Life, Knowledge and Values: A Tribute to John Stewart

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> Abstract • John Stewart passed away earlier this year. In this tribute, I present some elements of his biography and of his main intellectual engagements. **> Keywords** • **Autopoiesis, cognitive science, enaction, John Stewart, life, values.**

« 1 » Member of the editorial board and prominent contributor to the debates in *Constructivist Foundations* (cf. https://constructivist.info/authors/john-stewart), John Stewart unexpectedly passed away on 31 January 2021, in Paris, where he had lived for more than 40 years. He leaves behind him a considerable body of work in genetics, immunology, theoretical biology, cognitive science, epistemology and sociology of knowledge, but also – and more importantly – lively memories of a demanding and singular attitude in both intellectual and existential affairs, the two of them being deeply intertwined.

« 2 » Born in September 1941 in Hitchin (Hertfordshire, England), John Stewart was admitted to the University of Cambridge in 1959, where he studied physics, mathematics, biochemistry and physiology. He was introduced into genetics in 1961 by John M. Thoday, the successor of Ronald Fisher as the Arthur Balfour Professor of Genetics. A feature of Cambridge's originality in the teaching of genetics, at that time, was to include both population genetics and molecular biology. Still in Cambridge, John Stewart obtained his PhD in genetics in 1966, under the supervision of Stuart Spickett, with a dissertation titled "Genetic Variation in the Metabolism of Water and of Electrolytes in Mice." Benefitting from the institutional expansion of the Department of Genetics initiated by Thoday, John stayed in Cambridge until 1970, occupying diverse positions such as Research Fellow, Demonstrator, and head of a research team in endocrine genetics. With his first wife, who was French and whom he met around 1965, he was made sensitive to the stakes of political and social movements such as May 1968 (in France) and the Civil Rights Movement (in the US) early on. After several stays in research institutions in France (1966–1967) and in the United States (1970–1973), he settled in France for good in 1973, where he primarily worked at the Laboratory of Cellular Physiology at the Collège de France.

« 3 » All the conditions were in place for him to continue the classical intellectual trajectory initiated in Cambridge, but his career took another turn at that time, embracing social sciences and epistemology. Besides individual encounters and political engagements (he remained a committed Marxist all his life), the French context is important, here, for understanding John's trajectory. In the aftermath of May 1968, a minority of scientists began to develop an internal criticism of science. Different aspects of science were blamed: not only scientism, but also the overt specialization and compartmentalization of research, patriarchy, bureaucracy and Taylorism in the organization of laboratories, systematic alliances between sciences and the military and industrial domains … Those scientists imagined new ways of teaching, publicizing and practising science. John Stewart took part in this movement, in two ways:

« 4 » On the one hand, he published epistemological essays (notably in the emblematic journal *Impasciences*) in which he argued for the inescapability of political and social values and interests in scientific research. Scientific research is a human practice, necessarily embodied and situated, and thus existentially engaged. What would be the point of doing, teaching or supporting science if it had no value for our lives, at the personal, political and social levels? (See also Stewart 2014a). The problem is not that science and scientists are engaged; it is pretending that they are not, disguising science as a disinterested and monochord quest for objectivity, which is the best way to turn scientific results and methodology into a dogmatic guarantee for the economical, political and social orders. With this travesty of science, one gives up the emancipatory power of scientific research with respect to instituted authorities.

« 5 » On the other hand, bolstered with his first-hand experience of scientific research in genetics, John patiently deconstructed, in many papers and books, reductionist and gene-centered hereditary theories of schizophrenia and intelligence, highlighting their ideological background and their disastrous political consequences (e.g., Debray, Caillard & Stewart 1978; Schiff et al. 1978; Stewart 1980, 1983; Dumaret & Stewart 1989). Between 1975 and 1979, his research at the Centre d'Etudes Transdisciplinaires en Sociologie et Anthropologie (Edgard Morin's laboratory at the Ecole des Hautes Etudes en Sciences Sociales, EHESS, Paris) was financed by various contracts with the Délégation Générale à la Recherche Scientifique et Technique (DGRST). He entered the French Centre National de la Recherche Scientifique (CNRS) as a permanent research fellow in sociology in 1979, a status he would keep until his retirement in 2006, while working in different institutions.

« 6 » His activities were not confined to academic places. Between 1981 and 1986, he founded and directed the Fédération Nationale des Boutiques de Sciences, coordinating the activities of French "science shops." The concept of science shops appeared in the Netherlands in the late 1970s. It is not a place where science is sold. It is a way to experiment and implement a new interface between universities and civil society, by explicitly acknowledging the co-constructed character of knowledge, and the relations between knowledge and social interests. Starting from the needs expressed

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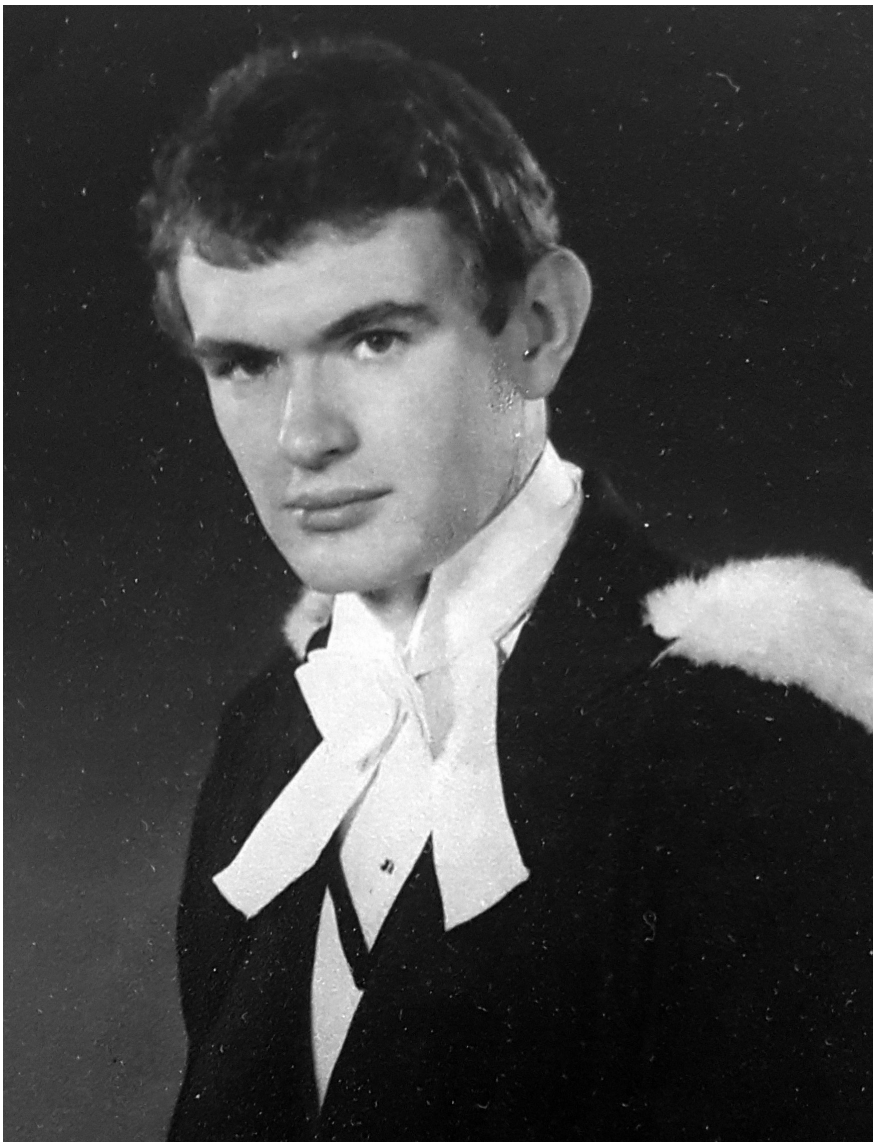

John Stewart in the 1960s wearing his Cambridge gown.
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by citizens and associations (practitioners, patients, activists …), a science shop puts academic researchers into contact with the public, so that research questions can be collectively defined and addressed. Here, science is not a source of expertise that would be opaquely imposed on society, but a resource for the empowerment of citizens and notably minorities whose interests and questions are often ignored by mainstream science (Stewart 1988).

« 7 » His encounter in 1987 (in Cerisy-la-Salle) and intellectual companionship with Francisco Varela definitely convinced him that it was possible to understand life without falling into the traps and illusions of informational and genetic reductionism. His collaborations with Varela, but also with Nelson Vaz and Antonio Coutinho, renewed his interest in immunology, under the auspices of the Immunobiology Unit of the *Institut Pasteur* in Paris (Stewart 1994). For a long time, in the context of his collaborations with Antonio Coutinho, he was also an invited researcher at the Department of Advanced Studies, at the Gulbenkian Institute of Science, in Portugal.

« 8 » This return to biology allowed John to articulate two of his most important topics:

a A non-reductionist theory of life (synthetized and systematized in Stewart 2004);
b The social dimensions of knowledge, including scientific knowledge, in a broad constructivist framework.

« 9 » Indeed, as we have seen, John began his scientific career as a geneticist; he then critically reflected on genetics and science with a view to overcoming scientism, Neo-darwinism and geno-centrism; cognitive science was finally the opportunity for him to integrate biology (purged of reductionism) and the importance of life in the study and definition of cognition and knowledge.

« 10 » With Varela and the nascent enactive cognitive science, John developed the possibility of a theory of cognition (including knowledge and scientific knowledge) according to which cognition is a phenomenon that is enacted by living organisms in their relations with their environment. John saw that something similar happened in biology and in cognitive science in the early 1990s: the criticism and demise of objectivist theories respectively reducing life and cognition to information, in the form of genes and formal symbols. Once one breaks with neo-Darwinism and computational cognitivism for defining life and cognition, a new paradigm – a new way of *seeing* and *solving* problems – appears: life (as autopoiesis) and cognition (as enaction) are the same phenomena, hence the equation "Life = autopoiesis = enaction" (Stewart 1995, 2001).

« 11 » Enactive cognitive science was thus at the intersection of his interests on life and knowledge. However, if cognition equals life, that does not mean it can be reduced to the autopoietic organizations of simple organisms such as bacteria. In the course of the history of life on earth, the coupling between organisms and their *Umwelt* is transformed, expanded and constrained by communicational, technical,

linguistic, social and cultural phenomena, so that new forms of cognition (including reflective knowledge and science) appear.

« 12 » The term "enaction" is now fashionable, loosely associated or even confused with "embodied cognition" or "extended cognition." Very early on, John was trenchantly aware of the dangers of that normalization of the term: renouncing the exigencies and the radicality of what *he* meant by "enaction." John's version of enaction articulated together

a The autopoietic theory of life (Humberto Maturana & Francisco Varela), associated with a processual ontology (Gilbert Simondon, Alfred North Whitehead);
b Phenomenology and first-person approaches to consciousness and experience;
c The transformational character for cognition of technological mediations and social institutions, such as public language, writing, money, or external representations (Emile Durkheim, Jack Goody, Julian Jaynes, and Alfred Sohn-Rethel were important influences on him);
d Epistemological constructivism, as entailing a new way to see and do science, beyond objectivism, positivism, and the fact/value dichotomy. The way we conceive cognition should resonate with our own experiences of what we are as living and social creatures.

« 13 » Reflexivity was a basic exigency for him: the fundamental value of science is not the results, theories and models it produces (even though they can be important), but that when we do science (including cognitive science), we not only study a particular topic but also contribute to the enactment of what we are. Science informs us about some phenomena, but it also informs us about ourselves, as observers and inquirers. With constructivism and enaction, the knowing subject is an inescapable part of what is studied, and this is perfectly clear in cognitive science (cognitive agents studying cognition). Consequently, if one feels uneasy about or a contradiction between how a theory of life or cognition describes what we are, and the way we experience ourselves as living and cognitive agents, this contradiction should be taken seriously. The conflict is genuine, not illusory. It shows us that the theory is incomplete, and that the search for another alternative is totally justified.

« 14 » In 1994, still as a CNRS researcher, he joined the Université de Technologie de Compiègne and played a major role in the development of the cognitive science program in the human sciences department of this university. Along with his colleagues Véronique Havelange (who was also his wife) and Charles Lenay at the COSTECH laboratory, he spared no effort to establish a European research community on enactive cognitive science, which resulted in the organization of the CNRS Summer School "Enaction and Cognitive Science" in 2006, and the publication of a collective book based on it (Stewart, Gapenne & Di Paolo 2010).

« 15 » In 2006, he officially retired from the CNRS. However, this did not put an end to his research activities: publications, conferences, weekly attendance at seminars in Compiègne, informal conversations and heated exchanges with colleagues, friends, and students, participations in various associations and journals including *Intellectica*, the journal of the French Association for Cognitive Science (ARCo). He continued to develop his lasting interests in the social dimensions of knowledge and cognition (Stewart 2014b), cognitive science and theoretical biology. In relation to the scope of his works and interests, one cannot but be amazed by the number of people with whom John co-authored papers. The list includes

- Paul Bourgine (Bourgine & Stewart 2004);
- Matteo Mossio and Giuseppe Longo (Mossio, Longo & Stewart 2009);
- Tom Froese (Froese & Stewart 2010);
- Charles Lenay (Lenay & Stewart 2012);
- Myself (Steiner & Stewart 2009);
- Francisco Varela and Antonio Coutinho (Varela, Coutinho & Stewart 1993).

For more publications see https://cepa.info/author/stewart-j. An exhaustive bibliography of John's works is currently in preparation.

« 16 » In continuity with his existentially engaged conception of scientific research, he also reflected upon the contemporary ecological crisis and our inability to apprehend its radicality (Stewart 2018). His last book, *Breathing Life into Biology*, was published in 2019.

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