The Holon/Parton Structure of the Meme, or The Unit of Culture

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INTRODUCTION

This chapter identifies the formal structure of *the unit of culture*,[1] a unit also known as the *meme* (Dawkins, 1976) as: the *holon/parton* - as a resolution of a longstanding open problem in both Information Science and Information Technology[2] and across all domains of culture including the media, the arts, entertainment and science. The holon/parton is a fractal hierarchical structure, the formation of which is governed by the laws of physics as proposed in (Wilson 1998). Previously there was no universal definition of the unit of culture, resulting in more than three hundred varying definitions of culture (Baldwin et al 2006) and no consensus (van Peer et al 2007).

This chapter thus presents *a universal structure for the unit of culture* (the meme) in order to facilitate commensurate empirical analyses of culture (and its component parts, or units) across disciplines - and to enable structural, functional and behavioral comparisons between biocultural artifacts (memes). This allows for the accurate tracking and understanding of the transmission of culture including within the domains of Information Science and Information Technology. The structure of the unit of culture - viewed as the *holon-parton* - is a conceptual, theoretical, practical and scientific tool for identifying and analyzing units of culture (as parts and also as wholes) within all symbol systems in culture.[3]

BACKGROUND TO THE PROBLEM

Knowledge (i.e., retained information, or culture) emerges from creative[4] biocultural human systems at an exponential rate. As two examples: the number of published scientific papers doubles every nine years (Bornmann & Mutz, 2014) and the number of new books published each year (approximately 700,000 per year in the U.S.) doubled in the five years from 2008 to 2012 (Bowker, 2013). The question emerges: What structural rules (laws) govern the formation of these units of culture (i.e., research papers, chapters, books, phrases, words) - or ideas, processes and products?

Knowledge is retained information, and is considered 'culture'. However 'culture' has been a problematic term as there is currently no consensus across all of domains and disciplines on the term. In 1952, 164 definitions of culture were extant (Kroeber & Kluckhohn, 1952) and in 2006 the list had been extended to over 300 definitions (see Baldwin, Faulkner, Hecht, & Lindsley, 2006, pp. 139-226). The article 'Evolution of Culture, Memetics' in the *Encyclopedia of Complexity and Systems Science* states 'The lack of a universally accepted meme definition and the vagueness of meme boundaries… indeed make empirical studies less evident' (Heylighen & Chielens, 2009, p. 3217).

The following identification of the structure of the unit of culture (the meme) - namely the *holon/*

parton - provides a solution to the problem of defining and thus analyzing culture and therefore has universal (multi-, cross- and trans-disciplinary) applications in allowing for comparative empirical studies of culture (or knowledge, or memes).

THEORETICAL PERSPECTIVE

The theoretical perspective adopted in this chapter is Evolutionary Systems Theory.[5] *Introduction to Systems Philosophy: Toward a New Paradigm of Contemporary Thought,* Laszlo (1972) incorporates Living Systems Theory (Miller, 1968)[6] and Bunge's hierarchical structures (Bunge, 1969) to provide a framework for understanding universal structures spanning from subatomic physics, through biology, chemistry, organisms, and social systems to the cosmos (Laszlo, 1972, pp. 29, 177-180). An illustration of this view is shown in Figure 1.

In this view the largest-to-smallest levels of structural hierarchical organization are all governed by three laws of physics, namely three laws of holarchies (see below). Laszlo (1972) employs Koestler's holon theory in systems (Laszlo, 1972, pp. 55-118, 252, 255, 272-114), as Koestler had previously extended General Systems Theory (Koestler, [1978] 1979, pp. 31-32; von Bertalanffy, 1950) from biological systems to social holarchies (i.e., hierarchies of social holon/partons) and to linguistic hierarchies (Koestler, [1964] 1989, pp. 287-290; [1967] 1989, pp. 103, 198-109; [1978] 1979, pp. 27-62). As noted in the *Key Terms and Definitions* section (below) in simplest terms the *three laws of holarchies* (three key behaviors of holon/partons) are as follows.

As *units*, holon/partons:

- Compete, and/or co-operate (and/or engage in *co-opetition*) 'sideways' – namely with other holon/partons on the same level;
- Integrate 'upwards' – namely into the larger holon/parton 'above'; and
- Control and command the holon/partons on the level 'below' – namely their own component holon/partons

Figure 1. The Evolutionary Systems View, from the multiverse through to subatomic particles (derived from Laszlo 1972); image copyright IGI Global (Velikovsky 2016, p. 211)
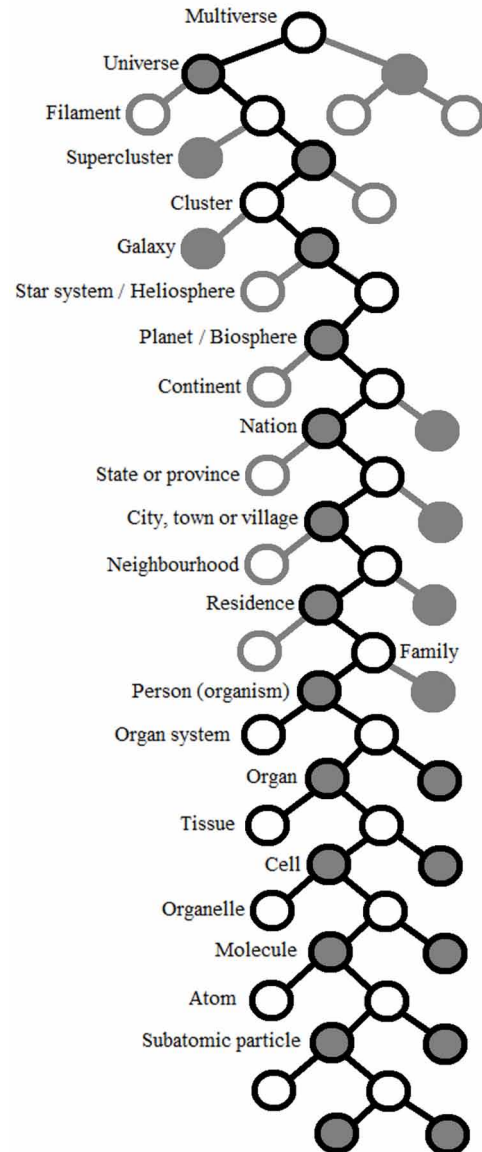
This basic concept of 'the three laws of holarchies' is illustrated in Figure 2.

These three laws are laws of physics (and of systems) applying both to biology and also as seen here in bioculture (aka 'culture') a possibility suggested in *Consilience: The Unity of Knowledge* (Wilson, [1998] 1999, pp. 60, 291, 293).

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