
The pursuit of happiness: The social and scientific origins of Hans Selye's natural philosophy of life

History of the Human Sciences

25(5) 13–29

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DOI: 10.1177/0952695112468526

hhs.sagepub.com



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Abstract

In 1956, Hans Selye tentatively suggested that the scientific study of stress could 'help us to formulate a precise program of conduct' and 'teach us the wisdom to live a rich and meaningful life'. Nearly two decades later, Selye expanded this limited vision of social order into a full-blown philosophy of life. In *Stress without Distress*, first published in 1974, he proposed an ethical code of conduct designed to mitigate personal and social problems. Basing his arguments on contemporary understandings of the biological processes involved in stress reactions, Selye referred to this code as 'altruistic egotism'. This article explores the origins and evolution of Selye's 'natural philosophy of life', analysing the links between his theories and adjacent intellectual developments in biology, psychosomatic and psychosocial medicine, cybernetics and socio-biology, and situating his work in the broader cultural framework of modern western societies.

Keywords

altruistic egotism, organic analogy, psychosomatic medicine, Hans Selye, socio-biology, stress

Introduction

In 1956, as his Hungarian compatriots were initiating a violent revolt against Soviet rule, Hans Selye (1907–82) published what was arguably his most influential study of the relationship between stress, health and disease. Written for a general as well as a medical

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and scientific audience and based on many years of laboratory experiments performed first at McGill University and subsequently at Selye's Institute of Experimental Medicine and Surgery at the University of Montreal, *The Stress of Life* set out the principal features of what Selye had originally termed the 'general adaptation syndrome' but increasingly referred to as the 'stress syndrome', or more simply as 'stress'. By exploring in turn his discovery of the concept of stress, the biological processes involved in stress reactions, and the various diseases that were thought to result from 'failures in the stress-fighting mechanism', such as cardiovascular and inflammatory diseases and peptic ulceration, Selye claimed that he had identified an innovative approach to understanding the 'mosaic of life in health and disease' (Selye, 1956: ix).

In a brief coda to his biological account of how the nervous and endocrine systems 'help to adjust us to the constant changes which occur in and around us' (ibid.: vii), Selye reflected on the 'philosophic implications' of stress research. According to Selye, people possessed a finite quantity of 'adaptation energy' which was gradually consumed by the 'wear and tear of life', leading to physiological ageing and death (Selye, 1956: 273–3; Selye, 1938a; Selye, 1938b). Longer and healthier lives could be promoted by protecting the stores of adaptation energy, a feat achieved by 'living wisely in accordance with natural laws'. Close study of nature, Selye argued, would allow people to 'derive some general philosophic lesson, some natural rules of conduct, in the permanent fight between altruistic and egotistic tendencies, which account for most of the stress in interpersonal relations' (Selye, 1956: 281–2). Just as biological harmony was achieved by 'intercellular altruism', so too social harmony, collective survival and human satisfaction could be enhanced by 'interpersonal altruism' or mutual inter-dependence, driven ultimately by striving for, and dispensing, a feeling of gratitude. Convinced that a mature 'philosophy of gratitude' based on biological principles offered the most constructive 'way of life', Selye concluded his reflections on the secret of happiness with a characteristic rhetorical flourish:

Can the scientific study of stress help us to formulate a precise program of conduct? Can it teach us the wisdom to live a rich and meaningful life which satisfies our needs for self-expression and yet is not marred or cut short by the stresses of senseless struggles? (Selye, 1956: 294)

Nearly 20 years later, and apparently prompted by the 'disproportionate amount of interest' expressed by psychologists, sociologists, anthropologists and clergymen in his earlier 'subjective digression' into the philosophical aspects of stress, Selye developed the ideas first aired in *The Stress of Life* into a more coherent argument about the promotion and maintenance of social equilibrium and individual happiness. In *Stress without Distress*, first published in 1974, Selye suggested that biological rules governing cells and organs 'could also be the source of a natural philosophy of life, leading to a code of behavior based on scientific principles' (Selye, 1974: 2). Arguing that the greater sense of social instability generated by the multiple stresses of modern lives made a unifying philosophy of life even more critical, Selye set out the manner in which the biological mechanisms of 'adaptive self-organization and homeostasis' should dictate social relations:

The same principles must govern cooperation between entire nations: just as a person's health depends on the harmonious conduct of the organs within his body, so must the relations between individual people, and by extension between the members of families, tribes, and nations, be harmonized by the emotions and impulses of altruistic egotism that automatically ensure peaceful cooperation and remove all motives for revolutions and wars. (Selye, 1974: 64)

Both the authoritative tone of his argument and the absence of supporting citations suggest that for Selye the philosophy of altruistic egotism constituted a relatively unproblematic translation of the results of laboratory studies and personal experiences of stress into the social realm. Not only could sick societies be diagnosed and healed in much the same manner that sick bodies could be identified and restored to health by scientific knowledge and clinical intervention, but the faithful application of biological principles to social organization would also ensure the prolonged physical and mental health of modern populations.

The aim of this article is to problematize Selye's seemingly effortless application of biology to society by exploring the social and scientific contexts that framed his ideas. I shall argue that Selye's philosophy of altruistic egotism drew heavily on preceding and adjacent intellectual and cultural developments: a traditional interest in the analogy between the human body and the body politic, evident not only in the scientific writings of Walter B. Cannon (1871–1945), for example, but also in post-war science fiction; the emergence of psychosomatic and psychosocial medicine, which postulated links both between mind and body and between health, environment and social behaviour; the rising prominence of cybernetic, socio-biological and biopsychosocial models of life and disease that were being fashioned by Norbert Wiener (1894–1964), Edward O. Wilson (b. 1929), Robert L. Trivers (b. 1943), George L. Engel (1913–99), and others during the late 1960s and early 1970s; and, more broadly, growing contemporary fears about rapid technological change and global political instability during the cold war. In the process, I also want to suggest that Selye's recipe for health and happiness reveals key features of post-war articulations of the psychosocial: not only did scientific formulations of stress serve to shape clinical discussions of the psychosocial determinants of health as well as political debates about effective social organization and health promotion, but expanding interest in biopsychosocial accounts of disease in turn also significantly increased the popularity of the language of stress as a means of experiencing, defining and managing diverse forms of mental and physical suffering.

The organic analogy and the stress of life

Hans Selye was by no means the first scientist or clinician to highlight possible analogies between biological and social organization or to emphasize the capacity for medical science to provide solutions to personal and political problems. As Roy Porter and others have suggested, it was customary in the early modern period for engravers, essayists, cartoonists and doctors themselves to transfer 'the idioms of sickness and healing to the realm of politics', to refer to healing practices in order to comment on and restore the health of the 'body politic' (Roy Porter, 2001: 20, 33, 220–49), and increasingly to draw analogies between 'body organs and the specialized functions of various governmental

agencies' (Stephens, 1970: 688). This tradition persisted. During the late 19th century, for example, it became popular to compare the functions of the emergent telecommunication system with the actions of the human brain and nerves. In this instance, the analogy worked in both directions: not only did the electric telegraph carry messages and regulate the social organism in the same manner that the central and peripheral nervous systems governed the body, but the telegraph was also conversely adopted by scientists and doctors as a means of explaining the functions (and malfunctions) of the nerves (Morus, 1999, 2000). During the middle decades of the 20th century, the analogy between physiological and technological forms of communication was pursued even further. According to the Canadian literary scholar Marshall McLuhan (1911–80), whose study of the impact of mass media on modern lives was informed by Selye's work on stress, the telegraph constituted a 'social hormone', serving not only to replicate physiological processes, but also to extend the reach of the human endocrine and neurological networks into the social realm (McLuhan, 1964: 246–57).

While mobilizing a traditional style of social commentary, however, Selye's philosophical ventures owed more to his reverence for the work of two earlier physiologists, Claude Bernard (1813–78) and Walter Cannon, both of whom had attached pensive codas to seminal scientific publications. In 1865, Bernard, whose notion of '*la fixité du milieu intérieur*' shaped Selye's physiological approach to stress and stability, published *An Introduction to the Study of Experimental Medicine*. Having explicated the significance of the experimental method for 'the study of vital phenomena', Bernard devoted his final chapter to considering the wider implications of his argument. Although he rejected the notion that experimental medicine corresponded in any way to a 'philosophic system' or that it should be extended beyond the phenomena that it described, Bernard did acknowledge that 'the progress of human knowledge' and the resolution of problems that were 'torturing humanity' required an intelligent combination of both science and philosophy (Bernard, 1957[1865]: 218–26).

During the early 20th century, the American physiologist Walter Cannon, whose formulation of 'homoeostasis' (or physiological equilibrium) also provided a pivotal concept for Selye's subsequent accounts of adaptation and stress, continued the trend set by Bernard's humanistic reflections. In the final chapter of *The Wisdom of the Body*, first published in 1932, Cannon directly examined the 'analogies between the body physiologic and the body politic' and suggested that comparative studies of the means by which organisms retained physiological stability in the face of external environmental changes might furnish opportunities for generating or restoring industrial, domestic and social harmony (Cannon, 1939: 305). Ignoring Bernard's words of caution about the inappropriate extrapolation of results from laboratory to society, Cannon argued that applying the principles of homoeostasis to social organization would not only 'foster the stability, both physical and mental, of the members of the social organism', but also provide 'serenity and leisure, which are the primary conditions for wholesome recreation, for the discovery of a satisfactory and invigorating social *milieu*, and for the discipline and enjoyment of individual aptitudes' (ibid.: 324).

Cannon further developed the analogy between physiological and social systems in a series of articles published during the 1930s and 1940s. In 1933, for example, he posed the question: 'Does the human body contain the secret of economic stabilization?'

Starting from the premise that modern civilization was in need of urgent corrective measures in order to eliminate hunger, poverty and unemployment, and drawing explicitly on Bernard's emphasis on the importance of maintaining a stable operating environment, Cannon applied his model of the self-regulating human body directly to society. 'It seems to me', he argued, 'that quite possibly there are general principles of organization that may be quite as true of the body politic as they are of the body biologic.' These principles comprised the effective division of labour, the establishment of an intricate system of communication and exchange of goods and services, and a central authority (equivalent to the brain) responsible for controlling social and economic transactions (Cannon, 1933, 1941).

Cannon's work provided inspiration for other social commentators. The American psychologist Albert T. Poffenberger (1885–1977), for example, acknowledged the role of Cannon's 1932 monograph in shaping his own belief that the processes responsible for maintaining both psychological and social equilibrium were analogous to those preserving physiological stability (Poffenberger, 1938, 1950). Similarly, in 1936, the American cytologist Edmund V. Cowdry (1888–1975) applauded Cannon for attempting to determine whether there were any 'methods of regulation within the human body of any interest to those responsible for regulation within the nation' (Cowdry, 1936: 222). According to Cowdry, cell theory in particular provided an effective blueprint for the productive division of labour, the regulation of the manufacture and consumption of goods, and the overall maintenance of social stability.

As Stephen Cross and William Albury have argued in an exemplary discussion of the development of the 'organic analogy' in the work of Cannon and his fellow Harvard physiologist Lawrence J. Henderson (1878–1942), early-20th-century applications of the principles of physiological regulation to social organization were shaped by the social, political and economic challenges faced by inter-war American society (Cross and Albury, 1987). Although Cannon and Henderson differed in their political orientation, both they and other commentators were responding to a perceived 'social crisis' in the years following the Great War, a crisis exemplified by the rise of fascism, the perilous consequences of economic depression, the eradication of 'cherished values and institutions' by the 'technological tide of a new "machine age"', and the proliferation of contentious debates about evolutionary theory and human behaviour within the natural and social sciences (Cross and Albury, 1987: 166–70). These concerns were not confined to North America: inter-war European populations too were consumed by morbid anxieties about the decline, and impending collapse, of modern western civilization (Overy, 2009).

In spite of persistent reservations about the applicability of biological principles to political and social problems (Julian Huxley, 1941; Stephens, 1970; Ingle, 1975), various features of the organic analogy remained fertile concepts not only for scientists but also increasingly for social commentators and novelists. As Cynthia Eagle Russett has argued, the notion of equilibrium that emerged partly from early 20th-century physiology constituted a critical tool in contemporary social theory, particularly in the work of the Italian sociologist Vilfredo Pareto (1848–1923) and his followers at Harvard (Russett, 1966; Heyl, 1968). Interest in balance, equilibrium and self-regulating systems was also a feature of the work of Selye's Hungarian compatriot, Arthur Koestler (1905–83), who was aware of Cannon's work on the neurophysiology of emotions and

familiar with debates about homeostasis, particularly in the context of evolution (Koestler, 1968: 154, 261–74). Indeed, in *The Ghost in the Machine*, Koestler directly compared the behaviour of bodily organs, mental structures and social groups ‘under conditions of stress’ (Koestler, 1967: 48, 230–3). In the novels of Aldous Huxley (1894–1963), Ursula Le Guin (1929–), John Wyndham (1903–69), and Nobel laureate Doris Lessing (1919–), the maintenance of social harmony and ecological balance similarly constituted a pivotal theme: utopian (or eventually dystopian) societies routinely mobilized biological principles in order to justify the regulatory measures adopted to ensure the security and stability of their inhabitants (Aldous Huxley, 1962; Le Guin, 1974; Wyndham, 1979; Lessing, 1979).

By the time that Koestler and others were debating the capacity for scientific principles to regulate society, new threats to health and happiness had emerged. In the decades following the Second World War, global political reconstruction was hindered by ideological, and increasingly military, conflicts between western capitalism and eastern communism: the Korean War, the Hungarian revolution, the Cuban missile crisis, and the Vietnam War, events that clearly provided a conscious backdrop to Selye’s reflections (Selye, 1974: 7–8), all served to heighten the escalating tension between America and eastern bloc countries. Although intellectual responses to these events were mixed, the fear of impending global destruction generated by the Cold War and deepening concerns about the human consequences of the technological revolution and expansion of the media (McLuhan, 1967; Toffler, 1970) pervaded both scientific and fictional commentaries on the value and attainability of individual and social stability.

Many of these strands of mid-20th-century scientific and political ideology were already evident in Selye’s first philosophical enterprise in 1956. Selye himself admitted that he was greatly indebted to the philosophical physiology of Bernard and Cannon, acknowledging their seminal role in shaping his approach to adaptation and disease (Selye, 1956; Selye, 1975: 89). Indeed, in many ways, Selye’s science and philosophy were both genuine descendants of Cannon’s quest for a comprehensive ‘physiology of man’ (Dale, 1947; Cross and Albury, 1987). At the same time, Selye’s commitment to ‘interpersonal altruism’ as a means of moderating stress in human relations was based on his scientific understanding of the evolutionary significance of intercellular altruism, or collective egotism, in higher animals, that is, on a particular, and relatively naïve, version of the organic analogy. For Selye in 1956, the personal benefits of following a natural code of life were self-evident: a philosophy of gratitude based on ‘fundamental biological laws’ (Selye, 1956: 301) would ensure a reduction in stress-related mental and physical disease and increased happiness and success. As Selye’s later explication of his code suggests, adhering to the principle of altruistic egotism also carried the potential to heal sick societies and to confront what many commentators regarded as an expanding burden of psychosomatic diseases afflicting modern communities.

Stress and the sick society

As Donna Haraway, Gregg Mitman and John Parascandola have suggested, organicist and holistic ideologies permeated research in a range of scientific and social science domains during the inter-war and post-war years. Studies of competition, cooperation

and aggression among primate populations carried out by C. R. Carpenter (1905–75), the ecological theories of Warder Clyde Allee (1885–1955) and Alfred Edwards Emerson (1896–1976), and Lawrence Henderson’s investigations of both physiological and social regulation and adaptation, for example, were based on a belief not only that communities functioned as integrated organisms (and vice versa), but also that it was legitimate to extrapolate directly ‘from the biological to the social realm’ (Mitman, 1992: 144; Haraway, 1982; Parascandola, 1971). Increasingly linked to totalitarian and fascist ideals, such attempts to develop natural codes of behaviour for human populations from animal studies in the laboratory or field were contested (Mitman, 1992). The American economist and social scientist Lawrence K. Frank (1890–1968), for example, strongly criticized the tendency to apply biological laws unproblematically to social problems. Arguing that cultural factors rendered societies inherently more complex and discordant than natural systems, he suggested the need for more sophisticated accounts of individual and social behaviour in order to safeguard social order (Frank, 1932: 519, 525; Frank, 1925, 1928, 1936).

Although Frank rejected the manner in which physical principles were applied indiscriminately to questions of social organization and behavioural control, he did accept one of the fundamental premises on which Cannon, and later Selye, based their accounts of social homeostasis, namely that modern society itself was in some ways dysfunctional. ‘There is a growing realization among thoughtful persons’, he wrote in 1936 when he was working for the Josiah Macy Foundation, ‘that our culture is sick, mentally disordered, and in need of treatment’ (Frank, 1936: 335). Citing the work of his Macy-funded colleague, the American psychoanalyst Helen Flanders Dunbar (1902–59), Frank suggested that a variety of symptoms of ‘cultural disintegration’ were evident in modern societies: ‘crime, mental disorders, family disorganization, juvenile delinquency, prostitution and sex offenses, and much that now passes as the result of pathological processes (e.g. gastric ulcer)’ (Frank, 1936: 336).

Frank’s reference to Dunbar reveals another context for the evolution of Selye’s natural philosophy of life. Along with the Hungarian-born Franz Alexander (1891–1964), Dunbar was instrumental in shaping the emergent field of psychosomatic medicine. Through the pages of *Psychosomatic Medicine*, founded in 1939, and the activities of the American Psychosomatic Society, established three years later, Alexander, Dunbar and others began to promote a more holistic, organismic approach to illness that highlighted interactions between psychological and physical processes and between social circumstances and health (Powell, 1977). Although proponents of psychosomatic medicine did not necessarily agree about the precise relationship between mind and body, they did tend to focus collectively on what Alexander referred to as the ‘magic seven’ psychosomatic conditions: asthma; essential hypertension; rheumatoid arthritis; peptic ulceration; ulcerative colitis; hyperthyroidism; and neurodermatitis (Levenson, 1994; Mark Jackson, 2007).

For the psychoanalytically minded Dunbar and Alexander, who regarded the ‘principle of stability’, initially devised by Gustav Theodor Fechner (1801–87) and subsequently developed into the ‘constancy principle’ by Sigmund Freud (1856–1939), as one of the fundamental building blocks of psychodynamic medicine (Alexander, 1960[1949]: 35), the ‘magic seven’ diseases were caused primarily by

repressed emotions or frustrated desires from childhood (Dunbar, 1947). For others, such as the Scottish physician James Lorimer Halliday (1897–1983), the aetiology of chronic functional disorders was to be located within the structures and habits of modern societies. According to Halliday, whose major study of the ‘sick society’ was first published in 1948, epidemics of peptic ulcers, gastritis and fibrositis, declining fertility, and a range of social, cultural and political problems such as high rates of unemployment, sickness absence and juvenile delinquency, were the direct result of economic rivalry, military conflict and social disintegration (Halliday, 1949). From Halliday’s perspective, the challenge for ‘psychosocial medicine’ was to acknowledge the biological reality of social sickness and to address its causes through social ‘reintegration’, rather than the familiar, individualistic strategies traditionally employed by doctors and the state (ibid.: 196).

Halliday’s prescription for a new form of ‘integrated medicine’ involved educating doctors, medical students and the public about the burden of social sickness, expanding professional and state awareness of the importance of preserving or restoring psychological health, and encouraging the emergence of a form of ‘biopolitics’ that prioritized both the physical and the spiritual health of modern western populations (ibid: 196–224). Of course, Halliday’s emphasis on the social determinants of illness was not new. On the contrary, it echoed the political and utopian rhetoric of British social medicine, which was heavily influenced during the immediate post-war years by John Ryle’s notion of ‘social pathology’ and which increasingly focused on the role of stress as an important behavioural factor in the aetiology of chronic disease (D. Porter, 1992, 2002). In North America, a programme of progressive socio-economic reform and preventative health care, similar to that adopted by Ryle and his colleagues and also concerned with the impact of environmental stress on mental health, was promoted by proponents of social psychiatry and endorsed by President J. F. Kennedy (Rosen, 1959; Smith, 2008).

Parallels between psychosomatic and psychosocial medicine, on the one hand, and Selye’s formulation of stress, health and disease, on the other hand, are evident at a number of levels. In the first instance, although Halliday challenged Selye’s preoccupation with physical rather than emotional stressors in his experimental work (Halliday, 1950), even he acknowledged that his suggestion that modern western civilization had precipitated a ‘failure of biological adaptation’ (Halliday, 1949: 181) echoed Selye’s emphasis on maladaptation to modern life as the principal mechanism involved in the pathogenesis of many chronic diseases (Halliday, 1950). Indeed, the ‘magic seven’ conditions explored by proponents of psychosomatic medicine overlapped considerably with the paradigmatic stress disorders or ‘diseases of adaptation’ described by Selye (Selye, 1956: 128–89): not only was there pressure during the post-war years to redefine ‘psychosomatic diseases’ as ‘stress disorders’ (Viner, 1999: 396), but Selye’s colleagues and peers began to conflate the two traditions by referring increasingly to ‘psychosocial stress’ (Levi and Andersson, 1975). There is also evidence that Selye had read both Halliday’s formulation of psychosocial medicine and accounts of psychosomatic medicine by Alexander and Dunbar (Selye, 1974: 155–6, 161, 166).

More broadly, it is evident from the British-based *Journal of Psychosomatic Research*, founded in the same year that Selye first published *The Stress of Life*, that stress was becoming an increasingly important focus for researchers on both sides of the

Atlantic interested in psychosomatic or psychobiological approaches to health and disease. During the 1950s, 1960s and 1970s, the journal published the results of a number of animal studies, which explored the links between stress and a range of diseases, including cancer, peptic ulceration, tuberculosis, asthma, eczema, and coronary and thyroid disease. Echoing earlier concerns expressed by Frank and Halliday that society was itself a potent stressor, from the 1960s articles also began increasingly to address the relationship between the onset of physical and mental diseases and the stress of social circumstances; that is, to examine the impact on health of what Richard H. Rahe and his colleagues referred to in 1964 as a 'psychosocial life crisis' (Rahe et al., 1964: 41). In a series of articles published in the journal over the next year or so, Rahe and Thomas H. Holmes elaborated the principal features of their 'social readjustment rating scale' (Holmes and Rahe, 1967). Based on a fusion of Adolf Meyer's psychobiology, in particular his use of 'life charts' or 'dynamic biography' to reveal the relationship between biological, psychological and sociological processes and disease, and Harold G. Wolff's exploration of stressful life events, Rahe and Holmes offered clinicians and their patients a means of quantifying life stressors and predicting, or at least explaining, illness onset (Masuda and Holmes, 1967a, 1967b).

In the same year that Holmes and Rahe first outlined their approach to social adjustment and disease, the American psychiatrist George L. Engel (1913–99) was invited by members of the Society for Psychosomatic Research to present the keynote speech at their annual conference. Arguing that psychosomatic medicine was still in its infancy and riven with theoretical and clinical differences, Engel claimed that the discipline needed a 'theoretician of the calibre of Darwin or Einstein' to provide a unifying theory that allowed researchers to relate clinical and laboratory 'phenomena across frames of reference' (Engel, 1967: 8). According to some commentators, the necessary synthesis had already been achieved by Hans Selye. In 1952, in a paper originally broadcast on the Third Programme of the BBC, the British surgeon David Le Vay argued that Selye's formulation of 'diseases of adaptation' as the product of endocrine disturbances generated by stress provided the possibility of a 'satisfactory integration' of previous approaches to the mechanisms of disease causation. For Le Vay, the significance of Selye's work lay particularly in its application to broader social issues:

Selye's work is important, not only in the narrow biological field of injury and response to injury, but in relation to the much wider problems of man as a living organism set in the stresses of modern civilisation, so many and so varied and so constant in their impact. (Le Vay, 1952: 168)

It was precisely this belief that the scientific study of stress would provide a blueprint for protecting the physical and mental health of modern populations living in a troubled world that encouraged Selye to develop a more expansive vision of how to achieve social harmony, or to manage stress without distress, in 1974.

The evolution of altruistic egotism

Between October and November 1956, a series of protests against the Stalinist government and Soviet policies ricocheted through Selye's homeland of Hungary, a

stark manifestation of escalating East–West hostilities during the Cold War. Although he had left Europe over two decades earlier, Hans Selye remained proud of his Hungarian heritage and had retained ties with his family in Komárom. His father, who had been a surgeon in the Austro-Hungarian army and subsequently set up his own surgical clinic, had died in Budapest some years earlier, but his mother was a direct casualty of escalating violence during the winter of 1956, killed by a stray bullet as Soviet troops attempted to suppress the revolution. It is difficult to establish with any certainty the impact of these events, or indeed of his own experience of pain and life-threatening illness (Selye, 1979: xi; Selye, 1977: 124–8), on Selye’s science and philosophy. In his autobiography, Selye implied that he had been relatively untroubled by the trauma of the Hungarian revolution or by the ‘emptiness’ generated by his mother’s death, from which he felt emotionally separated by time and distance (Selye, 1977: 66). However, it is possible to detect a more critical and perhaps more poignant political edge to Selye’s humanistic voice in 1974 than had been present in 1956: *Stress without Distress* constituted not merely a set of philosophical reflections, like his earlier work, but a manifesto for urgent personal and social change.

Stress without Distress was Selye’s definitive attempt to translate the fruits of laboratory research on stress into the social realm. Arguing that previous strategies intended to ‘achieve peace and happiness’ had largely proved unsuccessful (Selye, 1974: 2), he highlighted the growing need for a convincing philosophy with which to address momentous socio-political and cultural challenges:

Besides, since 1956, technological advances in our rapidly changing world are making more and more special demands on our abilities for readaptation. Now, through the media in our homes, we are facing daily new and often threatening events wherever they occur on earth (Vietnam, Watergate, the Middle East) or even in outer space. On the other hand, jet travel tends to make many of us feel uprooted and virtually homeless. Ever-increasing requirements for travel create the need for adaptation to different time zones, customs, languages, lodgings, and a sense of instability caused by unpredictable changes in schedules. (Selye, 1974: 7–8)

Selye’s claim that humans were struggling to adapt both physically and mentally to the structures and processes of modern society was not routinely endorsed. In 1965, the French-born microbiologist René Dubos (1901–82) not only covertly questioned the validity of Selye’s ‘general adaptation syndrome’ (Dubos, 1980[1965]: 262–3), but also dismissed the reality of contemporary anxieties about the impact of spectacular technological developments:

The dangers posed by the agitation and tensions of modern life constitute another topic for which public fears are not based on valid evidence. Most city dwellers seem to fare well enough under these tensions: their mental health is on the whole as good as that of country people. Indeed, there is no proof whatever that mental diseases are more common or more serious among them now than they were in the past, or than they are among primitive people. (Dubos, 1980[1965]: 274)

However, in a climate of growing global political instability, when the world appeared to be in a state of permanent hostility, and in the light of an apparent rise in the prevalence of many chronic diseases, Dubos's faith in the ability of humans to adapt effectively to new conditions was rejected by researchers and social commentators keen to lament the social anomie and health hazards generated by the stresses and strains of modern lives. In 1970, the American writer Alvin Toffler (b. 1928) explored the overwhelming sense of instability imposed by 'super-industrial societies', coining the term "'future shock"' to describe the shattering stress and disorientation that we induce in individuals by subjecting them to too much change in too short a time' (Toffler, 1970: 4). Similarly, in his concluding remarks at a symposium on the psychosocial environment and psychosomatic diseases sponsored by the World Health Organization in 1970 (and at which Selye presented an overview of the stress concept and its clinical applications), Arne Engström, professor of medical physics at the Karolinska Institute in Sweden, emphasized the urgent need to mitigate the impact of dramatic technological and social change on human health, arguing that psychological and environmental stress would become 'one of the most important future issues both politically and ecologically' (Engström, 1971: 448).

For Toffler, Engström and Selye, like Halliday and others before them, a combination of personal endeavour and political reform was required to manage the diverse threats to human and animal health, and indeed to the balance of the environment and the harmony of the cosmos, inherent in modern western lifestyles. According to Toffler, the successful 'pursuit of happiness' required people to identify and attain what John L. Fuller, a geneticist at the Jackson Laboratory in Maine, had referred to as the optimum 'amount of change in their lives', which in turn allowed them to achieve 'serenity, even in the midst of turmoil' (Toffler, 1970: 339). More particularly, the antidote to 'future shock' in Toffler's view comprised a stronger commitment to democracy. 'To master change,' he wrote in 1970, 'we shall therefore need a clarification of important long-term social goals *and* a democratization of the way in which we arrive at them. And this means nothing less than the next political revolution in the techno-societies – a breathtaking affirmation of popular democracy' (ibid.: 422).

In contrast to the sweeping political changes envisaged by Toffler, Selye focused on a more overtly individual route to social harmony, one that explicitly dismissed the practical and theoretical values of democracy (Selye, 1974: 247) and drew instead on Selye's understanding of biological homeostasis and on his earlier reflections on the nature and control of conflict and competition. In *Stress without Distress*, Selye argued that peaceful cooperation between people and societies, like that between cells and organs, could only be achieved by a collective commitment to 'altruistic egotism'. In essence, this philosophy involved recognizing the evolutionary benefits of both altruistic and egotistical tendencies and combining them, at a social level, in much the same way that multicellular organisms formed 'a single cooperative community in which competition was amply overcompensated by mutual assistance' (ibid.: 57). Cooperation was to be achieved by dispensing, and striving for, a sense of gratitude, that is, by making ourselves indispensable to, and valued by, our neighbours, an approach to social cohesion encapsulated in his motto: 'earn thy neighbor's love' (ibid.: 122–31).

Selye clearly relied on a variety of personal, intellectual and philosophical resources in order to develop the notion of 'altruistic egotism'. According to Selye himself, his

belief in the psychological value of gratitude, rather than the accumulation of ‘worldly assets’, stemmed originally from his father’s advice to prioritize knowledge over possessions or status following his experiences during the collapse of the Hapsburg Empire (Selye, 1977: 28). Selye also acknowledged that his practical code of behaviour held much in common with many religious ideals, although his approach carried the advantage of being substantiated by natural laws (Selye, 1974: 120–1). More directly, Selye based his natural philosophy not only on laboratory investigations of homeostasis and stress, but also on the rise of ‘systems philosophy’, which was influenced largely by cybernetic studies of feedback and adaptation in individual and social life. Although Selye did not cite the ground-breaking study of cybernetics published by the American mathematician Norbert Wiener in 1948 or the subsequent attempts of Karl W. Deutsch (1912–92) and others to apply cybernetic principles to social and political organizations (Wiener, 1948; Deutsch, 1966; Pickering, 2010), he was clearly aware of the systems philosophy of his Hungarian compatriot Ervin Laszlo (b. 1932) and of the evident similarities between cybernetics and his own studies of stress reactions (Selye, 1974: 64, 113).

It is noticeable, however, that Selye made only oblique (and rather dismissive) references to parallel developments in ecology and socio-biology (Selye, 1974: 10), that is, to studies of the evolution of the biological determinants of social behaviour. During the 1960s and 1970s, biologists such as Robert Trivers and Edward Wilson, both then at Harvard, were deeply concerned with exploring and explaining various behavioural patterns, most notably altruism and aggression, among animal and human populations. In a seminal paper published in 1971, Trivers analysed the evolutionary significance of ‘reciprocal altruism’, highlighting in particular the ‘psychological and cognitive complexity’ of altruistic behaviour in humans (Trivers, 1971). Several years later, Wilson suggested that reciprocal, or what he termed ‘soft-core’, altruism, much like Selye’s ‘altruistic egotism’, offered one route to social harmony:

My own estimate of the relative proportions of hard-core and soft-core altruism in human behaviour is optimistic. Human beings appear to be sufficiently selfish and calculating to be capable of indefinitely greater harmony and social homeostasis... True selfishness, if obedient to the other constraints of mammalian biology, is the key to a more nearly perfect social contract. (Wilson, 2004[1978]: 157)

Wilson was clearly conversant with Selye’s work. In his monumental overview of the field, first published in 1975, Wilson discussed Selye’s general adaptation syndrome in relation to the external and internal triggers of aggression. Although he suggested that Selye’s account of adaptive processes awaited experimental validation and expressed doubts about the credibility of extrapolating directly from animal studies to debates about human behaviour, Wilson accepted that aggression constituted ‘a set of complex responses of the animal’s endocrine and nervous system, programmed to be summoned up in times of stress’ (Wilson, 2000[1975]: 248). Wilson’s focus on the evolutionary biology of stress was not unusual in this period. As Haraway has argued, stress became a pivotal concept in socio-biological studies of communications systems (and their limits) in the decades following the Second World War (Haraway, 1981: 250).

Wilson's gesture to Selye's 'behavioral endocrinology' was not reciprocated. Although Selye was extremely well read in many scientific disciplines, and cited numerous studies of psychosocial stressors and their impact on health, his annotated bibliography in *Stress without Distress* included no references to ecological or socio-biological theories of aggression and altruism and only occasional allusions to studies of the factors regulating aggressive behaviour. It may be that Selye was not aware of the socio-biology of Wilson and Trivers, of Carpenter's studies of aggression and dominance among primate populations, or of biopsychosocial models of disease, which were also informed by systems theory and were being elaborated in particular by George Engel and his colleagues at the University of Rochester Medical Center (Engel, 1967, 1977). Equally, it is feasible that Selye preferred to distance himself from these studies, perhaps in order to emphasize the scientific, rather than social science, basis of his theories: in the opening pages of *Stress without Distress*, Selye insisted that, although he had relied on 'observations about the evolution of natural selfishness in living beings' (suggesting at least some acquaintance with ecological and socio-biological literature), discoveries in these fields were 'only superficially, or not at all, related to what I described as the "stress syndrome"' (Selye, 1974: 10). It is also possible that Selye wished to establish the primacy of his particular formulation of 'altruistic egotism' over competing prescriptions for social cohesion and human happiness: the foundations for his natural philosophy of life were, after all, already apparent in 1956, some years before the emergence of Trivers's parallel notion of reciprocal altruism.

Conclusion

At the turn of the millennium, it became fashionable for scientific experts, health psychologists, the media and government ministers (at least in Europe) to proclaim not only that happiness could be accurately defined and quantified, but also that it could be more readily attained if modern populations implemented a relatively simple set of prescriptions for individual behaviour and social reform. According to the World Database of Happiness, directed by sociologist Ruut Veenhoven, patterns of happiness can now be measured and compared between nations and across time: evidence from the database apparently indicates that while real income has increased dramatically in most western countries, fewer people are 'very happy' in the early years of the 21st century than 50 years ago (World Database of Happiness; Tim Jackson, 2009: 40). In the writings of the economist Richard Layard and the psychologist Jonathan Haidt, levels of individual and collective happiness are largely determined by family relationships, financial circumstances, work, friends, community support and health as well as by genetic predisposition, leading some commentators to construct what Haidt refers to as a discrete 'happiness formula' (Haidt, 2006: 91; Layard, 2006). Within this context, while unhappiness and stress have emerged as key (and relatively unchallenged) indicators of social pathology and as central targets for political intervention, contemporary formulations of the psychosocial determinants of disease have in turn amplified the figurative currency of stress as an explanation for sadness and ill-health.

Recent attempts to calculate and engineer happiness have often been based on an intuitive, almost transcendental, notion of happiness as a universal and timeless quality,

recognizable in all cultures at all historical moments. While this approach may have some validity, it is important to recognize that current formulations of happiness also draw heavily on particular accounts of the psychosocial determinants of health and behaviour that were mapped out initially by Dunbar, Halliday, Selye and others during the second half of the 20th century. As this article has argued in relation to Selye's specific prescription for greater social cohesion and individual happiness, the construction of a link between psychosocial processes and health and the invention of a regulatory code of behaviour for inhabitants of the modern world were not inevitable corollaries of biological principles of stress reactions revealed in the laboratory, as Selye claimed. On the contrary, Selye's emphasis on balancing the seemingly contradictory evolutionary forces of egotism and altruism and his belief in the applicability of biological models of homeostasis to social problems were contingent upon a range of scientific, social, political and cultural contexts. The relatively well-established, if occasionally contested, credibility of the organic analogy, the rising popularity of holistic, organicist approaches to sick bodies and sick societies, the spread of cybernetic models of physiological and social organization, and growing concerns to explain seemingly deviant social behaviour in biological terms all provided an important intellectual matrix for Selye's natural philosophy of life. In addition, Selye's recipe for social harmony, like our current preoccupations with manufacturing happiness, can be seen as the result of a constellation of anxieties (often perhaps unsubstantiated, as Dubos suggested) about global political instability and seemingly uncontrollable technological change. From this perspective, both Selye's science of stress and his pursuit of happiness were as much a product of psychosocial processes as the diseases that he struggled to explain.

Acknowledgements

I am grateful to Rhodri Hayward and the anonymous referees for their helpful comments. I would also like to thank the Wellcome Trust for funding the research on which this article is based.

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