Chapter 6
The Role of Ecological Cognition for Supporting Webometrics:
Towards "Serendipity Engineering for Seductive Hypermedia" and "User Analysis Using Socialnomics"

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ABSTRACT

This chapter investigates the long-established ecological cognition framework and updates it to better account for the advances in digital transformation. To do this, two concepts are explored. The first, 'serendipity engineering for seductive hypermedia', looks at how to design information systems to account for the pleasant occurrences that happen in offline environments studied by those in sales and marketing where beneficial outcomes often occur by chance encounters. The second, 'user analysis using socialnomics', looks at how a parametric user model based on the ecological framework can be used to understand users of information systems from the point of view of supporting a digital economy of users. A number of additional equations are developed using socialnomics that can be applied to digital transformation based on the parametric user model, including to calculate probability of seduction and probability of serendipity in an information system. The parametric model presented has great applicability for information and communications technology solution providers.

INTRODUCTION

It has been argued that one of the greatest challenges in intelligent systems design is to harness "technologies to verify and apply longstanding theories from distributed AI, agent systems, and other areas of networked intelligent systems research" (Willmott, 2004). It has been argued that intelligent systems research is required to "prevent users being overwhelmed by the complexity of the systems with which they will be asked to interact" (Steventon & Wright, 2010). One approach to intelligent systems research is to designing intelligent systems that think and act like humans (de Lope, 2007) is ecological cognition (Bishop & Goode, 2021).

Ecological Cognition

An essential premise of ecological cognition is that the world which we observe is socially constructed from how we perceive it and we then construct an alternative reality, whether it be called our unconscious or sub-conscious, that is more consistent with the reality we would prefer to perceive (Bishop, 2007; Hutchins, 2000; Jensen, Thomas W., 2017; Jensen, Thomas Wiben & Greve, 2019; Johansson Falck, 2018). Through using these, how our reality is constructed can be described, including by drawing on the dedicated multimedia studies literature, such as that recommended elsewhere (Cunliffe & Elliott, 2005). The most recent ecological cognition framework is presented in Figure 1 is associated with a parametric user model in Equation 8 (Bishop & Goode, 2021; Bishop, Kommers, & Bechkoum, In Press), which provides an exemplary means to create intelligent systems even compared to earlier embodiments (Bishop, 2013).

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