

THE EVOLUTIONARY SIGNIFICANCE OF SPIRITUAL DEVELOPMENT

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Adaptability is of central importance to the evolutionary process. It is through adaptation that organisms are able to survive in changing environments, become better suited to their existing environment, or expand into new environments. In general, organisms that are more adaptable can be expected to be more successful in evolutionary terms. A major improvement in adaptive ability is a major evolutionary advance.

Humans are the most adaptable organism to live on this planet. We use our rapidly improving science and technology to survive and satisfy our adaptive goals in a wide range of environments. Whatever adaptive problem we put our minds to, we can generally find a solution. We have proven far more adaptable than organisms that evolve by gene-based evolution. It took millions of years for genetic evolution to discover how to produce reptiles that fly, while humans developed the technology to achieve this in a few thousand years. The massive adaptive improvements seen in human capacities over recent centuries are significantly greater than could be achieved by genetic evolution over hundreds of millions of years.

Whatever our wants, whatever our needs, we are very effective at finding ways to manipulate our environment to achieve them. But we are very poor at achieving things that we do not want. We don't use our creativity to find better ways to achieve things we are not motivated to achieve. In evolutionary terms, this turns out to be the central limitation in human adaptability.

Typically, we do not see this as a limitation. It does not prevent us from doing anything that we want to do. It does not stop us from living happy and fulfilled lives. We do not feel restricted because we have no desire to do what we have no desire to do. If we evaluate our adaptability by asking whether it enables us to satisfy our needs and wants, we continue to see ourselves as being highly adaptable.

But if we measure our adaptive ability in evolutionary terms, we reach a very different conclusion. What if our continued evolutionary success demands that we adapt in ways that conflict with the satisfaction of our existing needs and wants? What if our existing motivations and needs do not produce the behaviours that are best in evolutionary terms? These sorts of conflicts between our needs and evolution's needs seem highly likely to emerge during our evolutionary future. It is improbable that the needs and wants implanted in us by our evolutionary past will produce the behaviour that is also optimal for our future. This means that our adaptability is seriously limited in evolutionary terms.

There is an enormous range of behaviours, life styles and technologies that we would not want given our current needs and motivations. But these might be critically important for achieving evolutionary success in the future. We have a very large evolutionary blind spot. We are not motivated to explore an immense variety of adaptive possibilities, no matter how useful they may be in evolutionary terms. Until we overcome this limitation, we will continue to use genetic engineering, artificial intelligence and other technological advances to satisfy our past evolutionary needs and conditioning, rather than to achieve future evolutionary success.

If we are to be successful in evolutionary terms in the future, we will need to overcome this adaptive limitation. We will have to be able to do whatever it takes for future success. Humanity will need to free itself from the needs and wants installed in us by our biological and cultural past. For this we will find that we will need to develop in ways that have traditionally been classified as spiritual. Humanity will need to widely adopt the practices currently associated with spiritual development if we are to continue to be successful in evolutionary terms.

To get a better understanding of how human adaptability would need to change in the future, it is useful to see how adaptability has improved during the past evolution of life on Earth. This will enable us to locate the current level of human adaptability within a long sequence of evolutionary improvements. We will see how our current level surpassed previous abilities, but how it too is limited. This will help identify the new capacities we would have to develop if we are to overcome these limitations. It will point to the new psychological skills and capacities we need if we are to overcome our current deficiencies.

There are a number of quite distinct mechanisms that adapt organisms on our planet¹. One of the first to emerge was gene-based natural selection. With this mechanism, organisms produce offspring that differ genetically from each other and from their parents. The genetic difference might produce a change within the organism that carries it. This changed characteristic might in turn make the individual more successful and have a greater number of surviving offspring. If so, the proportion of individuals that carry the genetic difference will increase, and the genetic difference will spread throughout the population. The population will be better adapted, having acquired an improved characteristic. Gene-based natural selection discovers adaptations by trying out changes amongst offspring.

But gene-based natural selection operates only across generations. It does not adapt individual organisms during their life. It is unable to discover new adaptations by trying out changes within the individual while it lives. Obviously an adaptive mechanism that could do so would have a significant advantage in evolutionary terms. It could discover and implement improved adaptations continuously within individuals, long before genetic evolution was able to do so.

Somewhat ironically, the adaptive arrangements that operate within organisms during their life were discovered and established by genetic evolution. Genetic evolution has developed the superior adaptive mechanisms that have the potential to replace it, at least in humans. The first adaptive mechanisms established by genetic evolution searched for better adaptation by trying out changes within the organism, using trial and error. But how could the organism's systems know whether a particular change had improved the organism's adaptation? This was a key challenge for genetic evolution—it had to install the organism with some way of identifying the internal changes that were beneficial in evolutionary terms.

This challenge was easier in the case of changes that produced some immediate improvement in the functioning of the organism. The efficacy of a change could be judged against its immediate effects within the organism. For example, changes to the amount of oxygen delivered to a tissue could be evaluated by their effect on the metabolic rate in the tissue.

The challenge could not be met so easily for changes that might produce longer-term evolutionary advantage, without immediate beneficial effects on the organism. Behaviour that leads to sexual reproduction provides a clear example. These behaviours have no immediate pay-off for the organism. They do not improve its functioning, and may even impede it. How could evolution fit out organisms so that they implemented behavioural changes that led towards successful reproduction, and rejected behaviour that did not?

The answer discovered by genetic evolution was to install organisms with an internal reward system. This system rewards individuals internally when they try out behaviours that are beneficial in evolutionary terms, and punishes them when they do otherwise. We experience these internal rewards as various kinds of attractive feelings, motivations and emotions. The habits and behaviour patterns that an organism adopts are those that are positively reinforced by its internal reward system. Its behaviour and lifestyle is shaped by the goals that are established by its motivations and emotions.

The internal rewards and punishments act as proxies for evolutionary success. Genetic evolution tunes the system of motivations and emotions so that when an organism pursues its internal rewards, it acts in a way that leads to evolutionary success. An organism's motivations and emotions guide it to discover and implement adaptations that are beneficial in evolutionary terms. If circumstances change, and a particular behaviour is no longer optimal in evolutionary terms, genetic evolution will modify the internal reward system so that the behaviour is no longer reinforced. Genetic evolution adapts the internal reward system so that the organism's goals continue to be aligned with evolutionary success.

Other important developments in the evolution of adaptive mechanisms within organisms were learning and imitation. Once an organism discovered by trial-and-error that a particular change was useful in particular circumstances, learning enabled it to implement that adaptive change whenever those circumstances arose again. And imitation enabled an organism to adopt an adaptive change discovered by another individual, without having to discover it for itself. Both these improvements reduced the amount of trial-and-error that organisms had to use to adapt.

But the most significant and far-reaching advance in adaptability came with the development of a capacity for mental modelling². This capacity is very familiar to us—it is most fully developed in humans. We use thinking and other mental representations to model the effects of our behaviour on our environment. So instead of having to try out alternative actions in practice, humans can use mental models to predict their effects. We can try out possible adaptations mentally. This significantly reduces the need for costly trial and error in the search for adaptive behaviour, and enables us to take account of the (predicted) future consequences of our actions.

Our ability to test alternative behaviours mentally is the basis of our capacity to plan ahead, imagine alternatives, invent and adapt technology, build structures such as houses and roads, radically modify our external environment for our adaptive goals, establish long-term objectives, imagine how we might change the world, develop strategic plans, design projects and undertake activities that pay off only in the future (such as plant crops and feed animals).

The acquisition of language was a critically important step forward in our ability to construct mental models. Language and associated forms of communication enabled humans to share the knowledge used for building models. Communication enabled all members of a society to acquire and use the knowledge discovered by any individual. It also enabled knowledge to be accumulated across the generations. The progressive accumulation of knowledge has enabled humans to model a greater range of interactions with our environment, and to predict the consequences of our actions over wider scales of space and time. This has enabled us to discover more effective ways of achieving our adaptive goals and obtaining positive reinforcement from our internal reward systems.

Our ability to construct and manipulate models has also improved as we have learnt to augment our mental abilities with external artefacts such as pen and paper, books, recording devices, computers and other forms of artificial intelligence. Our mental adaptability can be expected to

continue to improve as humanity accumulates more knowledge about how the external world responds to our interventions and as artificial intelligence is developed.

The full evolutionary potential of mental modelling is obvious. Once organisms have accumulated sufficient knowledge, their modelling will often be superior to the internal reward system at identifying the adaptations that are best in evolutionary terms. No longer would the organisms have to be guided towards evolutionary success solely by a system of motivations and emotions. Instead the organisms could use mental modelling to identify and implement the actions that would enable it to survive and flourish into the future.

Mental models have the potential to be far superior than the internal reward system established by genetic evolution in the organisms' evolutionary past. The motivations and volitions (moral or otherwise) that were favoured by Darwinian selection in their evolutionary past are highly unlikely to be optimal for their successful survival throughout the next million years. And as circumstances change into the future, the values and motivations that are optimal are likely to change repeatedly.

But mental modelling is not able to fulfil its enormous adaptive potential when it first emerges. Initially, it does not have the capability to take over the adaptation of the organism. It has not accumulated the detailed knowledge and information needed to predict the future consequences of a wide range of alternative actions. As a result, modelling will be less effective than the pre-existing motivation and reward systems at discovering the best adaptations.

However mental modelling will still provide immediate advantages. It enables the organism to find better ways of achieving its internal rewards and motivations. The organism can use mental models to identify the behaviours that will achieve outcomes that produce desirable internal states. Initially mental modelling will not establish or change the adaptive goals of the organism—it begins as a servant of the pre-existing motivation and reward systems.

It is easy to locate humanity within this evolutionary sequence³. Humans are not yet organisms that use mental modelling to adapt in whatever ways are necessary for future evolutionary success. We are still organisms that spend their lives pursuing proxies for evolutionary success as ends in themselves. We use our mental modelling to work out how to achieve the goals set by our internal reward and motivation system—goals that we have been fitted out with by natural selection and that are modified to a limited extent by conditioning during our upbringing. We use the enormous power of mental modelling to see how we can act on the world to produce desirable psychological states and avoid unpleasant ones. For most this means using modelling to pursue sex, wealth, popularity, satisfying relationships, social status, power, feelings of uniqueness, and so on. And we spend our lives trying to avoid undesirable psychological states such as those associated with stress, guilt, depression, loneliness, hunger, and shame.

But when our evolutionary interests clash with these motivations and emotional responses, our evolutionary interests lose out. We have not yet developed a comprehensive capacity to free ourselves from the dictates of our biological and social past. We cannot adapt or modify at will our likes and dislikes, our emotional reactions, our motivations, what it is that gives us pleasure or displeasure, our habits, or our personality traits (eg we cannot change from extrovert to introvert at will). Few of us can effortlessly 'turn the other cheek' even when we can see mentally that it is in our interests to do so. This is the case whether these predispositions are largely inherited, or the product of individual experience during our upbringing.

As a result, the evolutionary adaptability of humanity is seriously limited. We do not use the immense capacity of mental modelling to pursue evolutionary ends. Adaptations exist that are

superior in evolutionary terms, we can see that they are superior, but we do not implement them. Instead we spend our lives chasing positive reinforcement from our internal reward system. If humanity is to realise the full evolutionary potential of mental modelling, we will have to free ourselves from our biological and cultural past.

Can humans develop such a psychological capacity? Or will our ability to adapt be forever constrained by the predispositions resulting from our evolutionary history? Will we be able to adapt only in directions currently rewarded by our internal reward system, irrespective of what is best for our evolutionary future? Or can we develop the capacity to move at right angles to our history and conditioning, and to adapt in whatever ways will produce future evolutionary success?

Modern scientific psychology has not yet developed an understanding of how we can develop a psychological capacity along these lines. To date it has concentrated on understanding how our psychology currently operates, and how pathologies can be corrected. It has little to say about our potential for future psychological development.

But humans have accumulated an extensive body of knowledge and practice about how we can develop these new psychological capacities. This knowledge is embodied in religious and spiritual systems. Although some systems are more explicit about it than others, and some have a number of other goals for spiritual development, the world's major religious systems all advocate the development of an ability to free oneself from particular emotional responses, desires and motivations. Furthermore, all systems contain methodologies and practices that can assist the development of such a capacity.

Despite the fact that religious systems use widely different terminology to describe their practices and beliefs, it is possible to identify a broadly common approach to spiritual development. Most practices are directed at promoting the emergence of a new self that stands outside the individual's emotional states, thoughts, and sensations. This new observing self is not bound up in the flow of thoughts and feelings and sees them as objects of attention. The individual experiences herself as the new observing self, as separate from her thoughts, feelings and sensations, and able to treat them as objects that can be managed and modified⁴. What were once part of the subject are objects in relation to the new self, and can be managed and controlled by it⁵.

This contrasts with the individual's experience before a new observing self is developed. Previously the individual tended to be absorbed in and identified with emotional reactions and thoughts, was not aware of herself as separate to them, and could not easily choose whether to be influenced by them. The individual experienced herself as her motivations and thoughts, and defined herself through them and through the personality traits and behaviour patterns they entrenched.

The new self is given a wide variety of names in various religious and philosophical systems. Aspects of the new self are referred to variously as the silent witness, the true self, Buddha mind, the Lord, the observer, the soul, atman, the master, Christ consciousness, the observing "I", an emergent metasystem⁶, and the higher self.

Religious systems generally promote the emergence of the new self through practices that separate the mind into an observing part and an observed part. The observing part is the precursor to the new self. These practices typically operate by turning attention and awareness inwards, and directing it at mental contents—at sensations, emotions, motivations, mental images and thoughts as they arise in the mind. For example, many religious systems require

adherents to struggle against the dictates of their 'lower' desires and impulses. Doing so directs attention inwards, makes these mental states objects of attention and begins the separation of the mind into an observing part and an observed part. The waging of an internal war against desires and impulses will assist the development a new self that stands outside them and is no longer identified with them.

Other practices also enhance the separation of the mind into an observing part and an observed part. Meditation typically involves turning attention inwards and making thoughts and emotional states objects of attention⁷. Similarly, the mindfulness practices of Buddhism and the self-observation⁸ of Gurdjieff promote the development of the new observing self during ordinary life. These practices focus attention on the physical sensations, emotions, mental images and thought that arise as the individual goes about daily activities and interactions. All these techniques emphasise that self-observation it to be passive and non-judgemental. This assists in ensuring that the new observing self does not identify with or become absorbed in mental contents as they arise.

A number of practices help the observing self to remain separate from mental contents. Some of these operate by dampening mental activity and reducing the incidence of intense emotional experiences. This makes it easier for the new self to stand outside the flow of mental contents without becoming absorbed and identified with them. Examples include practices that take individuals away from the pressures of normal life such as retreats, monastic life, asceticism, and pilgrimages. Many systems have also discovered that meditation is an effective method of tranquillising mental activity, and that prayer and devotion can have similar effects. Most systems emphasise that repeated effort and vigilance is needed to maintain separation—the individual will tend to slip back into identification with thoughts and emotional states, and will find it very difficult to stand outside and observe them for extended periods.

These practices also develop the ability of the individual to dispose attention wilfully and to break the control of attention by emotional states. Devotional practices also enhance this ability—they require the individual to continually bring attention back to the object of devotion and away from distractions.

The new self that can be developed as a result of these practices is relatively free of the adaptive goals of the internal reward system. Once the emerging new self can remain functionally separate from motivations and emotional impulses, it can decide whether or not to be influenced by them. Instead of 'going with' these impulses as they arise, it can decide not to act on them. This functional separation also enables the new self to control the disposition of attention. The new self can direct attention and energy only at activities that serve the aims of the self.

As the observing self accumulates knowledge about the operation of the motivational and emotional system, it improves its capacity to manage them. The individual learns how to modify the goals of her internal reward system, and is then able to align them with goals and objectives of her choosing. As a result, the individual can find motivation and emotional satisfaction in whatever activities serve her goals and objectives. For example, if an individual chooses to pursue evolutionary success as her ultimate goal, she will be able to align her internal reward system with evolutionary goals⁹.

The metaphor of a carriage (or chariot) drawn by horses has been used by a number of religious and philosophical systems to represent the psychology of a person who has developed these capacities¹⁰. Generally, the driver is the intellect, the horses the emotions, the carriage the body, and the master in the carriage (or lord of the chariot) is the new self. The master coordinates the actions of the various components so that they cooperate together to serve the objectives and

goals set by the master. Importantly, this metaphor emphasises that the new self does not repress, override, or take over the functions of the emotions and the body. A competent higher self, like a competent manager of a modern corporation, or like the conductor of an orchestra, works with and makes best use of the special abilities of the elements it manages.

Why have religions developed this extensive body of knowledge and practice about freeing humans from the requirements of their motivational and emotional systems? A key reason is that religions generally promote adherence to ethical systems that conflict with the dictates of our internal reward system. Religions have learnt that it takes much more than an intellectual commitment to an ethical system before an individual is able to implement it. Reason does not control the passions until the individual has developed a new psychological structure that has the capacity to manage the individual's internal reward system.

Another reason for religions' deep interest in this area is the intuition that only a self that has transcended emotional impulses could conceivably live beyond the body. A self that is bound up in bodily desires and emotional responses will surely die when the body that gave rise to them dies. A number of religious traditions that take this position also believe that the end point of spiritual development is the fusion of this transcendent self with the absolute (eg God).

Of course, the great majority of the members of religions do not develop a higher self. Most do not adopt in full the practices prescribed by their religion, and few understand the practices and beliefs in the terms described here. Very few Christians develop the capacity to effortlessly turn the other cheek in the full sense of that metaphor. If the practices of spiritual development are to succeed in transforming the psychology of humanity in general, they will need to be enhanced and developed. This is most likely to be achieved if the practices are investigated by modern scientific psychology, and eventually integrated into it. If spiritual practices are subjected to the sceptical scrutiny and rigorous testing of modern science, the practices and beliefs that are grounded in fact could be separated from those that are embedded in supposition and baseless mysticism. And the powerful techniques and extensive resources of modern science could be used to discover new and better practices. This process would continue the progressive expansion of science into new domains that has taken place throughout its relatively young history. Science has grown by incorporating and developing bodies of knowledge that were initially unsystematic and riddled with contradictions and folk knowledge.

Until we humans develop the capacity to free ourselves from our biological and cultural past, our evolutionary adaptability will be seriously constrained. We will not use the enormous potential of mental modelling to identify and implement the actions that will contribute most to the evolutionary success of humanity. Instead of using our technological advances and economic resources for evolutionary goals, we will continue to use them only to serve the needs and wants established by our evolutionary past and conditioning. Humanity will continue to spend its time on this planet masturbating stone age desires, going nowhere in evolutionary terms.

Alternatively, we could massively enhance our evolutionary adaptability by freeing ourselves from the dictates of our biological and cultural past. We could develop the ability to align our internal reward and motivation system with evolutionary goals. This would enable us to find satisfaction and motivation in whatever adaptations serve these goals. With this capacity we could choose to implement whatever actions would advance the evolutionary success of humanity, and would find satisfaction and motivation in doing so. This would enable us to use the immense power of mental modelling to pursue evolutionary goals, rather than continue to blindly pursue outdated and inaccurate proxies for evolutionary success as ends in themselves.

If we make this transition, humans would become self-evolving beings, able to adapt in whatever directions are necessary for future evolutionary success, relatively unfettered by our biological past or by our previous life experiences. As we move out into the solar system, the galaxy and the universe, we would be able to change our adaptive goals and behaviour in whatever ways were demanded by the challenges we meet. We would be able to continually recreate ourselves, to change human nature at will, to repeatedly sacrifice what we are for what we can become, to continually die and be born again.

¹ For a more detailed discussion of the evolution of these mechanisms see Dennett, D. C. (1995), *Darwin's Dangerous Idea* (New York: Simon and Schuster).

² The evolutionary significance of mental modelling was first clearly recognised by Popper, K. R. (1972), *Objective knowledge - an evolutionary approach* (Oxford: Clarendon).

³ For a fuller discussion see Stewart, J. E. (2000), *Evolution's Arrow* (Rivett: Chapman Press) [online at <http://www4.tpg.com.au/users/jes999/>].

⁴ For more on the relationship between the new self and mental contents, see Nicol, M. (1980b), 'The Four Bodies of man', in *Psychological Commentaries on the Teachings of Gurdjieff and Ouspensky* (London: Watkins) **1**, pp. 218-35.

⁵ This point is made very well by Keegan, R. (1994), *In over our heads – the mental demands of modern life* (Cambridge: Harvard University Press).

⁶ See Heylighen, F. (1991), 'Cognitive Levels of Evolution: from pre-rational to meta-rational', in *The Cybernetics of Complex Systems – Self-organisation, Evolution and Social Change*, F. Geyer Ed., (Salinas, California: Intersystems) pp.75-91.

⁷ For example, see Goleman, D. (1988), *The meditative mind – the varieties of meditative experience* (New York: G. P. Putnam's Sons).

⁸ For more on self-observation see Nicol, M. (1980c), 'Commentary on Self-Observation and 'I's'', in *Psychological Commentaries on the Teachings of Gurdjieff and Ouspensky* (London: Watkins) **1**, pp. 302-17.

⁹ This notion is developed in greater detail in Stewart, J. E. (2001), 'Future psychological evolution', *Dynamical Psychology* [online at <http://www.goertzel.org/dynapsyc/>].

¹⁰ For example, see the *Katha Upanishad*, Plato's *Phaedrus*, and Gurdjieff's *Beelzebub's tales to his Grandson*.