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# Integrated management systems for enhancing education for sustainable development in universities: a memetic approach

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## ABSTRACT

There is a need for new approaches for enhancing education for sustainable development in universities. Memetics, which is about effective pathways of communication, could be such a new, promising approach. Quality assurance is required in universities to secure and improve education, which could be another approach. The aim of this study is to look into whether and how frameworks for processes and procedures for quality assurance, such as management systems, could be utilized to promote higher education for sustainable development. The study approaches this from both a theoretical and a practical standpoint. An evolutionary perspective was chosen, considering higher education for sustainable development and management systems as memes, or basic units of cultural replication. The practical context was studied by looking into how 11 universities in the Nordic countries have enhanced ESD with management systems. We found that both higher education for sustainable development and management systems could be considered successful memes and that management systems could be applied to enhance higher education for sustainable development.

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## 1. Introduction

The aim of the UN Decade of Education for Sustainable Development (DESD) 2005–2014 has been to integrate education for sustainable development (ESD) into all levels of education (UN DESD, 2011). Acquired skills by graduates from higher education (collectively referred to in this paper as “universities”) should, thereby, include the ability to choose the best actions after considering the social, economic and environmental benefits and drawbacks. Although higher education for sustainable development (HESD) necessarily involves cross-disciplinary approaches, and should therefore interest representatives of a multitude of disciplines (Lozano et al., 2013; Rieckmann, 2012; Svanström et al., 2008), faculty are unsure if the DESD objectives will be achieved. A

survey revealed that less than half of international ESD experts believed that the action goals for the second half of the DESD will be realized at a satisfactory level (Gross and Nakayama, 2010). Should this be true, either the goals set have been too ambitious, the efforts to enhance ESD have been too weak, or the methods to promote ESD insufficient.

Leal-Filho (2011) identified four critical challenges for enhancing sustainable development (SD) in universities. Firstly, SD should be interpreted more broadly so that each individual understands the role of SD. Secondly, SD should be made an understandable goal for a high diversity of interested parties, such as various professions and nations. Thirdly, tangible projects are needed in order to help understanding reasons and results of achievements. Fourthly, there is a need to increase support for SD promotion, both in terms of financial support and commitment.

Lozano (2006) identified methods by which to overcome barriers to change, and argues that transdisciplinary and multi-stakeholder approaches could be used to enhance SD and engaging top-level management is essential. Waas et al. (2010) identified 22 content with process related characteristics of university research for SD, which can be applied as a frame of reference by various university stakeholders interested in (re)orienting their research towards SD. Environmental, safety and security management is one of the identified research characteristics or methods.

*List of acronyms:* DESD, Decade of Education for Sustainable Development; EMS, environmental management system; ESD, education for sustainable development; HESD, higher education for sustainable development; IMS, integrated management system; ISO, International Organization for Standardization; MS, management system; QMS, quality management system; SD, sustainable development; TQM, total quality management.

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They also propose that the in-depth meaning of these characteristics and the way they could be handled in a real university research context should be studied.

In this study we investigate whether memetics (refer to Dawkins, 1976), applied here as the study of effective communication within human communities, may prove useful for ESD promotion in universities. Following the suggestion of Waas et al. (2010), we also analyse the situation in a real context at 11 universities by looking into how they have enhanced ESD with management systems (MSs).

Quality assurance requirements range from national to international standards and guidelines (Ewell, 2010; Kliot and Bykovskaya, 2011; Yuan, 2010). Quality, environmental and integrated MSs have been developed by some universities as a response to quality expectations (Federkeil, 2008; Pratasavitskaya and Stensaker, 2010). Pratasavitskaya and Stensaker (2010) observed that, although terminologies may differ, quality management is basically similar in different universities. They found at least three explanations for the observed variance: 1) the research tends to be performed from multiple perspectives; 2) the published studies often focus on a single case; and 3) a general scepticism towards the use of more general quality management approaches prevails, because they are not seen as suitable for universities. In this study we have tackled these shortcomings by including practical examples from several universities, and by focussing on the advantages of both ESD and MSs for universities. As HESD is an interdisciplinary field of study, we approach the topic from multiple perspectives.

## 2. A memetic approach to enhancing higher education for sustainable development using management systems

ESD has already been adopted by many universities worldwide (UNCSD, 2012). The same is true for MSs, which are frameworks of processes and procedures used by management to ensure tasks required for quality assurance (Federkeil, 2008; Pratasavitskaya and Stensaker, 2010). This section examines some possibilities for considering HESD itself and different MSs as memes.

The literature review was done using among others Scopus and Emerald, and benefiting by a literature list for a PhD course in evolutionary economics.

### 2.1. The basics and relevance of memetics

Since the end of the 19th century, the evolutionary theory has had a great and continuing impact on many scientific disciplines. In economics, evolutionary ideas have been used to explain the evolution of human societies and industrial organizations (Hoefstadter, 1944; Nelson, 1995). Early pioneers of the evolutionary theory included Darwin, who introduced the concept of natural selection, and Spencer, who applied Darwin's approach to human societies (Currie and Mace, 2011). A century later, in the 1970s, there was a rebirth in the popularity of biological approaches in the social sciences, largely due to the rise of sociobiology (Wilson, 1975). The Darwinian principles were considered providers of an essential general framework for understanding population systems (Hodgson and Knudsen, 2008).

The concept of "meme" was introduced by evolutionary biologist Richard Dawkins (Dawkins, 1976). Predecessors of the concept can be found around the turn of both the 19th and 20th centuries, in various analyses of cultural evolution; Thorndike was possibly the first to define "cultural imitation" in 1898, and Baldwin used the term "social heredity" in the beginning of the 20th century (Blackmore, 1999). According to the memetic theory, humans are packs of neurons and memes; genes are instructions coded in molecules of DNA, and memes are defined as elements of culture

that are imitated, self-replicating ideas, or views, or instructions coded in human brains or artefacts like books or pictures (Gill, 2012; see Fig. 1). For something to count as a replicator, it must express the characteristics of variation, selection and heredity. Memes express variation (children's stories, for example, have many variations), selection (the best stories will be passed on) and heredity (the stories are transmitted essentially unchanged) (Dawkins, 1976).

The memetic theory has been applied primarily in the fields of organizational culture, innovation strategy, and mergers (Gill, 2012). Although many researchers have welcomed the new concept (Blackmore, 1999), there is no lack of criticism against it. According to Elster (1989), the difference is that, while populations in nature adapt slowly to their environment over time, companies must be constantly in tune with their economic environment, which requires the ability to adapt quickly and even return to an earlier state, a fact that is not possible in an essentially irreversible biological evolution. According to Constant (2000), however, it is not clear what evolves in technological and scientific change, or on what grounds or at which particular level selection might be said to occur. Neither is it properly defined what counts as a useful adaptation. Gabora (2011) criticized the emphasis on competition in the theory of memetics, and presented cultural evolution instead as a process based on cooperation between individuals. Nelson (1995) noted that the biological analogy by itself is not sufficient, since, in companies, other processes such as individual learning and organizational adaptation take place at the same time. Whitmeyer (1998) claimed that memes are not independent from our genes and that morals are independent from both genes and memes. According to John (2003), the role of imitation has been exaggerated in memetics; for example, in politics many decisions are not a result of imitation but of power.

In this paper we accept that the meme is a controversial concept, but at the same time consider that there is much to be learned from memetics in its emphasis on factors that promote the effective diffusion of ideas and other innovations in human societies, especially in universities that have to adapt to changes in society. Fig. 1 depicts the main differences between memes and genes based on the theory of Dawkins (1976), and Blackmore (1999) and the identified criticism.

The choice of categories in Fig. 1 was compared with earlier studies. We conducted a search on Scopus (on June 28th, 2013) with the keywords "meme and gene", for which 27 articles were found; and the keyword "memetics", for which 36 articles were found. Of the articles, four (Guillo, 2012; Kvasnička, 2003; Tanaka, 2002; Wilkins, 1988) explored genes and memes, and three of them included the categories in Fig. 1. Six (Brand, 2010; Brooks, 2008; Bryson, 2008, 2009; Paull, 2009; Whitty, 2005) presented a theory for memetics. All six articles included the categories in Fig. 1.

In the current study, we have adopted the widely accepted view that "prevalence in human minds" is the basic criterion for a meme's success, even though Kvasnička (2003) and Brand (2010) presented that there might be a coevolution between genes and memes. We have also adopted the meme map tool proposed by Paull (2009). According to Paull's model, the life span of a meme consists of a meme gestation zone, a meme birth point and a meme development zone.

The rate of diffusion of a meme is dependent on its content (variation), frequency of acceptance (selection), and persistence of content from source to recipient (heredity) (Blackmore, 1999). Typical examples of successful memes are altruistic, cooperative and generous ways of behaviour. For example, a professor who generally invests his/her time and provides guidance to his/her students is likely to be very successful in transmitting his/her views (i.e., memes) to even more students. Another characteristically successful meme is the promotion of cooperative behaviour

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