea must also be appropriate—useful and actionable.[96] Creative competitive intelligence is a new solution to solve this problem. It links creativity to innovation process and competitive intelligence to creative workers.

Economic views of creativity

Economic approaches to creativity have focussed on three aspects - the impact of creativity on economic growth, methods of modelling markets for creativity, and the maximisation of economic creativity (innovation).

In the early 20th century, Joseph Schumpeter introduced the economic theory of *creative destruction*, to describe the way in which old ways of doing things are endogenously destroyed and replaced by the new. Some economists (such as Paul Romer) view creativity as an important element in the recombination of elements to produce new technologies and products and, consequently, economic growth. Creativity leads to capital, and creative products are protected by intellectual property laws.

Mark A. Runco and Daniel Rubenson have tried to describe a "psychoeconomic" model of creativity.[97] In such a model, creativity is the product of endowments and active investments in creativity; the costs and benefits of bringing creative activity to market determine the supply of creativity. Such an approach has been criticised for its view of creativity consumption as always having positive utility, and for the way it analyses the value of future innovations.[98]

The *creative class* is seen by some to be an important driver of modern economies. In his 2002 book, *The Rise of the Creative Class*, economist Richard Florida popularized the notion that regions with "3 T's of economic development: Technology, Talent and Tolerance" also have high concentrations of creative professionals and tend to have a higher

level of economic development.

The creative industries in Europe - including the audiovisual sector - make a significant contribution to the EU economy, creating about 3% of EU GDP - corresponding to an annual market value of €500 billion - and employing about 6 million people. In addition, the sector plays a crucial role in fostering innovation, in particular for devices and networks.[99] The EU records the second highest TV viewing figures globally, producing more films than any other region in the world. In that respect, the newly proposed 'Creative Europe' programme will help preserve cultural heritage while increasing the circulation of creative works inside and outside the EU.[100] The programme will play a consequential role in stimulating cross border co-operation, promoting peer learning and making these sectors more professional. The Commission will then propose a financial instrument run by the European Investment Bank to provide debt and equity finance for cultural and creative industries. The role of the non-state actors within the governance regarding Medias will not be neglected anymore due to a holistic approach .

Fostering creativity

Daniel Pink, in his 2005 book *A Whole New Mind*, repeating arguments posed throughout the 20th century, argues that we are entering a new age where creativity is becoming increasingly important. In this *conceptual age*, we will need to foster and encourage *right-directed thinking* (representing creativity and emotion) over *left-directed thinking* (representing logical, analytical thought). However, this simplification of 'right' versus 'left' brain thinking is not supported by the research data.[101]

Nickerson[102] provides a summary of the various creativity techniques that have been proposed. These include approaches that have been developed by both academia and industry:

1. Establishing purpose and intention
2. Building basic skills
3. Encouraging acquisitions of domain-specific knowledge
4. Stimulating and rewarding curiosity and exploration
5. Building motivation, especially internal motivation
6. Encouraging confidence and a willingness to take risks
7. Focusing on mastery and self-competition
8. Promoting supportable beliefs about creativity
9. Providing opportunities for choice and discovery
10. Developing self-management (metacognitive skills)
11. Teaching techniques and strategies for facilitating creative performance
12. Providing balance

Some see the conventional system of schooling as "stifling" of creativity and attempt (particularly in the pre-school/kindergarten and early school years) to provide a creativity-friendly, rich, imagination-fostering environment for young children.[102] [103] [104] Researchers have seen this as important because technology is advancing our society at an unprecedented rate and creative problem solving will be needed to cope with these challenges as they arise.[104] In addition to helping with problem solving, creativity can also helps students identify problems where others have failed to do so.[102] [103] [105] See the Waldorf School as an example of an education program that promotes creative thought.

Promoting intrinsic motivation and problem solving are two areas where educators can foster creativity in students. Students are more creative when they see a task as intrinsically motivating, valued for its own sake.[103] [104] [106] [107] To promote creative thinking educators need to identify what motivates their students and structure teaching around it. Providing students with a choice of activities to complete allows them to become more intrinsically motivated and therefore creative in completing the tasks.[102] [108]

Teaching students to solve problems that do not have well defined answers is another way to foster their creativity. This is accomplished by allowing students to explore problems and redefine them, possibly drawing on knowledge

that at first may seem unrelated to the problem in order to solve it.[102] [103] [104] [106]

Several different researchers have proposed methods of increasing the creativity of an individual. Such ideas range from the psychological-cognitive, such as Osborn-Parnes Creative Problem Solving Process, Synectics, Science-based creative thinking, Purdue Creative Thinking Program, and Edward de Bono's lateral thinking; to the highly-structured, such as TRIZ (the Theory of Inventive Problem-Solving) and its variant Algorithm of Inventive Problem Solving (developed by the Russian scientist Genrich Altshuller), and Computer-Aided Morphological analysis.

Understanding and enhancing the creative process with new technologies

A simple but accurate review [109] on this new Human-Computer Interactions (HCI) angle for promoting creativity has been written by Todd Lubart, an invitation full of creative ideas to develop further this new field.

Groupware and other Computer Supported Collaborative Work (CSCW) platforms are now the stage of Network Creativity on the web or on other private networks. These tools have made more obvious the existence of a more connective, cooperative and collective nature of creativity rather than the prevailing individual one. Creativity Research on Global Virtual Teams [110] is showing that the creative process is affected by the national identities, cognitive and conative profiles, anonymous interactions at times and many other factors affecting the teams members, depending on the early or later stages of the cooperative creative process. They are also showing how NGO's cross-cultural virtual team's innovation in Africa would also benefit from the pooling of best global practices online. Such tools enhancing cooperative creativity may have a great impact on society and as such should be tested while they are built following the Motto: "Build the Camera while shooting the film". Some European FP7 scientific programs like Paradiso [111] are answering a need for advanced experimentally-driven research including large scale experimentation test-beds to discover the technical, societal and economic implications of such groupware and collaborative tools to the Internet.

On the other hand, creativity research may one day be pooled with a computable metalanguage like IEML [112] from the University of Ottawa Collective Intelligence Chair, Pierre Levy. It might be a good tool to provide an interdisciplinary definition and a rather unified theory of creativity. The creative processes being highly fuzzy, the programming of cooperative tools for creativity and innovation should be adaptive and flexible. Empirical Modelling [113] seems to be a good choice for Humanities Computing.

If all the activity of the universe could be traced with appropriate captors, it is likely that one could see the creative nature of the universe to which humans are active contributors. After the web of documents, the Web of Things might shed some light on such a universal creative phenomenon which should not be restricted to humans. In order to trace and enhance cooperative and collective creativity, Metis Reflexive Global Virtual Team has worked for the last few years on the development of a Trace Composer [114] at the intersection of personal experience and social knowledge.

Metis Reflexive Team has also identified a paradigm for the study of creativity to bridge European theory of "useless" and non-instrumentalized creativity, North American more pragmatic creativity and Chinese culture stressing more creativity as a holistic process of continuity rather than radical change and originality. This paradigm is mostly based on the work of the German philosopher Hans Joas, one that emphasizes the creative character of human action. This model allows also for a more comprehensive theory of action. Joas elaborates some implications of his model for theories of social movements and social change. The connection between concepts like creation, innovation, production and expression is facilitated by the creativity of action [115] as a metaphore but also as a scientific concept.

The Creativity and Cognition conference series, sponsored by the ACM and running since 1993, has been an important venue for publishing research on the intersection between technology and creativity. The conference now runs biennially, next taking place in 2011.

Social attitudes to creativity

Although the benefits of creativity to society as a whole have been noted,[116] social attitudes about this topic remain divided. The wealth of literature regarding the development of creativity[117] and the profusion of creativity techniques indicate wide acceptance, at least among academics, that creativity is desirable.

There is, however, a dark side to creativity, in that it represents a *"quest for a radical autonomy apart from the constraints of social responsibility"*.[118] In other words, by encouraging creativity we are encouraging a departure from society's existing norms and values. Expectation of conformity runs contrary to the spirit of creativity. Sir Ken Robinson argues that the current education system is "educating people out of their creativity".[119] [120]

Nevertheless, employers are increasingly valuing creative skills. A report by the Business Council of Australia, for example, has called for a higher level of creativity in graduates.[121] The ability to "think outside the box" is highly sought after. However, the above-mentioned paradox may well imply that firms pay lip service to thinking outside the box while maintaining traditional, hierarchical organization structures in which individual creativity is not rewarded.

Notes

[1] Runco, Mark A.; Albert, Robert S. (2010). "Creativity Research". In James C. Kaufman and Robert J. Sternberg. *The Cambridge Handbook of Creativity*. Cambridge University Press. ISBN 978-0-521-73025-9.

[2] "And eke Job saith, that in hell is no order of rule. And albeit that God hath **created** all things in right order, and nothing without order, but all things be ordered and numbered, yet nevertheless they that be damned be not in order, nor hold no order."

[3] Mumford, M. D. (2003). Where have we been, where are we going? Taking stock in creativity research. Creativity Research Journal, 15, 107–120.

[4] Meusburger, Peter (2009). "Milieus of Creativity: The Role of Places, Environments and Spatial Contexts". In Meusburger, P., Funke, J. and Wunder, E.. *Milieus of Creativity: An Interdisciplinary Approach to Spatiality of Creativity*. Springer. ISBN 1402098766, 9781402098765.

[5] Kozbelt, Aaron; Beghetto, Ronald A. and Runco, Mark A. (2010). "Theories of Creativity". In James C. Kaufman and Robert J. Sternberg. *The Cambridge Handbook of Creativity*. Cambridge University Press. ISBN 978-0-521-73025-9.

[6] Gabora, Liane (1997). "The Origin and Evolution of Culture and Creativity" (http://cogprints.org/794/1/oecc.html). *Journal of Memetics - Evolutionary Models of Information Transmission* **1**. .

[7] Csíkszentmihályi, Mihály (1996). *Creativity:Flow and the Psychology of Discovery and Invention*. Harper Collins. ISBN 0060928204, 978-0060928209.

[8] Simonton, D. K. (1997). "Creative Productivity: A Predictive and Explanatory Model of Career Trajectories and Landmarks". *Psychological Review* **104** (1): 66–89. doi:10.1037/0033-295X.104.1.66.

[9] Robinson, Ken (1998). *All our futures: Creativity, culture, education* (http://sirkenrobinson.com/skr/pdf/allourfutures.pdf). National Advisory Committee on Creative and Cultural Education. . Retrieved 2 October 2010.

[10] Craft, Anna (2001). "'Little C' creativity". In Craft, A., Jeffrey, B. and Leibling, M.. *Creativity in education*. Continuum International. ISBN 0826448631, 9780826448637.

[11] Boden, Margaret (2004). *The Creative Mind: Myths And Mechanisms*. Routledge. ISBN 0297820699..

[12] Kaufman, James C.; Beghetto, Ronald A. (2009). "Beyond Big and Little: The Four C Model of Creativity". *Review of General Psychology* **13** (1): 1–12. doi:10.1037/a0013688.

[13] Władysław Tatarkiewicz, *A History of Six Ideas: an Essay in Aesthetics*, p. 244.

[14] Albert, R. S.; Runco, M. A. (1999). ":A History of Research on Creativity". In Sternberg, R. J.. *Handbook of Creativity*. Cambridge University Press.

[15] Albert, R. S.; Runco, M. A. (1999). ":A History of Research on Creativity". In Sternberg, R. J.. *Handbook of Creativity*. Cambridge University Press. p. 5.

[16] Niu, Weihua; Sternberg, Robert J. (2006). "The Philosophical Roots of Western and Eastern Conceptions of Creativity" (http://www.westga.edu/~stpp/JTPP_Aticles/26-2/THE1210.pdf). *Journal of Theoretical and Philosophical Psychology* **26**: 18–38. doi:10.1037/h0091265. . Retrieved 23 October 2010.

[17] Dacey, John (1999). "Concepts of Creativity: A history". In Mark A. Runco and Steven R. Pritzer. *Encyclopedia of Creativity, Vol. 1*. Elsevier. ISBN 0122270762.

[18] Albert, R. S.; Runco, M. A. (1999). ":A History of Research on Creativity". In Sternberg, R. J.. *Handbook of Creativity*. Cambridge University Press. p. 6.

[19] Tatarkiewicz, Władysław (1980). *A History of Six Ideas: an Essay in Aesthetics*. Translated from the Polish by Christopher Kasparek, The Hague: Martinus Nijhoff.

[20] Wallas, G. (1926). *Art of Thought*.

[21] Simonton, D. K. (1999). *Origins of genius: Darwinian perspectives on creativity*. Oxford University Press.

[22] Whitehead, Alfred North (1978). *Process and reality : an essay in cosmology ; Gifford Lectures delivered in the University of Edinburgh during the session 1927-28* (Corrected ed.). New York: Free Press. ISBN 0029345804.
[23] Meyer, Steven (2005). "Introduction: Whitehead Now". *Configurations* **1** (13): 1–33.
[24] Sternberg, R. J.; Lubart, T. I. (1999). "The Concept of Creativity: Prospects and Paradigms". In ed. Sternberg, R. J.. *Handbook of Creativity*. Cambridge University Press. ISBN 0521572851.
[25] (Hargreaves, H. L. (1927). "The faculty of imagination: An enquiry concerning the existence of a general faculty, or group factor, of imagination." British Journal of Psychology Monograph Supplement 3: 1-74.)
[26] Smith, S. M. (2011). "Incubation". In M. A. Runco & S. R. Pritzker. *Encyclopedia of Creativity Volume I* (2nd ed.). Academic Press. pp. 653–657. ISBN 978-0-12-375039-6.
[27] Ward, T. (2003). "Creativity". In ed. Nagel, L.. *Encyclopaedia of Cognition*. New York: Macmillan.
[28] Smith, Steven M. (1995). "Fixation, Incubation, and Insight in Memory and Creative Thinking". In Steven M. Smith, Thomas B. Ward and Ronald A. Finke. *The Creative Cognition Approach*. MIT Press.
[29] "Anderson, J. R. (2000). *Cognitive psychology and its implications*. Worth Publishers. ISBN 0716716860.
[30] Guilford, J. P. (1967). *The Nature of Human Intelligence*.
[31] Ward, T.B. (1995). What's old about new ideas. In S. M. Smith, T. B. Ward & R. A. & Finke (Eds.) *The creative cognition approach*, 157–178, London: MIT Press.
[32] Weisberg, R. W. (1993). *Creativity: Beyond the myth of genius*. Freeman. ISBN 0716721198.
[33] Helie, S., & Sun, R. (2010). Incubation, insight, and creative problem solving: A unified theory and a connectionist model. *Psychological Review*, *117*, 994-1024.
[34] Koestler, A. (1964). *The Act of Creation*. London: Pan Books. ISBN 0330731165.
[35] Gabora, L. & Saab, A. (2011). Creative interference and states of potentiality in analogy problem solving. *Proceedings of the Annual Meeting of the Cognitive Science Society*. July 20–23, 2011, Boston MA.
[36] Roese, N. J. & Olson, J. M. (1995). *What Might Have Been: The Social Psychology of Counterfactual Thinking*. Mahwah, New Jersey: Erlbaum
[37] Markman, K. Klein, W. & Suhr, E. (eds) (2009). *Handbook of mental simulation and the human imagination.* Hove, Psychology Press
[38] Byrne, R. M. J. (2005). The Rational Imagination: How People Create Counterfactual Alternatives to Reality. Cambridge, MA: MIT Press.
[39] (Kraft, 2005)
[40] (Torrance, 1974)
[41] (Carson, 2005)
[42] Kim, K. H. (2006). "Can We Trust Creativity Tests? A Review of the Torrance Tests of Creative Thinking (TTCT)". *Creativity Research Journal* **18**: 3–1. doi:10.1207/s15326934crj1801_2.
[43] Zeng, L.; Proctor, R. W.; Salvendy, G. (2011). "Can Traditional Divergent Thinking Tests Be Trusted in Measuring and Predicting Real-World Creativity?". *Creativity Research Journal* **23**: 24. doi:10.1080/10400419.2011.545713.
[44] for example McCrae (1987)
[45] Batey, M. & Furnham, A. (2006). Creativity, intelligence and personality: A critical review of the scattered literature. Genetic, Social, and General Psychology Monographs, 132, p. 355-429.
[46] Batey, M., Furnham, A. F. & Safiullina, X. (2010). Intelligence, General Knowledge and Personality as Predictors of Creativity. Learning and Individual Differences, 20, p. 532-535.
[47] Feist, G. J. (1998). A meta-analysis of the impact of personality on scientific and artistic creativity. Personality and Social Psychological Review, 2, 290–309.
[48] (O'Hara & Sternberg, 1999).
[49] Kim, Hyung Chee (2005). "Can Only Intelligent People be Creative?" (http://kkim.wmwikis.net/file/view/Can Only Intelligent People Creative.pdf). *Journal of Secondary Gifted Education* **16** (2/3): 57–66. . Retrieved 12 May 2011.
[50] Plucker, J. A. & Renzulli, J. S. (1999). "Psychometric Approaches to the Study of Human Creativity". In ed. Sternberg, R. J.. *Handbook of Creativity*. Cambridge University Press.
[51] Kim, K. H. (2005). "Can Only Intelligent People Be Creative? A Meta-Analysis". *The Journal of Secondary Gifted Education*. doi:10.4219/jsge-2005-473.
[52] Nusbaum, E. C.; Silvia, P. J. (2011). "Are intelligence and creativity really so different?☆Fluid intelligence, executive processes, and strategy use in divergent thinking". *Intelligence* **39**: 36. doi:10.1016/j.intell.2010.11.002.
[53] (Kenneth M Heilman, MD, Stephen E. Nadeau, MD, and David Q. Beversdorf, MD. "Creative Innovation: Possible Brain Mechanisms" Neurocase (2003) (http://neurology.med.ohio-state.edu/cognitivelab/CreativityMechanisms.pdf)
[54] Flaherty AW (2005). "Frontotemporal and dopaminergic control of idea generation and creative drive". *J Comp Neurol* **493** (1): 147–53. doi:10.1002/cne.20768. PMC 2571074. PMID 16254989.
[55] Vandervert 2003a, 2003b; Vandervert, Schimpf & Liu, 2007
[56] Miyake & Shah, 1999
[57] Schmahmann, 1997, 2004
[58] Andersen, Korbo & Pakkenberg, 1992.
[59] Miller & Cohen, 2001
[60] Vandervert, 2003a

[61] Jung-Beeman, Bowden, Haberman, Frymiare, Arambel-Liu, Greenblatt, Reber & Kounios, 2004
[62] Imamizu, Kuroda, Miyauchi, Yoshioka & Kawato, 2003
[63] Schmahmann, 2004,
[64] Wagner U., Gais S., Haider H., Verleger R., Born J. (2004). "Sleep inspires insight". *Nature* **427** (6972): 352–5. doi:10.1038/nature02223. PMID 14737168.
[65] Cai D. J., Mednick S. A., Harrison E. M., Kanady J. C., Mednick S. C. (2009). "REM, not incubation, improves creativity by priming associative networks". *Proc Natl Acad Sci U S A* **106** (25): 10130–10134. doi:10.1073/pnas.0900271106. PMC 2700890. PMID 19506253.
[66] Walker MP, Liston C, Hobson JA, Stickgold R (November 2002). "Cognitive flexibility across the sleep-wake cycle: REM-sleep enhancement of anagram problem solving". *Brain Res Cogn Brain Res* **14** (3): 317–24. doi:10.1016/S0926-6410(02)00134-9. PMID 12421655.
[67] Hasselmo ME (September 1999). "Neuromodulation: acetylcholine and memory consolidation". *Trends Cogn. Sci. (Regul. Ed.)* **3** (9): 351–359. doi:10.1016/S1364-6613(99)01365-0. PMID 10461198.
[68] Mark A. Davis (January 2009). "Understanding the relationship between mood and creativity: A meta-analysis" (http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6WP2-4SJR2DD-2&_user=10&_coverDate=01/31/2009&_rdoc=1&_fmt=high&_orig=search&_origin=search&_sort=d&_docanchor=&view=c&_searchStrId=1591960036&_rerunOrigin=scholar.google&_acct=C000050221&_version=1&_urlVersion=0&_userid=10&md5=124ef41f3adc2879e442ae692bd64fc1&searchtype=a). *Organizational Behavior and Human Decision Processes* **100** (1): 25–38. doi:10.1016/j.obhdp.2008.04.001. .
[69] Baas, Matthijs; De Dreu, Carsten K. W.; Nijstad, Bernard A. (November 2008). "A meta-analysis of 25 years of mood-creativity research: Hedonic tone, activation, or regulatory focus?" (http://home.medewerker.uva.nl/m.baas/bestanden/MBaas_mood-creativity.pdf). *Psychological Bulletin* **134** (6): 779–806. doi:10.1037/a0012815. PMID 18954157. .
[70] (Rushton, 1990)
[71] http://exploration.vanderbilt.edu/news/news_schizotypes.htm (Actual paper (http://dx.doi.org/10.1016/j.schres.2005.06.016))
[72] Batey, M. Furnham, A. (2009). The relationship between creativity, schizotypy and intelligence. Individual Differences Research, 7, p.272-284.
[73] Batey, M. & Furnham, A. (2008). The relationship between measures of creativity and schizotypy. Personality and Individual Differences, 45, p.816-821.
[74] Furnham, A., Batey, M., Anand, K. & Manfield, J. (2008). Personality, hypomania, intelligence and creativity. Personality and Individual Differences, 44, p.1060-1069.
[75] Kyaga, S.; Lichtenstein, P.; Boman, M.; Hultman, C.; Langstrom, N.; Landen, M. (2011). "Creativity and mental disorder: Family study of 300 000 people with severe mental disorder". *The British Journal of Psychiatry*. doi:10.1192/bjp.bp.110.085316.
[76] (DeGraff, Lawrence 2002)
[77] (Batey & Irwing, 2010) http://www.e-metrixx.com/creativity-profit/me2-spec/
[78] Nijstad, B. A. and De Dreu, C. K. (2002), Creativity and Group Innovation. Applied Psychology, 51: 400–406. doi: 10.1111/1464-0597.00984
[79] [[Fangqi Xu (http://www.cct.umb.edu/fangqi.pdf)], et al. *A Survey of Creativity Courses at Universities in Principal Countries*]
[80] (Amabile, 1998; Sullivan and Harper, 2009)
[81] Hadamard, 1954, pp. 13-16.
[82] Brian, 1996, p. 159.
[83] G. H. Hardy cited how the mathematician Srinivasa Ramanujan had "moments of sudden illumination." See Kanigel, 1992, pp. 285-286.
[84] Interview with Walter Heitler by John Heilbron (March 18, 1963. Archives for the History of Quantum Physics), as cited in and quoted from in Gavroglu, Kostas *Fritz London: A Scientific Biography* p. 45 (Cambridge, 2005).
[85] von Franz, 1992, p. 297 and 314. Cited work: B. L. van der Waerden, *Einfall und Überlegung: Drei kleine Beiträge zur Psychologie des mathematischen Denkens* (Gasel & Stuttgart, 1954).
[86] von Franz, 1992, p. 297 and 314. Cited work: Harold Ruegg, *Imagination: An Inquiry into the Sources and Conditions That Stimulate Creativity* (New York: Harper, 1954).
[87] Hadamard, 1954, p. 56.
[88] von Franz, 1992, pp. 297-298.
[89] von Franz, 1992 297-298 and 314.
[90] Jung, 1981, paragraph 440, p. 231.
[91] http://www.culture.gov.uk/global/publications/archive_2001/ci_mapping_doc_2001.htm
[92] For a typical example see (Dorst et al., 2001).
[93] National Academy of Engineering (2005).
[94] http://www-03.ibm.com/press/us/en/pressrelease/31670.wss
[95] (Nonaka, 1991)
[96] Amabile, T. M. (1998). "How to kill creativity". Harvard Business Review
[97] Rubenson, Daniel L.; Runco, Mark (1992). "The psychoeconomic approach to creativity". *New Ideas in Psychology* **10** (2): 131–147. doi:10.1016/0732-118X(92)90021-Q.
[98] Diamond, Arthur M. (1992). "Creativity and Interdisciplinarity: A Response to Rubenson and Runco". *New Ideas in Psychology* **10** (2): 157–160. doi:10.1016/0732-118X(92)90023-S.

[99] www.france24.com/en/20110625-economic-warfare-on-the-silver-screen-cinema-cannes-festival-2011-hollywood-france by Markus Karlsson v. Violaine Hacker, PhD European law
[100] www.ec.europa.eu/culture/news/news3311_en.
[101] http://www.psychologytoday.com/blog/lives-the-brain/201004/creativity-the-brain-and-evolution
[102] Nickerson, R. S. (1999). "Enhancing creativity". In R. J. Sternberg. *Handbook of Creativity*. Cambridge University Press.
[103] Csíkszentmihályi, Mihály (1999). "Implications of a systems perspective for the study of creativity". In R. J. Sternberg. *Handbook of Creativity*. Cambridge University Press.
[104] Robinson, K.; Azzam, A. M. (2009). "Why creativity now?". *Educational Leadership* **67** (1): 22–26.
[105] Paris, C., Edwards, N., Sheffield, E., Mutinsky, M., Olexa, T., Reilly, S., & Baer, J. (2006). How early school experiences impact creativity. In J. C. Kaufman & J. Baer (Eds.), Creativity and Reason in Cognitive Development (pp. 333-350). New York, NY: Cambridge University Press.
[106] Byrge, C.; Hanson. S. (2009). "The creative platform: A new paradigm for teaching creativity". *Problems of Education in the 21st Century* **18**: 33–50.
[107] Csikzentmihalyi, M. (1993). Evolution and flow. In M. Csikzentmihalyi (Ed.), The evolving self: A psychology for the third millenium (pp. 175-206). New York: Harper Perennial.
[108] National Advisory Committee on Creative and Cultural Education (1998). All our futures: Creativity, culture, and education. UK: NACCCE
[109] http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6WGR-4G65VJ1-1&_user=10&_coverDate=10%2F31%2F2005&_alid=527112635&_rdoc=1&_fmt=summary&_orig=search&_cdi=6829&_sort=d&_docanchor=&view=c&_acct=C000050221&_version=1&_urlVersion=0&_userid=10&md5=3ad4369ed718542426a8f4ace61c7d8f
[110] http://www.informatik.uni-trier.de/~ley/db/indices/a-tree/l/Letaief:Rafik.html
[111] http://www.paradiso-fp7.eu/
[112] http://www.ieml.org
[113] http://www2.warwick.ac.uk/fac/sci/dcs/research/em/publications/papers/091
[114] http://www.iamot.org/conference/index.php/ocs/10/paper/view/1351/604
[115] http://www.press.uchicago.edu/presssite/metadata.epl?mode=synopsis&bookkey=45339
[116] (Runco 2004)
[117] see (Feldman, 1999) for example
[118] (McLaren, 1999)
[119] http://www.youtube.com/watch?v=cod5az5EcX0
[120] http://www.youtube.com/watch?v=mddD1yGREKQ&feature=related
[121] (BCA, 2006)

References

- Amabile, Teresa M.; Barsade, Sigal G; Mueller, Jennifer S; Staw, Barry M., "Affect and creativity at work," *Administrative Science Quarterly*, 2005, vol. 50, pp. 367–403.
- Amabile, T. M. (1998). "How to kill creativity". *Harvard Business Review* **76** (5).
- Amabile, T. M. (1996). *Creativity in context*. Westview Press.
- Balzac, Fred (2006). "Exploring the Brain's Role in Creativity". *NeuroPsychiatry Reviews* **7** (5): 1, 19–20.
- BCA (2006). *New Concepts in Innovation: The Keys to a Growing Australia*. Business Council of Australia (http://www.bca.com.au).
- Brian, Denis, *Einstein: A Life* (John Wiley and Sons, 1996) ISBN 0-471-11459-6
- Byrne, R. M. J. (2005). *The Rational Imagination: How People Create Counterfactual Alternatives to Reality*. MIT Press.
- Carson, S. H.; Peterson, J. B., Higgins, D. M. (2005). "Reliability, Validity, and Factor Structure of the Creative Achievement Questionnaire". *Creativity Research Journal* **17** (1): 37–50. doi:10.1207/s15326934crj1701_4.
- Craft, A. (2005). *Creativity in Schools: tensions and dilemmas*. Routledge. ISBN 0415324149.
- Dorst, K.; Cross, N. (2001). "Creativity in the design process: co-evolution of problem–solution". *Design Studies* **22** (5): 425–437. doi:10.1016/S0142-694X(01)00009-6.
- Feldman, D. H. (1999). "The Development of Creativity". In ed. Sternberg, R.J.. *Handbook of Creativity*. Cambridge University Press.
- Finke, R.; Ward, T. B. & Smith, S. M. (1992). *Creative cognition: Theory, research, and applications*. MIT Press. ISBN 0262061503.

- Flaherty, A. W. (2005). "Frontotemporal and dopaminergic control of idea generation and creative drive". *Journal of Comparative Neurology* **493** (1): 147–153. doi:10.1002/cne.20768. PMC 2571074. PMID 16254989.
- Florida, R. (2002). *The Rise of the Creative Class: And How It's Transforming Work, Leisure, Community and Everyday Life*. Basic Books. ISBN 0465024769.
- Fredrickson B. L. (2001). "The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions". *American Psychologist* **56** (3): 218–26. doi:10.1037/0003-066X.56.3.218. PMID 11315248.
- Hadamard, Jacques, *The Psychology of Invention in the Mathematical Field* (Dover, 1954) ISBN 0-486-20107-4
- Helmholtz, H. v. L. (1896). *Vorträge und Reden (5th edition)*. Friederich Vieweg und Sohn.
- Isen A. M., Daubman K. A., Nowicki G. P. (1987). "Positive affect facilitates creative problem solving". *Journal of Personality and Social Psychology* **52** (6): 1122–31. doi:10.1037/0022-3514.52.6.1122. PMID 3598858.
- Jeffery, G. (2005). *The Creative College: building a successful learning culture in the arts*. Trentham Books.
- Johnson, D. M. (1972). *Systematic introduction to the psychology of thinking*. Harper & Row.
- Jullien, F.; Paula M. Varsano (translator) (2004). *In Praise of Blandness: Proceeding from Chinese Thought and Aesthetics*. Zone Books, U.S.. ISBN 1-890951-41-2; ISBN 978-1-890951-41-2
- Jung, C. G., *The Collected Works of C. G. Jung. Volume 8. The Structure and Dynamics of the Psyche*. (Princeton, 1981) ISBN 0-691-09774-7
- Kanigel, Robert, *The Man Who Knew Infinity: A Life of the Genius Ramanujan* (Washington Square Press, 1992) ISBN 0-671-75061-5
- Kraft, U. (2005). "Unleashing Creativity". *Scientific American Mind* **April**: 16–23.
- Kolp, P., Lammé, A., Regnard, Fr., Rens, J. M. (ed.) (2009). "Musique et créativité". *Orphée Apprenti* (Conseil de la Musique) **NS** (1): 9–119. D/2009/11848/5
- McLaren, R. B. (1999). "Dark Side of Creativity". In ed. Runco, M. A. & Pritzker, S. R.. *Encyclopedia of Creativity*. Academic Press.
- McCrae, R. R. (1987). "Creativity, Divergent Thinking, and Openness to Experience". *Journal of Personality and Social Psychology* **52** (6): 1258–1265. doi:10.1037/0022-3514.52.6.1258.
- Michalko, M. (1998). *Cracking Creativity: The Secrets of Creative Genius*. Berkeley, Calif.: Ten Speed Press. ISBN 089815913X.
- Nachmanovitch, Stephen (1990). *Free Play: Improvisation in Life and Art*. Penguin-Putnam. ISBN 0874775787.
- National Academy of Engineering (2005). *Educating the engineer of 2020: adapting engineering education to the new century*. National Academies Press. ISBN 0309096499.
- Nonaka, I. (1991). "The Knowledge-Creating Company". *Harvard Business Review* **69** (6): 96–104.
- O'Hara, L. A. & Sternberg, R. J. (1999). "Creativity and Intelligence". In ed. Sternberg, R. J.. *Handbook of Creativity*. Cambridge University Press.
- Pink, D. H. (2005). *A Whole New Mind: Moving from the information age into the conceptual age*. Allen & Unwin.
- Poincaré, H. (1908/1952). "Mathematical creation". In ed. Ghiselin, B.. *The Creative Process: A Symposium*. Mentor.
- Rhodes, M. (1961). "An analysis of creativity". *Phi Delta Kappan* **42**: 305–311.
- Rushton, J. P. (1990). "Creativity, intelligence, and psychoticism". *Personality and Individual Differences* **11**: 1291–1298. doi:10.1016/0191-8869(90)90156-L.
- Runco, M. A. (2004). "Creativity". *Annual Review of Psychology* **55**: 657–687. doi:10.1146/annurev.psych.55.090902.141502. PMID 14744230.
- Sabaneev, Leonid. The Psychology of the Musico-Creative Process // Psyche. - Vol. 9 (July 1928). - pp. 37–54.
- Smith, S. M. & Blakenship, S.E. (1 April 1991). "Incubation and the persistence of fixation in problem solving". *American Journal of Psychology* **104** (1): 61–87. doi:10.2307/1422851. ISSN 00029556. JSTOR 1422851. PMID 2058758.

- Taylor, C. W. (1988). "Various approaches to and definitions of creativity". In ed. Sternberg, R. J.. *The nature of creativity: Contemporary psychological perspectives*. Cambridge University Press.
- Torrance, E. P. (1974). *Torrance Tests of Creative Thinking*. Personnel Press.
- von Franz, Marie-Louise, *Psyche and Matter* (Shambhala, 1992) ISBN 0-87773-902-1
- Andersen B., Korbo L., Pakkenberg B. (1992). "A quantitative study of the human cerebellum with unbiased stereological techniques". *The Journal of Comparative Neurology* **326** (4): 549–560. doi:10.1002/cne.903260405. PMID 1484123.
- Imamizu H., Kuroda T., Miyauchi S., Yoshioka T., Kawato M. (2003). "Modular organization of internal models of tools in the cerebellum". *Proceedings of the National Academy of Science* **100** (9): 5461–5466. doi:10.1073/pnas.0835746100.
- Jung-Beeman, M., Bowden, E., Haberman, J., Frymiare, J., Arambel-Liu, S., Greenblatt, R., Reber, P., & Kounios, J. (2004). Neural activity when people solve verbal problems with insight. PLOS Biology, 2, 500-510.
- Miller E., Cohen J. (2001). "An integrative theory of prefrontal cortex function". *Annual Review of Neuroscience* **24**: 167–202. doi:10.1146/annurev.neuro.24.1.167. PMID 11283309.
- Miyake, A., & Shah, P. (Eds.). (1999). Models of working memory: Mechanisms of active maintenance and executive control. New York: Cambridge University Press.
- Schmahmann, J. (Ed.). (1997). The cerebellum and cognition. New York: Academic Press.
- Schmahmann J (2004). "Disorders of the cerebellum: Ataxia, dysmetria of thought, and the cerebellar cognitive affective syndrome". *Journal of Neuropsychiatry and Clinical Neuroscience* **16**: 367–378.
- Sullivan, Ceri and Graeme Harper, ed., *The Creative Environment: Authors at Work* (Cambridge: English Association/Boydell and Brewer, 2009)
- Vandervert, L. (2003a). How working memory and cognitive modeling functions of the cerebellum contribute to discoveries in mathematics. New Ideas in Psychology, 21, 159-175.
- Vandervert, L. (2003b). The neurophysiological basis of innovation. In L. V. Shavinina (Ed.) The international handbook on innovation (pp. 17–30). Oxford, England: Elsevier Science.
- Vandervert, L., Schimpf, P., & Liu, H. (2007). How working memory and the cerebellum collaborate to produce creativity and innovation [Special Issue]. Creativity Research Journal, 19(1), 1-19.
- DeGraff, J.; Lawrence, K. (2002). *Creativity at Work*. Jossey-Bass. ISBN 0787957259.

Further reading

- Chung-yuan, Chang (1963/1970). *Creativity and Taoism, A Study of Chinese Philosophy, Art, and Poetry*. New York: Harper Torchbooks. ISBN 0061319686.
- Cropley, David H.; Cropley, Arthur J.; Kaufman, James C. et al., eds (2010). *The Dark Side of Creativity*. Cambridge: Cambridge University Press. ISBN 978-0-521-13960-1. Lay summary (http://www.cambridge.org/gb/knowledge/isbn/item2704083/?site_locale=en_GB) (24 November 2010).
- Robinson, Andrew (2010). *Sudden Genius?: The Gradual Path to Creative Breakthroughs*. Oxford: Oxford University Press. ISBN 978-0-19-956995-3. Lay summary (http://ukcatalogue.oup.com/product/9780199569953.do) (24 November 2010).

Article Sources and Contributors

Mihaly Csikszentmihalyi *Source*: http://en.wikipedia.org/w/index.php?oldid=466348777 *Contributors*: (HUN)Villy, Adam78, Addbc, Agoode, Alan Liefting, Altenmann, Aphilo, Arankine, BD2412, Barbara Shack, Bearcat, Benjamin Mako Hill, Bruxer, ChristopherAndersen, Ciaccona, Crzrussian, D6, Davidgauntlett, De ja vou, Deflective, DoctorW, Doczilla, Doodle77, Dr.enh, Drbreznjev, Egidijus Gečius, Elwikipedista, Ermeyers, Farsnickle, Fulhamzimmer, Gene Nygaard, Gondwanabanana, Greg Salter, GregorB, Gregorik, Gruen, Gsellis69, Gwguffey, Histrion, IIVeaa, It.franciscus, Jowen11, Keahapana, Kurivaim, Kwamikagami, Lachaume, MarkCsik, Marktweedie, Mat813, Mattisse, Mgiganteus1, MicahDCochran, MrOllie, Mravinszky, Mufka, Mussermaster, Mxn, MysteryBee, Nae'blis, Narssarssuaq, Natebailey, Ndantzig, Nearfar, Nicke L, Ningauble, ONEder Boy, Pariah, Pasztilla, Peter S., Phoenix-forgotten, Prevenient, R Lowry, R3m0t, Rheum Rhabarbarum, Rleveque, Ronebofh, Scwlong, Sillybilly, Spalding, T@Di, T@nn, TexasAndroid, The Man in Question, Uplifter, Vald, Viriditas, Waulapayne, Woodsrock, Woohookitty, Wotnow, ZsuzsiB, 94 anonymous edits

Flow (psychology) *Source*: http://en.wikipedia.org/w/index.php?oldid=469313709 *Contributors*: 2005-01-31T01:24Z, 2005-02-26T18:45Z, Aaron Kauppi, Aaron north, Access Denied, Aerojmac, Aeternus, Alvis, Andreas Carter, Andycjp, Atpal, B9 hummingbird hovering, Barbara Shack, Betacommand, Blainster, Blissvoidaxis, Boonukem, BrotherGeorge, Bumm13, CALR, Cacycle, Can't sleep, clown will eat me, ChemNerd, Cheoppy, Chicopac, Colonel Warden, Corwin8, Cs-wolves, DCDuring, Dan56, Danceron, DanielCD, David2346, Deltabeignet, Demonkoryu, DeutscherStahl, DoctorW, Dougofborg, Dr. Lucifer, Dr.enh, Drbreznjev, Dreadstar, Dream of Nyx, Dreslough, Drux, Dvyjns, ERcheck, Eequor, ElKevbo, Elyseo, Enjoyseemsss, Ffxi frohike, Fombom, Forerunner411, Frap, Fredrik, Fuzzy Logic, Fæ, Gary Cziko, Gary King, Gbsrd, Geoffreybernardo, Gigiwoo, GoldenGoose100, Gondwanabanana, Graham87, Greasebag, GregorB, Groupsixtysixty, HJ Mitchell, Haoie, Haus, Hoo man, Husond, Hw123, Hyperkobling, J. Spencer, Jacoplane, Janarius, Jarry1250, Jeff3000, Jel, Johnsolo, Jonkerz, Jpgordon, Jrdioko, Karl-Henner, Katsesama, Kered77, Kevingc, Kku, L00ptid, LadybugInvasion, Leandrod, Lonet, Lova Falk, MER-C, Majorclanger, Mankar Camoran, Marnanel, Mathmo, Mattisse, Maximus Rex, Mgiganteus1, Michael Hardy, Mitsube, Mm40, Montereyham, MoonMan, Mousewings, MrOllie, Natebailey, Nazar, Nesbit, Nickptar, Ohnoitsjamie, OisinisiO, Osaya, Peter S., Phantomsnake, Phoenixthebird, Phresnel, Physicistjedi, Piano non troppo, Pine, Plpkingsofflow, Poipriestess, Positivepsy, Ppe42, Pro crast in a tor, Project2501a, Rbpolsen, RedAlgorithm, Reynaldo en, RichardF, Riucia, Rjwilmsi, Rock4arolla, Roymstat, SPKirsch, Sadi Carnot, Sasata, SeanGustafson, Seb35, Seifried, Shlomke, Skoosh, Smcg8374, Solace098, Someguy1221, Sonjaaa, Spalding, Special-T, Spider-spax, Sriks7, Stallion19, Susko, Switchercat, Tbackstr, Teardrop onthefire, Teratornis, Tesseract2, Thedr.spo, ThomasPusch, ToasterCoster, Tompollak, Travis.m.granvold, Vandy10, Waldir, WikiReviewer.de, Wikiloop, Winter Breeze, Wjejskenewr, Yaamboo, 323 anonymous edits

Overlearning *Source*: http://en.wikipedia.org/w/index.php?oldid=427131111 *Contributors*: Alan Pascoe, Chill Factor Five, Doodle77, Dr.enh, Frau Holle, Gmandler, Kamezuki, Lyvien, Nbarth, Nesbit, PamD, Piksea, RxS, Spalding, TheParanoidOne, Thue, Xezbeth, 10 anonymous edits

Relaxation (psychology) *Source*: http://en.wikipedia.org/w/index.php?oldid=446591097 *Contributors*: Gamewizard71, Gary King, ThomasLuca, 3 anonymous edits

Boredom *Source*: http://en.wikipedia.org/w/index.php?oldid=469652706 *Contributors*: (jarbarf), 07joe2k7, 1607m4dsk1llz, 16@r, 2004-12-29T22:45Z, 28bytes, 3000zebs, 3R1C, AE Troll, Abeg92, AbsolutDan, Academic Challenger, Acalamari, Adambiswanger1, Adambro, Adamcastellano12, Aecis, Afed, AgentPeppermint, Ahering@cogeco.ca, Ahoerstemeier, Airconswitch, Alekjds, Alex LaPointe, AlexR, Alexbuirds, AlonCoret, Alphachimp, Altaron, Altenmann, Alvaro, Alxndr, Amreading, Anaraug, Andonic, Andrewpmk, Andycjp, Andylkl, Angela, Angelsfreeek, Anger22, Annulla, Anonywiki, Antandrus, AntoinePancakes, ApolloBoy, Apparent public relationship, AriaShakespeare, Ariesvinu, Aristotle1990, Arlogan0, Arm, Arnfieldroad, Arsene, Asarelah, Athf1234, Attafei, Audiparty, AznWarlord, Baberlp, Bachrach44, Backflip257, Baka-san, BanyanTree, Barek, Bdodo1992, Beamathan, Ben Gaskin, Bencherlite, Bento00, BigSciZot, Bilalruwala, Binksternet, Blast73, BlazeTheMovieFan, Blondeychck7, Blue Mirage, Bob Castle, Bobo The Ninja, Bobo192, Bongwarrior, Bored.org, BostonMA, Brian the Editor, Brownlee, Bubba hotep, BulletBillTime, Burn N Flare, Burntsauce, CDSD11111, CPMcE, CQJ, Caffine man, Caltas, Can't sleep, clown will eat me, Canderson7, Candy-Panda, Captain DLucks, Captaindan, Careboutthistbh, Cazort, Cdg1072, CerealBabyMilk, CharonX, Chaser, Chris Howard, Christian75, Chunky Rice, Chunkylefunga, Cjthellama, CleverScreeName, Cmputer, Cool moe dee 345, Coolcamxl, Cooldude7273, Coolhandscot, Corpx, Cosnahang, Courcelles, Cpnpmp94, CrankyKoh, Crazy bastard, Crazyblockhead, Crazycomputers, Cremepuff222, Ctu2485, Curps, Curve power, Cyrus Andiron, D, D. Kizzle Acorizzle, DARTH SIDIOUS 2, DBZROCKS, DGordonski, DVD R W, Dabaconboy, Dagrimdialer619, Damiens.rf, DancingPhilosopher, DanielCD, Danielaustinhall12, DannyB!!, Dar-Ape, Darksun, Darthchris316, DasallmächtigeJ, Datepalm17, Davespice, David Edgar, David G Brault, David Gerard, DavidOaks, Dbarker348, Dcsohl, Deanos, Deckiller, Deedzeh, Delirium, Delldot, DennyColt, Deonissexy, DerHexer, Derild4921, Dethme0w, Dhollm, Dictyosiphonaceae, Dina, Discospinster, Doc Tropics, Domthedude001, Doodle77, Doyley, Dr. F. Roy Dean Schlipp, Dr.enh, Dreadstar, DreamGuy, Dreamfoundry, Drumac, Drumnbach, Dubmill, Dylan anglada, Dzordzm, EWS23, Eassin, Editor2020, Eep², Ehheh, ElTyrant, Eliz81, Elris, Emufarmers, EncephalonSeven, Enviroboy, Erstwerst, EunuchOmerta, Everyking, Everything212, Evil Monkey, Evil-Poptarts, Excirial, Exploding monkies, Faithlessthewonderboy, Familyguyfan, Fanfanru, Fatty15, Fatty17, Fayenatic london, FileMaster, Finbar Canavan, Finlay McWalter, Flatronwide, Fly by Night, Flyingidiot, Fram, Freakofnurture, Fsubound517, Funandtrvl, Furby100, Fuzzwhy, Fæ, G 2d, GDonato, GRPH3B18, Gadfium, Garion96, GavinTing, Gavrun, Gdo01, Ggggunithaha, Ghettovenger, GhostPirate, Gilliam, Ginsengbomb, Gjd001, Gogo Dodo, Gogoiordh, Goodparley, Goodvac, GorillaWarfare, Gracenotes, Graham87, Graygator10, Grayshi, Greatgavini, Gregbard, Grimey109, Grstain, Gscshoyru, Guitarmankev1, Gullinkambi, Gurch, Gwernol, Hagerman, Haha169, Hallo poji, Harblong, Hargle, Headbomb, Hebrides, HeckXX, Hellotherehowareyou?23, Helmold, Hersfold, Hibana, Hmwith, Hughtcool, Hullaballoo Wolfowitz, Humanknowledge, Huwr, Hxckid0018, Höyhens, IGeMiNix, Icestorm815, Iirvine, Imasleepviking, Insanity Incarnate, Intelati, Ioannes Pragensis, Ivorverybigun, Ixfd64, J13fthree, JDoorjam, JEFFYBOBJOE, JNW, Jaberwocky6669, Jahsonic, JamesBWatson, JamieS93, Jamieostrich, Jatoo, Jauerback, Jaxl, Jaxsonjo, Jcarr82, Jcobb, Jcrook1987, Jean-François Clet, JeremyA, Jfire, Jhinman, Jidanni, Jinsenken, JoJan, JoanneB, John C PI, Jord010, JoshuaFLCL, Joyous!, Joyradost, Jr.steeler44, Jrl10rocks, Jrobbings, Jshook08, Jtalledo, Jtle515, K0hlrabi, KJS77, Kaisershatner, Karol Langner, Kashif sambhal, Kaspertron, Katerenka, Kaz11126, Kbrose, Kc2017kc, KeithB, Keristrasza, Khfan93, Kickstartmyfart2, King Lopez, Kingturtle, Klosterdev, Klubbit, Klwtwizzy, Kmkenney, KnightCrusader, Koavf, Koovin, Krich, Kukini, Kusma, Kwangbang, L3prador, LSX, LachlanA, LadyofShalott, LeCire, Leafyplant, Lebroyl, Lee1991, Leeborkman, Lelkesa, Lemo11, Leslie Mateus, LiamDXson123, Lightdarkness, Lights, Little Mountain 5, Lomn, Lorispen1, Lotje, Lradrama, Luiscubal, Luk, Lumpohero, Luna Santin, Lycurgus, Lyz-f, M0rt, MER-C, MZMcBride, Mac Davis, Macai, Mahewa, Makeemlighter, Malevolentsteel, Marco Guzman, Jr, Margana, Mario1021, MarkMarek, Mat JB, Materialscientist, Mathmo, Matt Crypto, Mattisse, Mauler90, McGeddon, Megan1967, Melaen, Mentality, Metallica12223, Michael K. Edwards, MichaelBillington, Midnightcomm, MikeVitale, Minimac, Mista Smooth, Mithent, Mmmready, Moeburn, Moeron, MonoAV, Moorcroftlad, Morningjava, Morwen, Mr Stephen, Mr. Billion, Mr.ankit97, Mrcolj, Mshecket, Muller654, Music Dragon, Mwilso24, My76Strat, Myanw, Mysdaao, N64128256, NERIUM, Nakon, Natalie Erin, NawlinWiki, Neil916, Neilc, Neoeno, Nesbit, Neskin, Neverflake, NewEnglandYankee, Newtown11, Nick, Nick Number, Nickhender, Nihiltres, No Guru, Nonameplayer, Notime007, NrDg, NumPad, Nurasko, ONUnicorn, Ocaasi, Occono, Octahedron80, Ohnoitsjamie, OnBeyondZebrax, Ornilnas, Owen Roe, Oxymoron83, ParkerHiggins, Pascal.Tesson, Pascalfortier, Patman89, Patrick, Patstuart, Paul August, Pax6, Pedant17, Persian Poet Gal, PeteShanosky, Pgreenfinch, Phil1988, PiRSquared17, Pilotguy, Pinethicket, Platonic Guardian, Polylerus, Portillo, Postdlf, Prashantparikh, Proof Reader, PsychoCola, Pumpmeup, PyroWEF, QUIGGY4794, Qst, Quadell, Quadpus, Quiddity, Quinlan Vos, QuiteUnusual, Qwerty505, Qwyrxian, Qxz, RDBrown, Radchenis, Ranatoro, Randfan, Rapturerocks, Rdsmith4, Realist2, Recury, Remurmur, Retiono Virginian, Rettetast, RexNL, Rgoodermote, Rhombus, Riana, RichardF, Richardnn, Risker, Roman Zacharij, Ronald.thomas, Rookkey, Rory096, RoyBoy, Rsm99833, Rtyq2, Rufiohaspan, Runt, Ryan Postlethwaite, RyanParis, Ryoutou, SCEhardt, SEWilco, SJP, ST47, Saaga, Saberiel, Sainandfable, Sam Hocevar, Samtheboy, Sango123, Scammern00bs, Schizobullet, Schlumpff, Scott0485, Scottland174, Scottys112, Scratsnut, Sdempsey, Sean D Martin, Seaphoto, Semperf, Seraphiel, SevenMass, Sfmammamia, Shagie, Shandris, Shantavira, Shelikesediting, Shenme, Shimdidly, Shirifan, Shoeofdeath, Shoppingqn1991, Shotgunk2, Silly rabbit, SimpleSilence, Singularity, Sintaku, Sir Nerdalot, Sir Nicholas de Mimsy-Porpington, Sixth degree of separation, Slartibartfastibast, SlimVirgin, SnapSnap, Sonic3KMaster, Sophie means wisdom, SpamBilly, Spamalope, SparrowsWing, Spartan-James, Speedfreak69, Sstteevvee, Stephenb, Steve carlson, Steven shipley1994, Sticky Parkin, Stoa, Strode Scholar, SuperSpeller22, Superlybored, Supertouch, Swpb, Syrthiss, TREACLE1, TaerkastUA, Taggart Transcontinental, Tainter, Tamwyn alex, Tbhotch, Tegrenath, Telepheedian, Teles, Tempodivalse, Terence, Terrana, Tevildo, The Anome, The JumpStation, The Rambling Man, The Sporadic Update, The Transhumanist (AWB), TheBeast69, TheFuzzball, TheInfluence, TheRanger, Thebobdude, Theda, Thingg, Thom85, Thoughtcat, Three-quarter-ten, Ticklemygrits, Tide rolls, TigerShark, Timberframe, Tlogmer, Tman92092, Tom harrison, TomGreen, Tonywalton, Triachus, Triwbe, Trnj2000, Trusilver, Tsunaminoai, Turlo Lomon, Twipie, Tydaj, U.S.A.U.S.A.U.S.A., Ubercreep361, Ugen64, Umbop21, Uncle G, Undeadhead, Userloser, Utcursch, Utopial, VTNC, Vaflo, Valmi, Vardion, Veldorome, Volcanictelephone, Vranak, Vrenator, W2bh, WLU, Wayward, Wefdsfassd, WereWolf, Weregerbil, Wereon, Whisky drinker, Whispering, Wiki alf, WikiDao, Wikiassasin, Wikibofh, Willewings, Wilt, Wimt, WolfyML, Woohookitty, Xcentaur, Xdenizen, Xennik, Yamaguchi先生, Yamamoto Ichiro, Yeti BM, Zeeboy 4, Zexarious, Zombiepopp, Zondor, Zorkmid, Zzuuzz, Александр Мотин, 1203 anonymous edits

Apathy *Source*: http://en.wikipedia.org/w/index.php?oldid=465055130 *Contributors*: 1ForTheMoney, 2D, A Macedonian, ABVS1936, Abcdefghayden, Abigailvoraxis, Alex.white07, Alexbuirds, Algont, All Hallow's Wraith, AllGloryToTheHypnotoad, Alleygator, Andycjp, Angela, Angelo De La Paz, Angr, AntiuserX, Antonio Lopez, AuburnPilot, Avoided, B Radley0123, BD2412, Badgernet, Beao, Belovedfreak, Bento00, Bobo192, Brian the Editor, Brian0918, Brookie, Bullzeye, CMBJ, Calumzu, Camw, Capitan Obvio, Card Zero, Chris the speller, Chrisdab, Cmarquezu, Colin413, CommonInfo, Cybercobra, D4g0thur, DTR, Daniil Maslyuk, Danski14, David Jay Walker, DerHexer, Dfrg.msc, Dipankan001, Doctoroxenbriery, Dr.enh, Dreadstar, Drumpler, Dycedarg, ELDRAS, ESkog, Edgar181, El C, Elecnix, Eletheia, Eric119, Erochelson, Everyking, Excirial, Farhadz, Fojane, Frangibility, Gamewizard71, Gary King, Gerrit, Granpuff, Gregbard, Greyhood, Gstew87, Guoguo12, Hamtechperson, Haruyasha, Hmains, Hu12, Husond, Iridescent, J.delanoy, JForget, JLaTondre, Jak123, Jakeseifert, JandyM98, Jcw69, Jeepday, Johndis5, Jonathunder, Jpoelma13, Jutherine, Kabuto Yakushi, Kazztawdal, Kevyn, Kgrad, Koavf, L33tminion, LCecere, LadyofShalott, Lambiam, Lhademmor, Lights, Lizrael, Loren.wilton, LoserJoke, MEspringal, MONGO, Macedonian, Maqs, Marc Venot, Mare420, Marek69, Materialscientist, Matthew Yeager, Mattisse, McGriddles, Mel Etitis, Metasquares, Micione, MrDarcy, Neelix, Neoguy999115, Nesbit, Neverquick, Niceguyedc, Ninja Wizard, NovaDog, ONEder Boy, OOODDD, Ocatecir, Oddity-, Olimit, OnBeyondZebrax, Ongar the World-Weary, Optim, Oskar71, Oxymoron83, PatrickFisher, PaulWicks, Peers12, Philip.t.day, Philippe Nicolai-Dashwood, Pictureuploader, Pitr, Prari, Proofreader77, Quibik, Quiddity, R'n'B, Randomconfusionx, RebelFox, Red dwarf, Redrocket, Regibox, RekishiEJ, Res2216firestar, Rexfan2, Rich Farmbrough, Richard0612, RichardF, Rigadoun, Rintrah, Rje, Rmky87, Roastporkbun, Rudimae, Russavia, Rusty2005, SQGibbon, SU Linguist, Sannse, ScrollMaker, Sheehan, Shoobedowap, SimonP, Singinglemon, Siobhán1868, Sionus, Skimaxpower, Snowolf, Soiregistered, Soosed, Sophroniscus, SpeedyGonsales, Spyros Pantenas, Stevertigo, Subverted, Sweebez, TehPh1r3, Tesseract2, The Transhumanist, The Transhumanist (AWB), TheEgyptian, Theymos, Timotheus Canens, Tiredofscams, Tommy2010, Topher385, Trivialist, Tverbeek, Ukexpat, Ulric1313, UnexpectedBanana, Urvi rulz, Utcursch, Viceroy Rick, Vision Thing, Vranak, Wetman, Wikipelli, Will-B,

Woohookitty, Yahel Guhan, Zrulli, Алиса Селезньова, 412 anonymous edits

Worry *Source*: http://en.wikipedia.org/w/index.php?oldid=467577555 *Contributors*: 16@r, Alansohn, Andycjp, Anthony Appleyard, AustinDean, Belovedfreak, Benbest, Bluedenim, Carysmith44, CharonX, Cholga, Christian75, Conan, Doodle77, Dr.enh, Dylan Lake, Eliyak, Escape Orbit, Gamewizard71, Gilliam, IRP, Ianweller, Intgr, J.delanoy, Jacob Vardy, Jcbutler, Jmh649, LittleHow, Mattisse, Nadinerocquette, Neelix, NevilleDNZ, Notinasnaid, OnBeyondZebrax, Pfctdayelise, Phoebe, Pigman, Ptolemy Caesarion, Quiddity, Rjwilmsi, Robert Daoust, Sceptre, Sepguilherme, Soiregistered, Some jerk on the Internet, Sparcle z, Stevegallery, Tinkermen, UDScott, Veinor, Worrydream, Xezbeth, Zondor, 43 anonymous edits

Anxiety *Source*: http://en.wikipedia.org/w/index.php?oldid=468798387 *Contributors*: 0861247208lc, 12dstring, 16@r, 1945AlphaTeam, 7h3 3L173, 998964731.blaneyfa, ABF, AThing, AaronSw, Abductive, Achowat, Adam C Murray, Ahoerstemeier, Aitias, Ajeelani, Aland90, Alansohn, Alasdair, Aldo samulo, Alex.g, Alex.tan, AlistairMcMillan, Allank6, Alphax, Amberrock, Ambuj.Saxena, Amerywu, Amreen05, Andycjp, Angela, Angr, Anna Lincoln, Antandrus, Anthonyhcole, Antonio Lopez, Anxietyanswers, Anxietyzone, Arana2000, Arcadian, Asarlaí, Ashmoo, Atthewell26, Auric, AustinDean, Avoided, Avs5221, Awesome.js, Awesomoe2000, Babedacus, Badgettrg, Barrylb, Bart133, Bashnhash, Bassbonerocks, Bauldfroog, Bawles2, Beetstra, Ben123holland, Besselfunctions, Betacommand, Bevio123321, Bfraz, Bighostchennai, Bigoxygen100, Bilzu, Binary TSO, Bjuliette, Bkabaker, Blackmax, Blades, Blake-, Bloodshedder, Blue520, BlueLotusLK, Bobo192, Bonadea, Bongwarrior, Boogaloodoo, Buddho, Bullzeye, CDA, CTZMSC3, Cacycle, Can't sleep, clown will eat me, Capricorn42, Capt. James T. Kirk, CesarB, Charles Matthews, CharlesLinden, CharonX, ChemGardener, Chenzw, Chester Markel, Chid12, Chloem86, Chomolungma, Chronicle7, Clarissalong, Cleared as filed, CloudSurfer, Codingmasters, Coemgenus, Cole Kitchen, Colin, Collinss12, Conversion script, Cooncheese77, CopperKettle, Cortamears, Cosmic Latte, Courcelles, CragFace, CreativeLife, Crystallina, DGX, DGaw, DVD R W, Dan100, Dancter, DanielCD, Dannyray1997, Darkspots, Davidruben, Dawn Bard, Dazz89, Deli nk, Delldot, Depression4, DerekvG, Despres, Diannaa, Difu Wu, Diotti, Discospinster, Disordered, Diza, DjKrisz, Djcam, Doc murad, Doc9871, Doctorwan, Doodle77, Doremítzwr, Dphrag, Dr.enh, Dream Focus, Drmies, Drone5, Dtanton, Dukejansen, Dzordzm, E2eamon, Edgar181, Editor18, Editor2020, Edward, Eetom, El C, ElBenevolente, Electrojet2008, Elvenscout742, Embopalulah, Emesee, EmpacherPuppet, Epbr123, EvanRMW, Eve Hall, Excirial, Ezzat144, FF2010, FT2, FastLizard4, FireWeed, Flybeta, Fortdj33, Franzio, Frederick B, Fredpoo, Fredweis, FreplySpang, Frogthedog, Func, Fæ, G7jgq, GRPH3B18, Gadfium, Gbanse, GcSwRhIc, Gcs584, Gioto, Goochelaar, Gpvos, Grace E. Dougle, GraemeL, Green Squares, Greenfunds66, Gregbard, Grm wnr, Gurch, Guymadison, Gwernol, Gwggary, Gz33, Hallows AG, Hardduck, Harrise6, Hawaiian717, Healyjess, Heidimars, HellDragon, Hontogaichiban, Hoof Hearted, Hordaland, HorsePunchKid, Hot200245, Hyacinth, I dream of horses, IM LINK!, IddoGenuth, ImperatorExercitus, Indon, Inka 888, Innerstudy, Ioeth, Irrevenant, Ishika, Ishikawa Minoru, Island Monkey, Ixfd64, J Di, J.delanoy, JHunterJ, JYolkowski, Jackmont, Jaden1792, Jagged 85, Jaranda, Jared Preston, Jaxl, Jaxsonjo, Jcbutler, Jchapman1016, JeR, Jeeny, JeremyA, Jfdwolff, Jgreenberg, Jim88Argentina, Jjalexand, Jmh649, Jmsdysart1972, Jngk2007, Jockmonkey, Joelr31, Johnpf, Jojhutton, Jon Awbrey, Jonkerz, Jorunn, Jossi, Joysofpi, Jtabernik, Jtkiefer, Jtneill, Judged, Jumbuck, Jurplesman, Jv821, Jweiss11, Kaiba, Kaji132007, Kara Brady, Karen Johnson, Katherab, Kavaboi, Kbh3rd, KeithJonsn, Kelly Jones, Kered77, Kgrad, Killiondude, King of Hearts, Kingpin13, Kipoc, Kkansas, KnowledgeOfSelf, Knwca95, Kollision, KonradG, Koyaanis Qatsi, Kraftlos, KrakatoaKatie, Kst447, Kubigula, Kuru, Kyle Barbour, Kylu, L Kensington, LF, Lacrimosus, LadyofShalott, Lamrock, Lanacam, Lauren Mid, Le17novembre, Leon7, Les boys, Liisasaurus, Linkspamremover, Lipothymia, Lisa-MarieSpillane, Literaturegeek, LittleHow, Longhair, Looie496, Lugnuts, Luigilos, MC MasterChef, MER-C, MaBe, Madhero88, Magicman24, Mahonk19, Manicjedi, MarcoTolo, Mardus, Marek69, MarilynCP, Markaci, Marlen Vargas, Mashford, Materialscientist, Matt Brubeck, Matt Gies, Matthew Buckley, Mattisse, Max David, Maximus Rex, McGeddon, Mdwh, Mechasheherezada, Mego'brien, Menchi, Mental Blank, Mephistophelian, Mets501, MexicanFish, Michaelbusch, Mike Rosoft, Mike6271, Miradre, Mjp797, Mktguru, Mobile Snail, Moeron, Moleonamountain, Moncrief, Monkeyman, Moshe Constantine Hassan Al-Silverburg, MosheA, Mr Stephen, Mr-Natural-Health, MrPlaid81, MsDagger, Mukadderat, N0cturn4lsh4d0w, NATIONALGUARD1, Nakon, Natalie Erin, NathanHurst, Natsirtguy, Nautical Phasmid, NawlinWiki, Neelix, Neil00027, Nephron, Nesbit, NeuroBells123, Neurodivergent, Neuromodulator, Neurophyre, News academic 35, Nickfacchetti, NihilisticMystic, Nmg20, Non-dropframe, Novalis, Nsaa, Nuggetboy, OOODDD, Obarskyr, Octavio L, Oederweg, Ohnoitsjamie, Ojcookies, OnBeyondZebrax, Opelio, Optikos, Orphan Wiki, Oscar747, Pat batemen, Paulaloja, Peiisu, Penbat, Peruvianllama, Petlif, PharmaInspector, Philip Trueman, Philippe, Physiolab, Physis, PierreAnoid, Pigsonthewing, Pill, PinchasC, Pinethicket, Pixeltoo, Pocbloc, Prof Health, Puckly, Qst, Quentar, Quiddity, Quuxplusone, R Lowry, R'n'B, R9obert, RCSB, Raymond murphy, Raymondwinn, Razorflame, Rcarlosagis, Reddi, Reedy, ReinforcedReinforcements, RekishiEJ, Relaxation studio, RexNL, Rich Farmbrough, RichardF, Rinpardee, Rjwilmsi, Robert Daoust, Rock4arolla, Roman à clef, Rotring, Rreagan007, Rrwright, Russell E, Ryanandrew, SJP, SPIKIEBIRD, Sally wonder, Salsb, Sango123, Sannse, Sapphire Flame, Sceptre, Scientizzle, Scott Ritchie, Screetchy cello, Seaphoto, Seek83, SelfStudyBuddy, Selket, Seven of Nine, Shadowjams, Shell Kinney, Sietse Snel, Simplyhealingclinic, Sinn, Sir Nicholas de Mimsy-Porpington, Sir Vicious, Skagedal, Skomorokh, Slakr, Smalltowngirl, Smaug123, Smched, Smeggysmeg, Snackycakes, Snowolf, Snoyes, Snuff, Soiregistered, Someguy1221, SpaceFlight89, SpecMode, SpiderDawn, SpikeToronto, Spliffy, Sporti, Srleffler, Stephen Compall, Sterntreiber, Stevegallery, StrikeTH, StuffOfInterest, Sunderland06, Sunflower1019, Superbeecat, Supersox, Surfera007, Sylent, Tabletop, Tall Midget, Taopman, Tarek, Targetpuller, Tariqabjotu, Tarret, Tassedethe, Tdowling, TeaDrinker, Teamabby, Terence, TerryChen, Texasreport, Texture, The Baroness of Morden, The Thing That Should Not Be, TheGerm, TheTyrant, Themfromspace, Thomas Larsen, ThunderCloud, Thunderbrand, Tide rolls, TimVickers, Tinkermen, Tlatseg, Tomiko72, TommyDaniels, Toughpigs, Transity, Travelbird, Trivialist, Trouvé, Tugger1, Twaz, Ukltd, Uncle Milty, Ute in DC, Valce, Veinor, Venatius, Vipinhari, Vkeller, Vkkota, Vrenator, Wadems, WaltJones1989, Wavelength, Wedgeantilles, Weregerbil, West Brom 4ever, West.andrew.g, Whouk, Wilkins3, Wingedsubmariner, Wtmitchell, Wtyneb, Xezbeth, Yelyos, Yonatan, Yoradler5, Zazpot, Zoicon5, Zozza, Zzuuzz, דוד55, 靖天子, 1090 anonymous edits

Arousal *Source*: http://en.wikipedia.org/w/index.php?oldid=460947831 *Contributors*: 16@r, 28421u2232nfenfcenc, A930913, Alansohn, Alex naish, Alfvaen, Arcadian, Aviados, Carabinieri, Chrisscrewball, Cogpsych, Crownjewel82, DVdm, DanielCD, Docboat, Doczilla, Doodle77, Dr.enh, Favonian, Frosted14, Fyyer, Fæ, Gamewizard71, Gary King, GeneMosher, Greswik, Hcheney, Hmwith, Hordaland, JForget, Jcbutler, Jgndksangjfdsaniog, Karol Langner, Kslays, Looie496, Lova Falk, Luna Santin, Mathfreq, Mattisse, Nesbit, Overmage, Pgr94, PhilKnight, Philip Trueman, PhnomPencil, Pinethicket, Raymondwinn, RedAlgorithm, Sam Hocevar, Sasquatch, SimonP, Slakr, Soiregistered, Steven Walling, Suidafrikaan, Switchercat, Tonesskin, Vaughan, Versus22, WJBscribe, WikHead, Yuriz, 78 anonymous edits

Mindfulness (psychology) *Source*: http://en.wikipedia.org/w/index.php?oldid=469504748 *Contributors*: Alansohn, Allaidh82, Amjrobbins, Anishmehta10, Aukaidoc, Banaticus, Belllinda, Bmlsorg, Caraluneau, Carl von Blixen, CaroleHenson, Cgingold, DCDuring, Dbachmann, Discospinster, Djkernen, Doczilla, Donmccown, Dr.enh, Ekabhishek, Feigenhain, Ffangs, Geofolks, GoingBatty, Henrysteinberger, JHunterJ, JHvW, JayEarley, Jcbutler, Jfew, Jhaimy, Jimmymac501, Kamatoa, Keahapana, Koavf, LilHelpa, Longouyang, Makeswell, Martinangel, Mrtea, Naniwako, OpenToppedBus, Patmc90, PeterMorgan1986, Presearch, Rich Farmbrough, Rjwilmsi, Ronz, Ryargathe, Seahorseruler, Sylvain1972, Tantek, Tedder, TimidGuy, TomEarth, Trifletraxor, Uusijani, Vanhalewijn, Winterst, 73 anonymous edits

Meditation *Source*: http://en.wikipedia.org/w/index.php?oldid=469711467 *Contributors*: 1gnostic, 200.255.83.xxx, 24.251.118.xxx, 2over0, 3-D, 7circuit, 842U, 93akshay, 9marimar, A Ramachandran, A. B., A. di M., ABF, ACSE, ARYAN818, Abecedare, Accusativen hos Olsson, Adam78, Adbhut, Addicted9, AdelaMae, Adityanamjoshi, Aergon, Aitias, Akhilz007, Alansohn, Alcidebava, Alexcheetham, Alien210, Alienlifeformz, Allegraltd, Allthesestars, Amatulic, Ambkj123, Amitjain80, Ancheta Wis, Andkaha, Andrea Claire Miller, AndrewBhasha, Andries, AndyBrandt, Andycjp, Angela, Antandrus, Apers0n, Aphilo, April8, Aprillius, Archtemplar, Are you ready for IPv6?, Argasp, Arjun01, Arrow740, Artelove33, Arthena, Asarelah, Asgrim, Astral, AugPi, Aunt Entropy, Awarmus1, B9 hummingbird hovering, BD2412, Bachrach44, Bajrangi, Bakerrebecca, Banatbanatbanjai, Banaticus, Banno, Battoe19, Bella7657, Belovedfreak, Ben Ben, Beyond My Ken, Bharatcit, Bhuston, Bigweeboy, Bikeable, Billinghurst, Bilz0r, Blainster, Bless sins, Bloodshedder, Bobblewik, Bobo192, Bodymindheal, Boing! said Zebedee, Bomac, Bosheng, Bradeos Graphon, Brian1000, BrianGV, Briligg, Brunoflexer, Budanatr, BuddhaDharma, Buddhipriya, Buddho, Byjuchalad, C+C, CALR, CDN99, CSWarren, CWii, Cacaroni, CactusWriter, Calabe1992, CalebNoble, CambridgeBayWeather, Camw, Can't sleep, clown will eat me, CanadianLinuxUser, Carlvincent, CarolGray, CaroleHenson, CarynIAM, CatAnna, Cek, Cgingold, Chcknwnm, Chible guru, Chillowack, Chriswaterguy, Chumchum7, Clicktomeditate, Clngre, Cmdrjameson, CommonsDelinker, Conversion script, Creidieki, Crystallina, Csbodine, Cssitkt, Ctjf83, Cuervo, Cyanolinguophile, DARTH SIDIOUS 2, DJ Clayworth, Da baum, DabMachine, Daisymackay, Dakinijones, Dalahäst, Daleknepp, Damianosk, Dancter, Danelo, Daniaper, DaoSeeker, Daoken, Darkwind, DashaKat, DaveRaftery, Davewild, David Shankbone, David spector, Daviscarr, Dbachmann, Dbratton, Ddj, Dechog, Deepak, Deeptii, Delirium, Delta Tango, Denny, DetailsDetails, DevaSatyam, Dgodfrey, Diamondlady1025, Discospinster, Disordered, Djkernen, Doozer, Dr.yogeshmathur, Drangon, Drano, Drbreznjev, Drjoeparazoo, Drmies, Dshafer, Duhrockr, DuncanCraig1949, Dunkenud, Dwarf Kirlston, Dylaniscool, Dysprosia, E3722, EKN, ESkog, Earlypsychosis, Econgame, Edhubbard, Educatingforpeace, Edward, Eep², Eequor, Ekajati, El C, Elfguy, Eliyak, Elwikipedista, Enigmocracy, Epipelagic, Epolk, Esowteric, Essjay, Eu.stefan, Eugenefx32, Evangeline, Evilestmark, Excirial, Extransit, Falcon8765, Fan-1967, Farhansher, Fatehji, Fauncet, Fenice, Ferkelparade, Ferrelas, Fevrierkiwi, Findlewindle, Fintor, Fisu, Fjk98, Fladrif, Flewis, Flies 1, Flo98, Floddinn, Flopsy Mopsy and Cottonmouth, Fordmadoxfraud, Frans Fowler, Fratrep, Fredrik, Fredsagirl, Freelion, Freshacconci, Froggy33, Fuhghettaboutit, Furrykef, Gabbe, Gamaliel, Garravogue, Gary D, Gary King, Garzo, Gatoclass, Geaux81278, Ghostofnemo, Giler, Gilliam, Glenn, Goatasaur, Goethean, GoingBatty, Goodmanco, Goodvac, Grace777, GraemeL, Graham87, Greenrenegade, Gregherman713, Grenavitar, Grunty Thraveswain, Gsp, Gtkd321, Gurpreet singh bhatti, Guru Devlin, Gyrofrog, Hadal, Haiduc, Hank52, Hanuman Das, Harland1, Harrym63, Havers, Hawol, Heatherfire, Heidimo, Hembh, Hifromeddie, Highercourt, Hillbrand, Himanshu 12ka4, HiramvdG, History2007, Hmains, Holy Ganga, Honorjames, Hottentot, Hu, Hu12, Humboldt hillbilly, Hut 8.5, Hyacinth, Hydroflexology, I-want-the-whole-truth, IPSOS, Ian.capasso, Iit chennai, Ikanreed, Imnotminkus, Impetuss, Indian Chronicles, Indon, Inequitas, InferKNOX, Innerpeace34, Intomeditation, Invader Zim, Ism schism, Itisitsits, Itistoday, Its all relatives, Ixfd64, J-stan, J. Passepartout, J.delanoy, J04n, JForget, JGG59, JIP, JRDolensky, JaGa, Jaigurudev, James W. West, Januarythe18th, Jasoneth, Jasvantsingh, JayDiggs12, Jayen466, Jayjg, Jbakernu, Jclemens, Jeeves, Jeff3000, Jeffmcneill, Jeffrey O. Gustafson, Jens Schriver, Jeraphine Gryphon, Jeromylewiscannon, Jguarino, Jill.magso, Jimbo787, Jimmi Hugh, Jlchan29, Jleon, Jmcw37, Jnani, Joepearson, John Gohde, John of Reading, JonDePlume, JonRhodesUK, JonasRH, Jondel, Jonnyjon, Josephbg, Jossi, Jp347, Jpjrf, Jsayre64, Jtneill, Julia Rossi, Jwanders, K kisses, K2709, KEL, KGasso, Kafziel, Kamal006, Kaobear, Kaori, KateWoodhouse, Kauaiwaves, KaymonRae, Keithbob, Kelly Martin, Kent Witham, Kevalgajjar, Kevin baluha, Kh7, Khannashweta2, Khazar, Khemadhammo, Khoikhoi, Kieranfox, Kingboyk, Kipholbeck, Kku, Kmarinas86, KnowledgeAndVision, Knowledgy, Koavf, Kochira, KoenDelaere, Kolrok, Koyaanis Qatsi, Kradzcalypse, KrakatoaKatie, Ksd5, Kukkurovaca, Kulalaw, Kundalinibooks, Kungfukats2, Kusunose, Kwertii, Lachh1, Ladarzak, Langdell, LanguageMan, Lapsha, Lara bran, Larry Rosenfeld, Lateg, Laurence.agriesti, Lawrencekhoo, Leibniz, Lentower, Leon7, Leoshad, Leuko, LexCorp, Librarian2, Lightwork Spiritual Development, LilDice, LilHelpa, LittleOldMe, Liyanage, Logan, Lord Pheasant, Lord Skye III, LordSimonofShropshire, Losangeles, Lotje, Louiejerome, Lova Falk, LoveDancing, Lowellian, Lucia ixtapa, Luis Dantas, Lumiere, Lumos3, Luna Santin, M, M Alan Kazlev, MARussellPESE, MECU, MER-C, Madagascar periwinkle, Madmedea, Magicinthedesert, Magister Mathematicae, Mahima13, Mairi, Maitreyasatsang, MajorVariola, Makeswell, Manbu, Mandarax, Mani1, Mann jess, Manop, MarB4, Marax, Marijuanarchy, MarkBurnett, Markkauffman2000, MarnetteD, Martintrinity2003, Marudubshinki, Mary Calm, MasterFade, Matthew Yeager, Mav, Maven, Maverick423, Mawfive, Maxis ftw, McSly, Mechamind90, Meco, Medawar, Meditation108, MeditationMaster, Meditationguru, Meditationunlimited, Mel Etitis, Mentifisto, Mercurywoodrose, Metta Bubble, Miaow Miaow, Michael Devore, Michael Hardy, Michaelbedar, Michel M Verstraete, Mike Rosoft, Millercdusa, Miss Madeline, Mitchmajik, Mitsube, Mkoyle, Mmason, Mmiller500, Mombas, Mornglori, Mortyorty, Mr-Natural-Health, Mr.troughton, MrOllie,

MrZhuKeeper, Mrmoocole, Mtiffany71, Munge, Muraqaba, Mwanner, Mynameismatt, Mysticschool, Naderdriver, Naniwako, Narcissus14, Naryathegreat, Nash siamwalla, Natalya, Natyadharmi, Naudefj, Ndenison, Neelix, Nekura, Nepenthes, Neverflake, Nhpfister, Niazahmed, NicholasJB, Nick Number, NightWolf1298, Nihilcertum, Nikkistation, Nima Baghaei, Ninly, Nirvana2013, Nixeagle, Nurmir, O Govinda, Odin of Trondheim, Ogress, Ohnoitsjamie, Oli Filth, Olivier, Onopearls, Orangutan, Owen, Ownlyanangel, Oxford73, PHDrillSergeant, Paddles, Pahool, Pariah, Pathan wannabe, Paul 012, Paul Erik, Perseverantia, Petersam, Pgan002, Ph.D.Nikki, Phil Boswell, PhilHibbs, PhilKnight, Phillip Rosenthal, Philothai, PhnomPencil, Pigman, Pikiwyn, Pinethicket, Playanaut, Pojanji, Pol098, Post.amit, Prajya, Prashanthns, Pratik1008, Prempungaliya, Presearch, Princess Lirin, Pritraj, Priyanath, Pschelden, Psillypsi, Ptr123, Puffrogyz, Puppypupdog, Pwqn, QVanillaQ, Quantpole, Qxz, R Lee E, R'n'B, R2d21, RDF, RHaworth, RTG, Rachel Powell, Rachit vm, Ragnii, Rahul moondra, Raju78, Rajvaddhan, Ranveig, Raphael26, Ravirrishi, Ravyehoshuadavid, Ray Dassen, Raynasa Rethan, Reaper Eternal, Rebecca Reynolds, Rebeldealegre, Rebelguru, Rebroad, Redheylin, Redtigerxyz, Reedy, Reilly204, ResearchEditor, Rettetast, Rhombus, Rich Farmbrough, RichardF, Richardvanegdom, Rijk Willemse, Risingstar12, Rjwilmsi, Rlove, Rmallott1, Robert Daoust, Rocketsfan135, Rodan44, Rogerbischoff, Roleplayer, RonF, Ronz, Ross Burgess, Ross Uber, Rseera, Rsrikanth05, Rstudstill, RunOrDie, Rursus, RyanParis, Rzelnik, S.K., Saarherman, Sacca, SaintOfFeon, Salmar, Sam Hocevar, Samaritan7, Samtallboy, Sanabis, Sandwinik, Sanjay1960, Sannse, Sarahinsedona, Sardaka, Sareini, Sasquatch, Saturdayloo, Sayeth, Scarian, Scarpy, Schun, Scoopohara, Scottking76, Seba5618, Septegram, Seren-dipper, Sergeastorms, Sethie, Sfacets, Shade.s3, Shamanchill, Shambhushivananda, Shantavira, Sharnak, Shashi2008, Shasorry, ShelleyAdams, Shii, Shirulashem, Shiva12345, Shukokaifist, Shusseina, Silananda, Silentaria, SimmoSays, Simon D M, SimonMayer, Skant, Skier Dude, Skora, Skysmith, Skywalker, Smalljim, Smood47, Snigbrook, Snmantri, Soccer30, Sourav.b.india, Sparkit, Spartian, Spidern, Spiff, Spinethetic, SpiritasA'ra, Spiritspeak1, SpiritualTeacher, Spiritualguru, Spiritualone, Splashen, Sps-808, SqueakBox, Stanqo, Starwave123, Stephen, Steven Walling, Stevenwagner, Stevertigo, Storm Rider, Struway, Sud Ram, Sud2010, Sudhanlogics, SudoGhost, Sueyen, Sunirmalya, Sunox, Sunray, Swampopus, Swashbucklingbuccaneer, Switchercat, Syncategoremata, SynchronicityFoundation, Tabletop, Taonetter, Tarakananda, TastyPoutine, Tdudkowski, Teardrop onthefire, Tearmann, Tection99, Teh tennisman, Temp07, Template namespace initialisation script, The Anome, The undertow, TheMandarin, TheOuterLimits, TheRingess, Themfromspace, Thesatyakaam, Thinman10, Thmasd525, ThomasLuca, Thomask0, Tide rolls, Tiger mask80, Tiger888, TimBentley, TimidGuy, TingtingSu, Tktruong2, Tom harrison, Tornadowhiz, Track1200, Trade2tradewell, Transformationmeditation, Travelbird, Trc, Treasuretron, Trusilver, Truthbody, Truthlove15, Turtlens, Tylerdmace, Tyw7, Uncle Dick, Uncle Milty, Universalpeace, Usedbook, Utcursch, Vanhalewijn, Vanished User 1004, Varuna, Vegan1218, Verdeneon, Versus22, Viriditas, Vish Baala, Visudha, VladGenie, Vlpreitauer, WLU, Wafulz, Waking, Walkerma, WatchAndObserve, Wavelength, Wbmag129, Weareallone, Wednesday Next, Wejer, Werdan7, Westerr, Who123, Wiki5d, WikiDao, Wikieditor06, Wikiloop, Wikipelli, Wilhelmina Will, Will Beback, WillMall, WillWare, William Ortiz, Windinthetrees, Wingspeed, Wintermute314, Wizardman, Wknight94, Wm, Wmahan, Wo0dstock79, Wolf2voices, Wolfkeeper, XenaLite, Xiong Chiamiov, Xxglennxx, Yamamoto Ichiro, Yashram, Ynot11, Yogainfo, Yoice95, Yworo, Zachorious, Zaknotzak, Zaytran, Zoegolightly, Zoffoperskof, Zoodeebanks, Zstowasser, Zεύς, Петър Петров, 1664 anonymous edits

Yoga *Source*: http://en.wikipedia.org/w/index.php?oldid=469840070 *Contributors*: *Kat*, -Midorihana-, 100110100, 15lsoucy, 1truthsoul, 216.39.175.xxx, 21655, 2T, 2sc945, 5 albert square, 78Laura, 999, A Ramachandran, A friend116, AAnandaramaa, ABF, ACEOREVIVED, Abce2, Abd, Abdguiagfruyqw, Abhinavg, Abiectus, Abrech, Aditya1975, AdultSwim, Aff123a, Ahoerstemeier, Aitias, Akamad, Aktsu, Alai, Alansohn, Alarichus, Albertindian2001, Alef Rosenbaum, Allisonmarieanne, Allstarecho, Alma Mater Studiorum, Alphachimp, Altenmann, Ambkj123, AndrewBhasha, Andries, Android Mouse, Andycjp, Anetode, Angr, Angrybull, Anil.ajax.wiki, AnilAlexAcademic, Anirvan, Anitaa, Anj12, Anmolchandhok, Anna Frodesiak, AnsarParacha, Antandrus, Antonio Lopez, Apparition11, Ariadnabakhmatova, Arijit.bhattacharyya, Arjuna, Arjunswarup, Arnuld, Arrow740, Artoasis, Aruton, Aryah, Asana108, Asdffdsa, Ashmoo, Atrzcins, Atulsnischal, AuburnPilot, Auntof6, Auriol, Avooli, B-ham, B9 hummingbird hovering, BD2412, BF, BTawtpresch001, Babub, Baodo, BaronLarf, Bart133, Belphegor192, BernardM, Bernieclark, BesstEditt, Betaeleven, Bewildermouse, Bhagavan2, Bharathnet, Bhavanani, BiT, Bibhasjob, Bigweeboy, Bihco, Bility, Billinghurst, Bincem, Bishonen, Bless sins, Blogstrings, Blu3jay, Blue Star, Bmicomp, BobKawanaka, Bobert wi, Bobo192, Bodhi dharma, Bodnotbod, Boivie, BozMo, Bpobiz, Bradeos Graphon, Brendanwinter, Brian, Brianga, Brighterorange, Brooklynsnob, Brosen, Bsadowski1, Buddhipriya, BullRangifer, Burrenyoga, CEHenderson, CIreland, CWY2190, Cacycle, CaiusNero, Callumazoo, Can't sleep, clown will eat me, CanadianLinuxUser, Carmichael95, Cataclysm, Catgut, Celsius1414, ChairYoga, Chaojoker, Charangito, CharlesC, Cheffoxx, Chowbok, Chris 73, Chris Roy, Christian75, Ck lostsword, Clarissalong, Claygreenberg, Clayman51, CliffC, Cloclofoshosho, Closedmouth, Cmdrjameson, Coder Lowrider, Colonies Chris, Comancheros, Conversion script, Coolkiddo69, Courcelles, Curb Chain, Curps, Cyrius, D, D6, DCEdwards1966, DKong27, DMG413, DMacks, DS.Dabe, DSRH, DVdm, Da Stressor, DaGizza, Dabomb87, Dakinijones, Dana murty, Dandelion1, Dangerous-Boy, Daniel.Cardenas, Danny, Dark Green, Darren996, DashaKat, Dave6, David Parfitt, David spector, DavidLevinson, DavidWBrooks, DavidYork71, Davin, Dawud, Day000Walker, Dbachmann, Dbfirs, Dcambria, DeRose London, DeZengo, DeadEyeArrow, Debnathsandeep, Deepak, Deeptrivia, Deepvalley, Delpino, DelvarMe, DerHexer, DesertRat262, Devadaru, DharmaWarrior, Dina, Djlayton4, Doctoroxenbriery, Dominicgamble, Domspe, DonaldSutherland, Doug4, Dougweller, Dppowell, Draeco, Dreadstar, Drmonabrown, Drsenthil143, Dseer, Dumontse, Dycedarg, Dysepsion, Dysprosia, ERcheck, ESerranoAG, Eafarah, Early morning person, Echoecho, Edm21, Eequor, Einheber, Ekabhishek, El C, Elgin222, Elizucha, Elwikipedista, Embhee, Empacher, Emreba, Eno fo to, Epbr123, Err ignignot, Esowteric, Essentialpath, Estudiarme, Et ego, Eternalvoyageur, Eugene-elgato, Eulalie D, Eumolpo, Far7anR, Fear based teachings, Femto, Fencingchamp, Filthyfix, Flewis, Fluri, Forteanajones, FrancoGG, Fredrik, Freedom skies, Freelion, FreplySpang, Furrykef, Fvw, Gaius Cornelius, Gary King, Garyzx, Gbeeker, Genelisp, Genius101, Geoff M, Gnanapiti, Goethean, GoodTimesOrc, GoonerDP, GourangaUK, Gr8white, Gracey0082, GraemeL, Grafen, Graham87, Grandpa jlc, Green mo, Greenguy1090, Greg Comlish, Gregbogart, GregorB, Grenavitar, Grm wnr, Gskohner, Gsuri18, Guoguo12, Gurch, Gurchzilla, Guru Fatha Singh Khalsa, Gwernol, Gypsytt, HB enthu, HID-IIY, Habhab38, Hadal, HalfShadow, Hallenrm, Hallows AG, Hanuman Das, Hariomswami, Harryboyles, HeBhagawan, Heidimo, HeikoEvermann, Hellodan, HexaChord, Hippietrail, History2007, Hkelkar, Hmains, Holy Ganga, Hoo man, Hu12, II MusLiM HyBRiD II, ISeePhotos, Iainscott, Igoldste, Impetuss, InMemoriamLuangPu, India Gate, Indian Chronicles, Irek Biernat, Iridescent, Ism schism, It Is Me Here, Ivan Zezyulya, Ivan Štambuk, J. W. Love, J.delanoy, J04n, J3roen, JFreeman, JHunterJ, JThomas777, Ja 62, Jackol, JainPlanetism, Jake Wartenberg, Jam2k, JameiLei, Jamesofur, Jarry1250, Jay, Jaywryu, Jbgreen, Jeff G., Jeff3000, Jeffrey O. Gustafson, Jenafalt, Jensp, Jfdwolff, Jfeckstein, Jh51681, Jiang, Jiddisch, Jimbrown76, Jmahon12, Jmeggers, Jncraton, Jnothman, JoeSmack, Joebeone, Johanflod, John254, JohnyDog, JonasRH, Jondel, Jonel, Joseph Solis in Australia, JoshBeckDan, Jossi, Joy, Jrtayloriv, Jsp722, Jtbobwaysf, Julia Rossi, Julie Zamostny, Jusdafax, Jyoti000, Jéské Couriano, K kisses, KINGx67, Kaliemon, Kanags, KarateLady, Karma2Grace, Karol Langner, Katelyntakesfive, Kathakmoksha, Katieh5584, Kawaiigirl, Keenan Pepper, KeepItClean, Kehrbykid, KellyPhD, Kennethtennyson, Kenyon, Kerry10, KillerBicycle, Killing Vector, Kingofgames2, Kinu, Klasovsky, Knightwhosayni, Knotnic, Knotwork, KnowledgeOfSelf, Knowz, Knverma, Koenige, Korg, Krashlandon, Krsont, Ksratnoo, Ksweith, Kubigula, Kubra, Kuru, Kylemec, LAX, Lackiss, Langdell, Lara bran, Laryssaxo, Lateg, Lawd1, Lazaroo888, Ldp linux, Learningyogi, LeaveSleaves, Lentower, Leszek Jańczuk, Levil, LiDaobing, Life of Riley, Lightmouse, Linbwiki, Lincher, Linkspamremover, LizardJr8, Logan, Lonehermit, LordSimonofShropshire, Louison, Lpgeffen, Lradrama, Luciasquirrel, Luk, Lumos3, Luna Santin, Lussmu, M.Imran, MECU, MER-C, MK8, MM1mmvii, Machaon, Madan lmg, Madan77, Magicalsaumy, Magioladitis, Mahayogini, Mail2drsandeep@yahoo.com, Majorly, Makeswell, Maluskarhrishikesh, Maniwar, Mankar Camoran, Mann jess, Mansukram, Manushya, Mapletip, Mar4d, Marceo, Marcus90, Marek69, Markhewitt3, Masondickson, Matt57, MattWright, Mavigogun, Maxikopy, MaxwellHse, Maynard Hogg, Mbimmler, McSly, Mediaimages, Meditation, Meditationguru, Mel Etitis, MertyWiki, MetaphysicalAwarenessCom, Metta Bubble, Mgiganteus1, Mhking, Miaow Miaow, Miblo, Mihail Vasiliev, Mike Rosoft, Missmiscellanea, Mit027*, Mitsube, Mkweise, Mladifilozof, Moeller at Central College, Monagc, Morganfitzp, Morinae, Mothergodchurch, Mr-Natural-Health, Mr.Hamer, MrArt, Mrh30, Mrhari1963, Msharms, Mukeshmakhija, Munishkr, Murgh, Mushroom, Musical Linguist, Mwanawevu, Mwanner, Mxn, Mysticschool, N5iln, NHRHS2010, Naddy, Nagaranjansr, Nahallac Silverwinds, Nakon, Nasnema, Natashasingh23, Natyadharmi, NawlinWiki, Nazar, Nehrams2020, Nemonoman, Neurolysis, Nick Number, Nifky?, Nigel.boswell, NightwolfAA2k5, Nirbao, Nirvana2013, Nisarga1, Nivix, Nobody60, Noctibus, Noiseoverip, Nomz66, Non sequitur, Normkjohnson, Nsaa, NubKnacker, Nubiatech, O. Pen Sauce, Oblast, Ogress, Ohnoitsjamie, Omer88f, Omgitshugo, Omicronpersei8, OrangePeel, Orphan Wiki, Osiris-, Oska, OwenX, Oxley1165, P.U. in P.E., PRRfan, PTJoshua, Pahool, Pastafarian Nights, Paul foord, Paul venter, Pavel Vozenilek, Paxsimius, Pengo, Penningtont1, Pepovium, Phantom654321, Pharotic, Phil Boswell, Philip Trueman, Phillip Rosenthal, Piano non troppo, Piccadilly Sirkus, Pigman, Pinethicket, Pizza Puzzle, Plastss, PlatinumX, PlusDrawn, Post.amit, PractitionerLez, Prakashmalshe, Pranathi, Prater, Pratyeka, Presearch, Printer222, Priyanath, Propaniac, Prosemo, Pshah.0206, Ptulysses, Puck42, Puffin, Punanimal, PurpleHamster124, Pvharikrishnan, Pwqn, Pyrotec, Qkk, Qmwne235, Quadell, Quantumor, Quasipalm, QzDaddy, RA0808, RDF, Raanoo, Ragib, Rahk EX, Rajendrashahyoga, Rajgupta18, Ram singh yadav, Ramayan, Ramesh 1987, RandomCritic, Raokasturi, Raudys, Raviprakashonline4all, Rbarton59, RedHillian, Redhaven27, Redtigerxyz, Rege, Relax ull be ok, Reneezawawi sapiens, Retired username, RetiredWikipedian789, RevRagnarok, Riana, Rich Farmbrough, RichardF, Right America, Risingstar12, Rjwilmsi, Rkc 25, Rl0674, Rob.bastholm, RobertG, RobertLawliet, Ronz, RoseyPosey101, Ross Burgess, Ross.smith, Roxioux, Rpkumar, Rudraksha108, Rupalidadoo, Rursus, Rutherford at central college, S.K., SC, SDC, Sadhaka, Sadhana01, Sadhanayoga, Sagargemini, Sakthi24, Salmar, Salvio giuliano, Sam Spade, Samaveda1, Samirdude21, Sanjhackett, Satyoga, Sbickel, SchfiftyThree, SchuminWeb, Seaphoto, Search4Lancer, Seddon, Seemagoel, Selmo, Sendbinti, Senthilvelsp, Sergi0, Sethie, Setmymax, Sfacets, Shalom Yechiel, Shambhushivananda, Shantiayp, Sharnak, Shot-caller8, Shreesha, Shyamdash, Silin2005, Simon D M, SimonP, Sindo, Singhalawap, Singhshraddha, SiobhanHansa, Sir Paul, Sirex98, Sivananda.com, Sivanath, Sk8terboy3, Skandha ji, Skenus, Skew-t, Skywalker, Slakr, Smilesfozwood, Smithfarm, Snakeg, Snowolf, Solmil, Someone65, Sonjaaa, Souljerky, Spartian, SpeedyGonsales, Speedygonzalous, Spencerk, Spike Wilbury, Squids and Chips, Sselvakumar, StaticGull, Stevertigo, Stormie, StuHarris, Subzerosmokerain, Suddha, Sudeoo, Sudhakar ks, Sudhanva Char, Sue Anne, Sueannharkey, Sumith*, Sumitroydipto, SunCreator, Sunilwrite, Sunray, Supten, Swamij, Swapnatom, Swetkyz, Sylvain1972, SyntaxError55, Taffenzee, Tainter, Tarakananda, Tarret, Tarungulati83, TastyPoutine, Tdhoufek, Teardrop onthefire, Tejabanu, Temp07, Template namespace initialisation script, Tempodivalse, Terminator III, Thachan.makan, That-matty-kidd, The Rationalist, The Thing That Should Not Be, The sock that should not be, TheRingess, TheSolomon, Theismcontrib, Theoldanarchist, Theprofessordoctor, ThermalHeat01, Theshuklas, Thingg, Thinkpilates, Thunderboltz, Tide rolls, Tigerghost, TimBentley, Timwi, Titoxd, Tom Radulovich, Tommy2010, Tpbradbury, Travelbird, Triona, Triplllle, Trollderella, Trusilver, Tryptofish, Ttwaring, Tudand, Tuncrypt, Uchohan, Uddhava, UmeshChitradurg, Unyoyega, Usulrudra, Utcursch, VForVendetta, Vagyoga, Valera, Valeriegoodman, Vapour, Varuna, Vassyana, Venkat av, Verlagdrkovac, Versus22, Vijai Singh, Vijaykum, Vina, VinceB, Vincent Ramos, Viridian, Viriditas, Virtual Cowboy, VirtualSteve, Viscious81, Vishnubishnu, Vivio Testarossa, Vivrekarnitin, Vlpreitauer, Voila-pourquoi, Vssun, WACourson, Walter Görlitz, Wanderingphilosopher, WarthogDemon, WayneLVN, Wbmag129, Wclark, WeaksauceXP, Weregerbil, Whig, Whisky drinker, Whoisanand, Wi-king, Wiki emma johnson, Wiki-uk, Wikibetter, Wikidas, Wikimachine, Wikipelli, Wikixoox, Wildnox, Wilke, Will Beback, Willsmith, Wimt, Wisdomking, Wmahan, Wmaykut, WojPob, Wolfkeeper, Woohookitty, Wookipedian, X-factor, XJamRastafire, Xact, Yahel Guhan, Yglooker, Yoga Mat, Yoga editor, Yogacharya, Yogadr6, Yogaesoteric, Yogaguruu, Yogainfo, Yogastudio.biz, Yogasutra, Yogee, Yogi2raj, Yurik, Yworo, Zerokitsune, Zoicon5, Zomorrod, Zsinj, Zuggernaut, Zundark, Zzuuzz, ^demon, 2038 anonymous edits

Alexander technique *Source*: http://en.wikipedia.org/w/index.php?oldid=467995102 *Contributors*: 205.188.200.xxx, 2over0, AED, AHABMCGEE, AJR, ATBS, Aiki Patrick Parker, Al B. Free, Alexanderteach, Alexanderteacher, Alksub, Altenmann, Andonic, AndreK, Anothergareth, Apers0n, Argyriou, Army1987, Atteacher, AxelBoldt, Azaiez, Barrylb, Bellagio99, Ben St. Hilaire, BenFrantzDale, Bethdon, Bmclaughlin9, Bob103051, Bobo192, Bogey97, Bossrat, Bradtcordeiro, BremenTownMusician, Bronayur, BullRangifer, CA387, CDN99, Campingcar, Can't sleep, clown will eat me, Cathmadden, Centrx, CesarB, Ceyockey, Cff12345, Chamness439, Chrislk02, Chrissie j, CiaranG, Cindyclayton, Closedmouth, Conversion script, Courtneyb2, Css, DCDuring, DHooke1973, Daf, Daniel M. Zipperer, Darrelljon, DavidWBrooks, Davidm617617, Deegee, Defenestrate, Delta Trine, Denverjason, Derild4921, Dhodges, DiiCinta, Dkasak, Dmcq, Dodger160, DunstanRamsay, Dysprosia, Edward, Elwikipedista, Epbr123, Esanchez7587, Everyking, Fdacosta, Fmwik, Franis, Franis Engel, Fratrep, GB fan, Gak, Gautier lebon, Geni,

GeorgeStepanek, GlassFET, GoodSir, Graham87, Grover cleveland, Guanaco, Hans Joseph Solbrig, Heathert, Hexatic, Hmains, Hopie, Horkana, Iamwaggle, Ian Page, ImperfectlyInformed, Introspective Perspective, Itai, J.delanoy, JDPhD, JIP, Jambajinga, James Baldwin, Janeky, Jasoneth, Java7837, JayJasper, Jcw69, Jinlye, Jj137, Jmnbatista, Jmofischer, John Gohde, Juliathemuse, Karada, KaySL, Kbdank71, Kccole01, Kcordina, Klonimus, LA2, LarryGilbert, LizardWizard, Lizundp, Logan, LoopTel, LoopZilla, Lord Chao, Lpgeffen, MHz, MLAvedon, Mais oui!, Marcika, Marcinbrz, Markjaye, Martpol, Marysunshine, Mattisse, Mcdgal03, Mclowes, Mdebets, Mebden, Michael Hardy, Michael Tall, Mporch, Mr-Natural-Health, Muskrat Collective, NawlinWiki, Neotap, Nick Number, Nivix, Nonquotidian, Notch, Novangelis, Nuttah, Ohnoitsjamie, Ooooooooo, P0mbal, Pearle, Penbat, Phil Sandifer, Pmj, Pro crast in a tor, Prolinol, Pwqn, Queenmomcat, Qwerty Binary, RK, Rahzel, RayBirks, Reedy, Rich Farmbrough, Rjwilmsi, Romit3, Ronz, Roymstat, SDC, Sarefo, Scheinwerfermann, Scolaire, Scott Burley, Sebbi, Shadowjams, Shadowlynk, Shantavira, Shockeroo, Sietse Snel, Silent badger, Skittleys, Sp4cetiger, Stevenfruitsmaak, Tannit, Tarquin, Teawaste, Technopat, Template namespace initialisation script, The Anome, Timothy Campbell, Tkdman589, Tlevine, Tohd8BohaithuGh1, TonySever, Topbanana, Tracygil, Trevyn, Trip6, Tristessa de St Ange, Tskaze, Tweeq, Tyciol, Uberblue, User86654, VanishedUser314159, Vannin, Verbal, VeronicaruthP, Vipul, VoiceScientist, Ward20, Wetaman, Wiki Raja, Wx8, Xcrivener, Xinit, Zenohockey, Zeraeph, 619 anonymous edits

Martial arts *Source*: http://en.wikipedia.org/w/index.php?oldid=469555249 *Contributors*: -Marcus-, .:Ajvol:., 137.99.144.xxx, 15.253, 18.44, 1ronin, 200.191.188.xxx, 216.39.175.xxx, 21stCenturyGreenstuff, 4twenty42o, 63.192.137.xxx, 7, A Bond Of Hate, AJackl, Aarchiba, Aashadowboxing, Abeg92, Access Denied, Ace of Spades, Acroterion, Adrian, Aesopian, Ahoerstemeier, Aiki Patrick Parker, Aitias, Ajraddatz, Ajstov, Akarkera, Akheel00, Aktsu, Alan Cano, Alan Liefting, Alanbcao, Alansohn, Alexa56789, Alexpandax, Alfaalfa, Alleyward, Amazins490, Anchor228, Anders Torlind, Andrei A A, Andremattos, Andrewpmk, Andy120, AndyBoySouthPas, Andycjp, Angela, Angoleiro, Animal spirit art, Anon12, Anonymous Dissident, Anonymous editor, AnonymousAmerican, Aquahelper, Arch NME, Artful Dodger, Asachs628, Asbestos, Ashashyou, Ashenai, Ashleyshadowz, Askari Mark, Asterion, Ataraxiatwo, Atzounis, Auscaster, Axl, Axlq, Aybar, Balliebob, BanyanTree, Bcs09, Bdve, BellsFromSeychelles, Belovedfreak, Bennybp, Bhludzin, BiT, Biggjoe, Bihal, Bizdev, Bkalafut, Blackcatfur, BlankVerse, BleedingEffect, Blue Mystic, Bobbithbrown, Bobbymac317, Bobmack89x, Bobo192, BodvarBjarki, Bonadea, Bongwarrior, Bonzo, Bookandcoffee, Boothy443, Boxing245, Bradeos Graphon, Bradford44, Bradtcordeiro, Breawycker, Brenont, Brion VIBBER, Brood82, C0N6R355, C777, CLW, CSWarren, Califman831, Caltas, CambridgeBayWeather, Can't sleep, clown will eat me, Canadian Ninja, Canderson7, Carlosguitar, Carlsonmark, CatherineMunro, Cbeckstein, Cek, Centrx, Century0, Cerebellum, Chanakyathegreat, Charleca, Chris Roy, Chris the speller, Christopher Parham, Chriswfc, ChronoKinetic, Chuck369, Chzz, Ciphergoth, Claudiohfg, Clausewitz01, Clintonflink, Clubmarx, Cmapaoperations, Cmdrjameson, Cmirescu, CobraWiki, Code-Lockie, Colonel Marksman, CommonsDelinker, Conti, Conversion script, Cool3, Corona111, Cosmo0, Courcelles, Crazycomputers, Cripken08, Cspeakonly, Cubbi, Culturalexchange, Cybertooth85, Cyril2net, DO'Neil, Daev, DaiBakLung, Dancter, Dangerous-Boy, DanielLC, Dante Alighieri, DarKnEs5 WaRrí0r, Darguz Parsilvan, Darth Maddolis, Daxter4392, Dayaanjali, Dbachmann, Dd007, Ddrboi, Deathphoenix, Deiaemeth, Delldot, Delmas alain, Demonkoryu, Dewan357, Deyyaz, Dfrg.msc, Dictouray, Diderot, Direvus, Discospinster, DocWatson42, Doniago, Donreed, Doulos Christos, DrOliPo, Dragonsscout, Dreadstar, Dredden57, Drmies, DruidArena, Drundia, Dsreyn, Dudtz, DuncanHill, Dungflinger, Dwanyewest, Dweller, E. Ripley, ESkog, Earth, EastTN, Ecb29, Eco, EdgarEdwinCayce, Edycarso, Eggandspoon, Ehheh, Einstein9073, ElTyrant, ElbowLick, Elipongo, Eliz81, Elwikipedista, Emersoni, Emperor Genius, EncMstr, Enchanter, Epbr123, Ercolino, Ergative rlt, Eric Wester, Ericoides, Error, Ev, Everyking, Evil saltine, Execrewrites, Ezhuttukari, FT2, FTW, Fabiopl, Fama Clamosa, Fang 23, Farcaster, Farosdaughter, Favonian, Filibustered, FinalGamer, FisherQueen, Flewis, Flmgnra, Francis Schonken, FrankWilliams, Fratrep, Frecklefoot, Freedom skies, Freeman6, From-cary, FrozenPurpleCube, Ftrewnv2, Func, Funknl, GM Prof. Syed Ali, Galwhaa, Gc ca, Gdm, Georgianman, Ghetteaux, GinaDana, Gingihan, Ginsengbomb, Glajela, Glen, Glenfarclas, Globosoft, Glowimperial, Gniw, GobtaNIndia, Goethean, Gogo Dodo, Gokarate, Gom01, GoonerDP, Gracenotes, GraemeL, Graham87, Grahamggggg, GrandMasterStephenChan, Grawpy, GregorB, Gtingle1, Gtstricky, Guessing Game, Gun Powder Ma, Gurukkal, Gutza, Guy Peters, HSL, Habj, Haeleth, Haham hanuka, Hans Dunkelberg, Hans Joseph Solbrig, HarmonicSphere, Harrydickman, Hateless, Hdt83, Heimstern, Heintzman1, Helikophis, Herle King, Hersfold, Hertz1888, HexaChord, Hfastedge, Hillcrestama, Hipocrite, Historybuffc13, Hitman047, Hmains, Honta, Hpetteri, Hu12, Hunt286, Huy0001, Hydrogen Iodide, Hypnosnake, I love val, Iain, Iamjasonwu2, Ianb, Ideasguide, Ideyal, Ihearthistory, Ike9898, Ilarenee, Immunize, Indonesiahits, Indrancroos, Inkbrush, Institute of MAS, Intranetusa, Ioeth, Ioscius, Ironholds, Irukandjimaster123, Isol8d, Isolatedbliss, Ixfd64, Izvora, J-Zeth, J.delanoy, JFD, JHFTC, JJL, JPEsperanca&Nanda, Jackiechanfansite, JadziaLover, Jaerom Darkwind, Jagged 85, JamesBWatson, Jamesontai, Jan1nad, Janggeom, Jason M, Jasoncoolax, Jay32183, Jburr1985, JeffDaniels, Jennylithauer, Jerome Charles Potts, Jessicabayon, Jiang, Jiju, Jim1138, Jim8899, JimHardy, Jimmy valentine, JinFengHuangTravels, JinJian, Jjskarate, Jmaclachlan, Jmah, Jmcw37, Jmlk17, Jni, JoanneB, JoeBruno, Joel7687, John.weaver, John254, JohnC, JohnI, Johnnymurda, Jon9541, Jondel, Jonpaulwade, Joseph Solis in Australia, Jp.publishers, Jpallett, Jrljudoka, JulianDelphiki, Jxg, Kali practitioner, Kaol, Karate123, Karateinfo, Karl Meier, Kchishol1970, Keegan, KelleyCook, Kennethtennyson, Ketiltrout, KevinTR, Kgorman-ucb, Kharissa, Khendon, Khoward56, Killbam, Killiondude, Kim99, Kimse, King of Hearts, Kiore, Kirokyukan, KirrVlad, Kjrajesh, Kkrystian, Kman543210, Knyght27, Koavf, Konrad Szczepara, Kontoreg, KravMagaX, KrazyCaley, Krosshair1, Ksipmann, Kts5com, Kubigula, Kuksul, Kwamikagami, Kyleaa, Kylelovesyou, Kylesaedfu, LFaraone, LILNIZ, LaMenta3, LabFox, Lacen, Lamb99, Le Anh-Huy, Leafyplant, LeaveSleaves, Legokid, Leonard G., Lerdsuwa, Liastnir, Light current, LightOfWisom, Lightdarkness, Lightmouse, LilHelpa, Litui, Loadmaster, Looxix, Lord Archimedes, Loudenvier, Lowellian, Lucas.Yamanishi, Lupin, MER-C, MLA, MR.Amazing2011, Machpovii3, Madip0899, Madpeter, Magek413, Magister Mathematicae, Majalo, Makedonij, Makemi, Malo, Mandrill5262, Mangojuice, Mani1, Maniac18, Maniago, Mano1, Manop, Manuel Mª, Marasmusine, Marcika, Marcok, Marek69, MarkBuckles, MarkSutton, MarkSweep, Martarius, Marteau, Martial arts88, Martial75, Martialarm, Martialartsmeta, MartinDK, Marty Rockatansky, Martynas Patasius, Marudubshinki, Masssiveego, Master Of Ninja, Master at Arms, Master of the Oríchalcos, MasterL1389, Matsumuraseito, Mauls, Maximkaaa, Maxstarr23, Mayooranathan, Mboverload, McSly, Mcherrill, Mdchachi, Medains, Mel Etitis, Menchi, Meok, Merenta, Meske, Mets501, Meursault2004, Midnightcomm, Mike Dillon, Mike Rosoft, Mikefzhu, Millerdaca, Mmaasia, Mockefj, Modulatum, Moez, Mofaz, Morinae, MosaicInteractive, Mr Stephen, MrBook, Mrand, Mrsteveee, Mschel, Muchness, Mudthang, Mumia-w-18, Musikgeec, Mutsoo, Muyiwamc2, Mydas, NJMauthor, Nabla, Nakon, Namaree84, Nandesuka, Nascar1996, Natcase, Nate1481, Natevines, Ncjones, NellieBly, NeoChrono Ryu, Netvip, Nick Number, NickBush24, Nickgomez, Nigelwalker, Nihonjoe, Ninjutsu, Ninly, Nk, NoProblem, Noformation, Nohemgotadagua, Noobeditor, Novis-M, Nrp79, NuclearWarfare, Numbo3, O, ODST trooper, Objectivist-C, Oblivious, Oda Mari, Ohconfucius, Ohnoitsjamie, Okamiokiba, Oli Filth, Olivier, Omnedon, Onlinedojo ca, Osensei, OwenX, Oxguy3, P0lyglut, PJM, PRehse, Pactio kiss, Pak21, Pakaran, Palnatoke, Panch dragon, Parable1991, Parthian Scribe, Pastinator, Patrick, Patrick0Moran, Paul A, Pelmeen10, Pendekarcool, Pepper, PerfectStorm, Perfectblue97, Peterpediar, Petteri38, Pfctdayelise, Phatcat68, Philjendo, Phreaknite, Phrost, Physicalarts, Piano non troppo, Pigman, Pilif12p, Pinethicket, Pinkadelica, Pipedreambomb, Piranhamae, Pit, Pjrich, Plm209, Pm11189, Pmetzger, PocketMoon, Popcorn1111, Postdlf, Ppntori, Prashanthns, Pressondude, Primatal ooze, PrometheusArisen, Publishing house, Punanimal, Pwqn, Quadell, Qutezuce, Qwyrxian, Qxz, Qxzsilver, R'n'B, RBM 72, RW Marloe, RaGnaRoK SepHír0tH, Radiozilla, Radon210, Randolf Richardson, Randroide, Ranp, Ranveig, Ratmando, Ray Van De Walker, Rayadistri, Razionale, Razorflame, RealBigFlipsbrain, Red Winged Duck, RedDrag0n, Redketchup67, Redrebel108, Remuel, RetiredWikipedian789, RevolverOcelotX, RexNL, Rfl, Rhrad, Rich Farmbrough, Rick Block, Rje, Rjwilmsi, Roberta F., Rocastelo, Rochs1996, Rodgeratkin, Rogue Corvette, RogueNinja, Rohead, Romtan689, Ronhjones, RookZERO, Rory096, Rorybowman, Rosenkreuz, Rossen4, Rpf, Rrr18, Ruben Tavernier, Ryulong, SJP, ST47, Saafir, Sakes, Sakeshotz, Sam Korn, Sam Spade, Samkhum, Sandanman, Sandman30s, Santhoshlee1, Sasajid, Sasuke Sarutobi, Sasw1117, Scarian, Scarlet Lioness, Scb steve, Scepia, SchuminWeb, Scott.toderash, Scottalter, Scotw, Seanadupre, Seay2nolan, Sect 7, Seektabit, Sekoh, Senseimom, Seriouslyuguys, Sesshomaru, ShadowPuppet, Shadowjams, Shaolin monk jub, Shawnc, Sherool, Shinji nishizono, Shino Baku, Shirt58, ShockingSharon99, Shriver, Sifaka, Sigma 7, Signalhead, SilhouetteSaloon, Simmmmm, SimonATL, SimonP, Simone Nicolescot, Sindo, Sinu s, Siroxo, Skier Dude, Skulslayer94, Skumarla, Snigbrook, Solitude, Solri, Somersetkravmaga, Sonjaaa, South Bay, Speck-Made, Spencemac724, Splash, Squirrel-monkey, Srich32977, Stephen Mallory, Steve2011, Stevecalloway, Steven Walling, Steven Zhang, Stevenreed037, Stroppolo, Stuartyeates, SuKristie, Super Ralf, Superman768, Susano, Svick, Swatjester, Syndicate, Sysy, THEunique, Tadanisakari, Taekwondo, Taekwondogirl, Tangotango, Tanzania, Tarrauko, Tartigrator, Teacherteacher, Tedankhamen, Telepo, Tenchijin10, TeoDut, Terence, Terminator484, Terrifictriffid, The Anome, The Sports Fan, The Thing That Should Not Be, The Transhumanist, The Utahraptor, The briarpatch, The merv, The money niz, TheLeopard, Theda, Thewayforward, Thewikipopo, Thingg, ThinkBlue, ThirteenthGreg, Thomas Larsen, Thomas P. Hartmann, Thunderlippps, Thunderlipppz, Tide rolls, Tiger888, Timc, Timrollpickering, Titoxd, Toddst1, Togays, Tohd8BohaithuGh1, Toliton, TomCerul, Tomdo08, Tommy2010, TonyTheTiger, Tonytrulson, Tr@veler, Transity, TravelingCat, Treisijs, Trevorm, TreyGeek, Trilobite, Tsgttucker, TwoOneTwo, Tyciol, Udaza, Ultra X987, Unileverd, Unnatural20, Urness.sam, Usaartstore, User5802, Utcursch, VCC, VIRGOPTREX, Vaganyik, Valhalla, Vamooom, Vanished user 39948282, Varlaam, Varuna, Verityjade, Versus22, Vianello, Vin Chua, VisionMaster, Visor, Voldomo, Voodoom, WODUP, Wagg4, Wayne Slam, Wayward, Whateley23, Whiskers, WhisperToMe, White Tiger, Wiki alf, WikiDan61, WikiMan11, Wikiality123, Wikidudeman, Wikijens, Wikipe-tan, Will Beback Auto, Will122194, Willking1979, Wine Guy, Wingnut99, Wintran, Wknight94, Womble bee, Woohookitty, Wwwillly, Wyckyd Sceptre, Wyldephang, Xanthine, Xaosflux, Xiliquiern, Xingyiman, Xueguo, Ya Sidi, Yappakoredesho, YellowMonkey, Yeokaiwei, Yourdoom 43, Yunshui, Zachlipton, ZaidAhmed, Zeno Gantner, Zensei, Zenwarrior, Zhongyi, Zillarat, Zondor, Zoran, Александър, มือใหม่, 2273 anonymous edits

John Neulinger *Source*: http://en.wikipedia.org/w/index.php?oldid=449078031 *Contributors*: Alan Liefting, John of Reading, Johnpacklambert, MPerel, Rneulinger, Viriditas, 2 anonymous edits

Experience sampling method *Source*: http://en.wikipedia.org/w/index.php?oldid=433173719 *Contributors*: Djbwiki, John Gookin, Jtneill, Markiewp, Mission Fleg, RHaworth, Rjwilmsi, Sadads, Woohookitty, 6 anonymous edits

Cognitive science *Source*: http://en.wikipedia.org/w/index.php?oldid=469292478 *Contributors*: A. di M., A314268, AJHaltom, APH, AaronSw, Abrio, Action potential, Akhileshmisra, Albany NY, Aldux, Alfie66, Altenmann, Alterego, Amatulic, Andres Agudelo, Andy Fugard, Anthony702, Anticipator, Aranea Mortem, Aranel, Arch dude, Are Sørli, AreNakrem, Arpiana, Arthur Rubin, Arvindn, Augur, Avmanzo, BAxelrod, Banrisul, Bduke, Beao, Benmotz, Berserk798, Bluemoss, Bobblehead, Bobzchemist, Bookuser, BrendenSewell, Brews ohare, BrotherE, Btornado, Camridge, Cansem, Cgingold, Chantal vieuille, CharlesGillingham, Ciceronl, Clerks, Clicketyclack, Cmh, Cogpsych, ConceptExp, Conversion script, Cookiedog, Cp111, Cstahmer, Cugel, Cybercobra, D15724C710N, DFRussia, DGG, Damnfunny, Dancter, DanielDemaret, DarTar, DarwinPeacock, Daven200520, David Ludwig, David R. Ingham, Dbulwink, Den fjättrade ankan, DennisDaniels, Derek Ross, Desawi, Dhart, Diberri, Diddims, Diego Moya, Dionysios, Discospinster, Don Quichote, Don4of4, DorisH, Drange net, Dzou, ELApro, Edhubbard, Edward, El C, Eolai1, Esperant, Etxekavy, FayssalF, Fellowscientist, Ferengi, Ferris37, Fibonacci, Fishermansbay, Forestgarden, George100, Gepwiki, GerryWolff, Gianguglielmo, Giftlite, Git2010, Glendac, GlennLThompson, Gloriamarie, Gmandler, Gpwhld, Gringer, Grunge6910, Guanaco, Guslacerda, Gwalla, Gyll, Gzabers, Hairy Dude, HangingCurve, Heida Maria, HendrixEesti, Hengshan.li, Hgamboa, Hparnell, Hu, Hvonhelmholtz, Ignat, Imnotminkus, Impedence, Ish ishwar, J. Spencer, J.delanoy, JHKChan, JJJJust, JTBurman, JackSchmidt, Jackhynes, James Crippen, Jamiejoseph, Janarius, Janus san, Jaymay, Jbusemey, Jcw69, Jenico465, Jj1236, JoanneB, John Ellsworth, Johndemers, Johnkarp, Jtneill, Junes, Junixrose, Jusdafax, Jusjih, Jwilliams43, KYPark, Kamerad, Karafias, Kesla, Kilrothi, Kowey, Kpmiyapuram, Kripkenstein, Kris1984, Kungfuadam, Kusma, Larry laptop, LauraCUP, Lestrade, Letranova, Leuoyb, Levineps, Lexor, Lightdarkness, Limormek, Lindsay658, Loopy48, Loxley, Luuknam, Mahanga, Male1979, Mamlung, Mark Dingemanse, Mark Elliott, MartinPoulter, Materialscientist, Mattisse, Maurreen, Mavery, Mayito, Mcmoychuk, Mcrvidal, Merope, Metahacker, Mgcsinc, Michael Dinolfo, Michael Fourman, Michael Hardy, MichaelAmlung, Micru, Mike Dillon, Mindguy, Mirv, Mjpieters, Monfornot, Morton Shumway, Mporch, MrOllie, Mrwojo, Msassets, Mshecket, Nabeth, Nadellynn, NatalieAvigail, Ncosmob, Nectarflowed, Neither, Neuropsychology, Noizy, Noticket, Novum, Nposs,

NuclearWarfare, Obradovic Goran, Olathe, Old Moonraker, Olivier, Onorem, OrgasGirl, Overix, PWhittle, Paroswiki, Patrick, Peak, PeepP, PeterTheWall, Philg88, Podzemnik, Poor Yorick, Porcher, Prototime, QuackGuru, Quevaal, R'n'B, R3m0t, Raul654, Rawadhmd, Reedy, Remis, Rend, Revolver, Rgdboer, Rich Farmbrough, RichardF, RickK, Rjanag, Rjwilmsi, Robert Daoust, RobertHuaXia, Robin klein, Rouenpucelle, Ryguasu, Salthizar, Samer.hc, Samwass, SarahStierch, Saxifrage, Schwnj, ScottMainwaring, SebastianHelm, Seglea, Sewblon, Shadowjams, ShaunMacPherson, ShelfSkewed, Silivrenion, Simoes, Sixfeetabove, Skychildandsonofthesun, Smithfarm, Snoyes, Sourabhchopra, Sourcer66, Sp, Spylab, Stevelopian, Stevertigo, Stylecontrol, Supertask, Suradnik13, Susan White, Svetovid, Tassedethe, Technopat, Tenellep, The Anome, The Cunctator, The Rationalist, The bellman, Tim Starling, Tkorrovi, Tmh, Tobi Kellner, Todd handerson, Tohd8BohaithuGh1, Tomos, Torchiest, Tryptofish, UniAce, Vaughan, Vdannyv, Verticalsearch, WAS 4.250, WLU, Wapcaplet, Wiki-bkok, Wikiklrsc, Wikiwikifast, Wileycount, William M. Connolley, Xanderk84, Xeos, Xyzzyplugh, Yasth, Zinjixmaggir, كاشف عقيل, 417 anonymous edits

Attention *Source*: http://en.wikipedia.org/w/index.php?oldid=468921214 *Contributors*: 1000Faces, 16@r, A314268, AFLastra, Aaron Kauppi, AbsolutDan, Adunn92, Alansohn, Anderbubble, Andycjp, Ariovistus, Ashleyisachild, Ask123, Beetstra, Blitzer Van Susterwolf, Bmso1992, BobKawanaka, Bodnotbod, Boing! said Zebedee, Calebe, Calvin08, Carebear409, Chipuni, Chris Howard, Christian.B, Claustrum, Clicketyclack, Cogpsych, Cogresearcher, Cooper24, CopperKettle, Crj18, Curps, DBaba, DCDuring, DMRDMR, Dab0927, DancingPhilosopher, Danger, Danny, Darkwind, Deor, Dianadeutsch, Dontaskme, Dreamyshade, Dvirgueza, EPadmirateur, Edhubbard, Edison, Edward blue, Eruantalon, Eubulides, Fastfission, Femto, Fieryfaith, Finn-Zoltan, Freckles.10.6.2005, Fred Bauder, Fredbauder, Fredrik, Funkendub, Garrondo, Gbchaosmaster, Gdje je nestala duša svijeta, Hayimi, Heida Maria, Helinspector, History2007, Hoyvin-Mayvin, IPSOS, Iamsmitty, IanOsgood, Immunize, Inderonline1988, JForget, Japanese Searobin, Jcbutler, Jj1236, Jncraton, John, John Bessa, John254, JohnIronwraith, Johnkarp, Jonsmallwood2004, Jonverve, Julia Rossi, Kajasudhakarababu, Keenan Pepper, Kghose, Khalid hassani, Kipholbeck, Kosigrim, Kslays, Levineps, Lifeartist, Ligulem, Livedevilslivedevil, Llrbaf, Looie496, Lotje, Lova Falk, Mackeriv, Male1979, Malkotozlo, Manni, Manuel Anastácio, Matthew Stannard, Mattisse, Mcwiggin, Megan1967, Michael Devore, Michael Hardy, Mietchen, NHRHS2010, Nabeth, Neoncow, Nick Number, Oblivious, Obnoxin, Occono, Ojkershaw, Omgthediaz, Pagingmrherman, Patrick, Pdcook, Penbat, Pixel™, Polluxian, Purplefrogs, Q uant, RL0919, Radagast83, Ray-Ginsay, RedAlgorithm, RichardF, Richwil, Rixs, Rjwilmsi, Rl, Robocoder, Ryguasu, SDC, Sam Hocevar, Sam mas47, Samwass, Sanya3, Sapphic, Sealpelt, Semperf, Sergey Moskalev, ShelfSkewed, SimonP, Sin-man, Skagedal, Slojoe, Smalljim, Smalltowngirl, Smokizzy, Sootymangabey, Starryboy, Suidafrikaan, Terrym2442, Texture, The Transhumanist, The wizz, Thenthorn, Tjhones101, Trent.andrus, Ubiq, Vaughan, Vegetator, Versageek, Versus22, Vrenator, WLU, WhatamIdoing, Wiggstar69, Will Beback, Xumm1du, Yammi73, Yurik, Zanimum, 229 anonymous edits

Creativity *Source*: http://en.wikipedia.org/w/index.php?oldid=469898055 *Contributors*: =Julius=, ABF, ACEO, AED, AK Auto, Aaron Kauppi, Abbw254, Acroterion, Action potential, Adraeus, Aeroknight, Af042, Afzalraza, AgRince, Ahoerstemeier, Aion, Aitias, Alansohn, Aleliv, Alerante, Alex Kosorukoff, Alex Rio Brazil, All Is One, Alysakiwi, Amirelion, Anat Rafaeli, Andrewjuren, AndriuZ, Andycjp, Apeloverage, Arnoutf, Asimzaidi, Asnav, Auréola, AxelBoldt, Badly, Bakilas, Belleville3, Belovedfreak, Bfiene, Bigsnoop7, Bishonen, Blauhaus, Blotwell, Bluezy, Bobo192, Borgx, Bracton, BrettRob, Brian Pearson, Buridan, Burningjoker, C0N6R355, CALR, Calliopejen1, Caltas, Cbrookca, Ceri sullivan, CharlesC, CharlesGillingham, Chenzw, Chickenflicker, Christian Storm, Christopherlin, Chudhudson, Ckostovny, Clam0p, Clngre, Cognition, Colonies Chris, Cometstyles, Cookie90, Cowdinosaur, Cre8tive19, Creativeprofessional, Creatology, CutOffTies, D6, DARTH SIDIOUS 2, DHN, DVdm, Danceron, Danny-w, Dannyguillory, Danski14, Danzen, Darth Panda, Davehi1, David.alex.lamb, Dbabbitt, Dbiel, Dd2, Ddon, Declan Clam, Dev2587, Dimanchebelleville, Divinecomedy666, Dmccuesm, Dobjsonne, DocWatson42, Dorimedont, DouglasGreen, Dr.enh, Dr.orfannkyl, Drumguy8800, Dvash, E.shakir, Elipongo, Elizabethpardo, Englishnerd, Eolanys, Epbr123, Epim, Erencexor, Estrellador*, Evereadyo2, Everyking, Fgasj, Filam3nt, Fivetrees, Footnotes2plato, Fourmiz59, Fram, Frankahilario, Frankenpuppy, Funandtrvl, Fvw, Gaius Cornelius, Galoubet, Gdje je nestala duša svijeta, Gem131, Generativity, Geniac, Georgi.dimitrov, Gil Dekel, Gioto, Glane23, Gogo Dodo, Goldsm, Gondwanabanana, GorillaWarfare, GraemeL, GraemeMcRae, Gregbard, Gscshoyru, Guanaco, HandsomeFella, HangingCurve, Harnad, Helix84, Hexagon70, Hu12, Hugh Mason, IRP, Iccincsm, Ichisan, Igiffin, Imbecileler, Iohannes Animosus, Iridescent, Isaacdealey, ItsZippy, J 32, J76392, JForget, JIP, JaGa, Jac16888, Jackelfive, JaneKT, Jauhienij, Jean-Louis Swiners, Jeff Silvers, Jennavecia, JesseColton, Jfire, JiMidnite, Jj1236, Jls517, John D. Croft, John ellenberger, John of Reading, Johnkarp, Jongrover, Jordanrambo, Jose Icaza, Jtneill, Justykim, Jyril, Kalyan79, Katsesama, Kbdank71, Kelly Martin, Keron Cyst, Kevdave, Khannashweta2, Khazar, Kingfish, Klonimus, Koakhtzvigad, Kuru, Kusma, Kusyadi, Kyle1278, LMackinnon, Lakinekaki, LaurMG, Leebo, Leopold Stotch, Leszek Jańczuk, Letranova, Liface, Lighthead, Lights, LittleHow, Livitup, Logologist, Lova Falk, Loxlok, Magenta1, Mahanga, Marcusscotus1, Masahiko, Mattergy, Maurice Barnwell, Maurreen, Maxí, Me-macias, Meldor, Mentifisto, Mh29255, MikeWazowski, Mikhailov Kusserow, Mild Bill Hiccup, Miles slow, MindShifts, Miradre, Mochomio, Morning star, Moskvax, Mr andrea, Mr. Stradivarius, MrChupon, MrOllie, Mwanner, Mysid, Nashhinton, Nasnema, Natkeeran, Nesbit, Nievved, Nihil novi, Nihiltres, Nikai, Nikkiopelli, Nlight, Norm, Notinasnaid, Ohnoitsjamie, Oicumayberight, Oli Filth, Oni Ookami Alfador, OsamaK, Ott, P Ingerson, Pavel Vozenilek, Pavlo Shevelo, Pearle, Pedant17, Pedrodurruti, Petermanchester, Phil Sandifer, Philip Trueman, PhilipO, Piano non troppo, Pictureuploader, Pierkolp, Pilibin, Pinethicket, Pink!Teen, Plasticup, PrimroseGuy, Prithu22, Prodego, Protez, Psywikiuser, Pumpie, Quesco, Qwyrxian, R'n'B, RUL3R, Raafat Karimi, Rainingblood667, Raymondwinn, Rcawsey, RealDracaena, Realdaytoday, RedAlgorithm, Redfang60, Redthoreau, RepublicanJacobite, RexNL, Rich Farmbrough, RichardF, Rjd0060, Rjwilmsi, Rl, Rlanda, Robfiscerr, Robin de lange, Roman Eisele, Ronz, Rowan Adams, RoyBoy, Rror, Ryangfloyd, Saniasoone, Sanjaydalal, Sara USA, Scandum, SchuminWeb, Seishirou Sakurazuka, Selket, Sellyme, Senseagent230, SeoMac, Seth Ilys, Sethoeph, Sharlotte29, Shimgray, SigmaEpsilon, SimonP, Skagedal, Skunksforever, Slgcat, SlimVirgin, Smalljim, Soiregistered, Somberi, Sparkit, Spellcast, Spellmaster, Spiriman, StaticVision, Station1, Subarctica, Swerdnaneb, Taranet, Tbackstr, Tcaudilllg, Teal6, Tedickey, Tenmei, Terjen, TheRingess, TheSmartDoccer, Thebridge, Theda, Thingg, Thinkertoy, ThisGuy62, Tide rolls, Tim Retout, TimBentley, Timwarneka, Tinystui, Tiptoety, Tnxman307, TomasBat, Tonyfaull, Tonygilloz, Topilsky, Topperfalkon, Transhumanist, Travis.m.granvold, Traxs7, Tremilux, Trojan traveler, Tudorrickards, Tulkolahten, USchick, Uannis, Unixer, UrbanIndianSF, User2004, Uthbrian, Veinor, Vezwyx, Victor falk, Vkeller, Vlaze, VoteFair, VsevolodKrolikov, Vsmith, VulcanOtaku, WMCEREBELLUM, Wafulz, Wavelength, WeijiBaikeBianji, West Brom 4ever, Wfxy, Why Not A Duck, Whywhywhy, Wikidan829, Will Beback, WillRabbit, Wk1, Wolfdog, Woodsrock, WpZurp, Xeno, Yelir61, Zveta, Zyrdorn, 633 anonymous edits

Image Sources, Licenses and Contributors

File:Mihaly Csikszentmihalyi.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:Mihaly_Csikszentmihalyi.jpg *License*: Public Domain *Contributors*: Ehirsh

File:Loudspeaker.svg *Source*: http://en.wikipedia.org/w/index.php?title=File:Loudspeaker.svg *License*: Public Domain *Contributors*: Bayo, Gmaxwell, Husky, Iamunknown, Mirithing, Myself488, Nethac DIU, Omegatron, Rocket000, The Evil IP address, Wouterhagens, 18 anonymous edits

File:Challenge_vs_skill.svg *Source*: http://en.wikipedia.org/w/index.php?title=File:Challenge_vs_skill.svg *License*: Public domain *Contributors*: w:User:Oliverbeatson

File:Scout Girl in Concentration.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:Scout_Girl_in_Concentration.jpg *License*: Creative Commons Attribution 2.0 *Contributors*: Randy

Image:South-Goodwin.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:South-Goodwin.jpg *License*: Creative Commons Attribution-ShareAlike 3.0 Unported *Contributors*: Charles J Sharp

File:Concentration.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:Concentration.jpg *License*: Creative Commons Attribution 2.0 *Contributors*: David Friel

File:Souvenir Seller - Moscow - Russia cropped.JPG *Source*: http://en.wikipedia.org/w/index.php?title=File:Souvenir_Seller_-_Moscow_-_Russia_cropped.JPG *License*: Creative Commons Attribution-Sharealike 3.0 *Contributors*: Adam Jones Adam63, cropped/retouched by User:Dcoetzee

File:Rea Irvin illustration for Why He Married Her, 1916.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:Rea_Irvin_illustration_for_Why_He_Married_Her,_1916.jpg *License*: Public Domain *Contributors*: Rea Irwin, artist

Image:Vasnetsov Nesmeyana.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:Vasnetsov_Nesmeyana.jpg *License*: Public Domain *Contributors*: Alex Bakharev, Butko, Pitke, Shakko, Skipjack, 1 anonymous edits

File:The children - victims of adult vices (indifference).jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:The_children_-_victims_of_adult_vices_(indifference).jpg *License*: Public Domain *Contributors*: Lvova Anastasiya (Львова Анастасия, Lvova)

Image:PD-icon.svg *Source*: http://en.wikipedia.org/w/index.php?title=File:PD-icon.svg *License*: Public Domain *Contributors*: Alex.muller, Anomie, Anonymous Dissident, CBM, MBisanz, Quadell, Rocket000, Strangerer, Timotheus Canens, 1 anonymous edits

Image:Worried little girl.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:Worried_little_girl.jpg *License*: Creative Commons Attribution 2.0 *Contributors*: Andre Engels, FlickrLickr, FlickreviewR, Jtneill, MECU, ThomasPusch, Wst, Yonatanh, 1 anonymous edits

Image:Guido Reni 040.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:Guido_Reni_040.jpg *License*: Public Domain *Contributors*: AndreasPraefcke, Bukk, G.dallorto, Kürschner, Pierpao, Scs, Shakko, 1 anonymous edits

File:Worries&Concerns.png *Source*: http://en.wikipedia.org/w/index.php?title=File:Worries&Concerns.png *License*: Creative Commons Attribution 3.0 *Contributors*: Sparcle z

Image:Emperor Traianus Decius (Mary Harrsch).jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:Emperor_Traianus_Decius_(Mary_Harrsch).jpg *License*: Creative Commons Attribution-Sharealike 2.0 *Contributors*: Mary Harrsch

Image:Mahayanabuddha.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:Mahayanabuddha.jpg *License*: Creative Commons Attribution 2.0 *Contributors*: User:Rosemania

File:Endurodoug.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:Endurodoug.jpg *License*: Creative Commons Attribution-Sharealike 2.0 *Contributors*: Endurodoug, a flickr user

File:Caravane sur la Route de la soie - Atlas catalan.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:Caravane_sur_la_Route_de_la_soie_-_Atlas_catalan.jpg *License*: Public Domain *Contributors*: Cresques Abraham

File:Brooklyn Museum - Man Meditating in a Garden Setting.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:Brooklyn_Museum_-_Man_Meditating_in_a_Garden_Setting.jpg *License*: Public Domain *Contributors*: AnRo0002, Túrelio, Zolo

File:BodhidharmaYoshitoshi1887.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:BodhidharmaYoshitoshi1887.jpg *License*: Public Domain *Contributors*: YoshitoshiTsukioka Yoshitoshi (1839-1892)

File:Buddha.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:Buddha.jpg *License*: Creative Commons Attribution-Sharealike 2.5 *Contributors*: User:Eric Pouhier

File:Padre Pio.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:Padre_Pio.jpg *License*: GNU Free Documentation License *Contributors*: OTRS Ticket#: 2006103010005766 & Ticket#: 2006102810006171 Nota: questa voce o parti di essa derivano da Lucia Dughetti che ringraziamo per l'autorizzazione accordata OTRS Ticket#:2007012510016109

File:Shiva Bangalore .jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:Shiva_Bangalore_.jpg *License*: Creative Commons Attribution-Sharealike 2.0 *Contributors*: Kalyan Kumar

File:Dhikr singing.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:Dhikr_singing.jpg *License*: Public Domain *Contributors*: Wowa, Wst

File:Mahaveer swami.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:Mahaveer_swami.jpg *License*: Creative Commons Attribution-Sharealike 3.0 *Contributors*: me

File:1979 Festival.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:1979_Festival.jpg *License*: Creative Commons Attribution-Sharealike 2.5 *Contributors*: User:Mombas

File:Stage1.gif *Source*: http://en.wikipedia.org/w/index.php?title=File:Stage1.gif *License*: Public Domain *Contributors*: AndreasPraefcke, Beta M, Jossifresco, Shizhao, Siebrand

File:Early Morning Meditation.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:Early_Morning_Meditation.jpg *License*: Creative Commons Attribution 2.0 *Contributors*: FlickrLickr, FlickreviewR, Ranveig

File:Meditating in Madison Square Park.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:Meditating_in_Madison_Square_Park.jpg *License*: Creative Commons Attribution-Share Alike *Contributors*: Beyond My Ken

Image:Shiva Bangalore .jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:Shiva_Bangalore_.jpg *License*: Creative Commons Attribution-Sharealike 2.0 *Contributors*: Kalyan Kumar

Image:Kamakura-buddha-1.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:Kamakura-buddha-1.jpg *License*: Public Domain *Contributors*: Thyes

Image:Yogisculpture.JPG *Source*: http://en.wikipedia.org/w/index.php?title=File:Yogisculpture.JPG *License*: Creative Commons Attribution-ShareAlike 2.0 Germany *Contributors*: User:Deepak

File:Parsva Shatrunjay.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:Parsva_Shatrunjay.jpg *License*: Public Domain *Contributors*: Jules Jain

File:Kevalajnana.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:Kevalajnana.jpg *License*: Public Domain *Contributors*: Jaina Publications. Original uploader was Indian Chronicles at en.wikipedia

File:MotherDreamCatcher.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:MotherDreamCatcher.jpg *License*: Public Domain *Contributors*: User:Jan Luca, User:Magnus Manske

Image:YogaClass.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:YogaClass.jpg *License*: Creative Commons Attribution-Sharealike 2.0 *Contributors*: Original uploader was Trollderella at en.wikipedia

File:Falun Dafa fifth meditation exercise.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:Falun_Dafa_fifth_meditation_exercise.jpg *License*: Creative Commons Attribution 2.0 *Contributors*: longtrekhome

Image:NAMA Akrotiri 2.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:NAMA_Akrotiri_2.jpg *License*: Creative Commons Attribution-ShareAlike 3.0 Unported *Contributors*: Barosaul, Bibi Saint-Pol, G.dallorto, Gun Powder Ma, Jastrow, Marsyas, Phso2, Tatoute, Yappakoredesho

File:Surikov Pokoreniye Sibiri Yermakom.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:Surikov_Pokoreniye_Sibiri_Yermakom.jpg *License*: Public Domain *Contributors*: Василий Иванович СуриковVasiliy Surikov

Image:Steven Ho Martial Arts Kick.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:Steven_Ho_Martial_Arts_Kick.jpg *License*: GNU Free Documentation License *Contributors*: Nick P. Original uploader was Nt2bd at en.wikipedia

Image:050907-M-7747B-002-Judo.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:050907-M-7747B-002-Judo.jpg *License*: Public Domain *Contributors*: -Marcus-, KTo288, Yappakoredesho

Image:ArmyMilCombativesChokehold.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:ArmyMilCombativesChokehold.jpg *License*: Public Domain *Contributors*: -Marcus-, High Contrast, Jdcollins13, Mattes, Rorybowman, 2 anonymous edits

File:Cognitive science heptagram.svg *Source*: http://en.wikipedia.org/w/index.php?title=File:Cognitive_science_heptagram.svg *License*: Public Domain *Contributors*: Books-aj.svg_aj_ashton_01.svg: Original author: AJ Ashton (on OpenClipArt). Code fixed by verdy_p for XML conformance, and MediaWiki compatibility, using a stricter subset of SVG without the extensions of SVG editors, also cleaned up many unnecessary CSS attributes, or factorized them for faster performance and smaller size. All the variants linked below are based on this image. Human.svg: created by NASA Phi.svg: jossi Psi2.svg: Gdh Heptagrams.svg: Fibonacci Lobes_of_the_brain_NL.svg: w:User:MysidMysid Robot_icon.svg: Bilboq Syntax_tree.svg: Aaron Rotenberg derivative work: Beao

Image:Cgisf-tgg.svg *Source*: http://en.wikipedia.org/w/index.php?title=File:Cgisf-tgg.svg *License*: Creative Commons Attribution-ShareAlike 3.0 Unported *Contributors*: gringer, SVG version of w:File:Cgisf-tgg.png

Image:Necker cube.svg *Source*: http://en.wikipedia.org/w/index.php?title=File:Necker_cube.svg *License*: Creative Commons Attribution-ShareAlike 3.0 Unported *Contributors*: BenFrantzDale

Image:Hypothalamus.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:Hypothalamus.jpg *License*: Public Domain *Contributors*: Denniss, Lipothymia, Methoxyroxy, Nevit, OldakQuill, Thuresson, Was a bee

Image:MultiLayerNeuralNetwork english.png *Source*: http://en.wikipedia.org/w/index.php?title=File:MultiLayerNeuralNetwork_english.png *License*: Creative Commons Attribution-ShareAlike 3.0 Unported *Contributors*: Chrislb

File:Wikipedia-spotlight.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:Wikipedia-spotlight.jpg *License*: Public Domain *Contributors*: Lovearobot

File:Plato-raphael.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:Plato-raphael.jpg *License*: Public Domain *Contributors*: Aavindraa, Bibi Saint-Pol, Chris 73, Infrogmation, Maarten van Vliet, Mattes, Sailko, Tomisti, 3 anonymous edits

Image:Eletrice wire reel reused in like a furniture ecodesign.JPG *Source*: http://en.wikipedia.org/w/index.php?title=File:Eletrice_wire_reel_reused_in_like_a_furniture_ecodesign.JPG *License*: Public Domain *Contributors*: Alex Rio Brazil

Image:HenryMoore RecliningFigure 1951.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:HenryMoore_RecliningFigure_1951.jpg *License*: Creative Commons Attribution-Share Alike 2.0 Generic *Contributors*: Bohème, ComputerHotline, Comrag, Deror avi, Gerardus, JackyR, Man vyi, Moonriddengirl, ShakataGaNai, Solipsist, Tomer T, Túrelio, 8 anonymous edits

Image:NewtonsPrincipia.jpg *Source*: http://en.wikipedia.org/w/index.php?title=File:NewtonsPrincipia.jpg *License*: Creative Commons Attribution-Share Alike 2.0 Generic *Contributors*: Acc60, Anarkman, Aristeas, Aunuki, Aushulz, Duesentrieb, Ephraim33, JackyR, Mdd, Piero, Solipsist, Svdmolen, Wst, 3 anonymous edits

License