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**Encoding and Decoding in the Human-Environment Discourse**

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**Abstract**

The field of media and communication research has traditionally been premised on the study of *media* systems (Hallin & Mancini, 2004) – configurations of technologies, institutions, and practices carrying political and cultural discourses, which serve to articulate the common as well as conflicting interests of societies in public (Habermas, 1989[1962]). In the subfield of environmental communication research consolidated over the last few decades (Comfort & Park, 2018; Hansen & Cox, 2015), that premise has guided a growing number of studies along the lines of classic communication models, examining news and other media institutions producing and circulating quantitative patterns and qualitative thematics of environmental information to national and international publics poised to act on the messages being sent about, and by, their habitats. With society-wide and worldwide digitalization underway, media systems are becoming constituents of wider *communication* systems (Jensen & Helles, 2023), which challenges the self-conception of the field in responding to the accelerating climate crisis (IPCC, 2023). At present, an Internet of Things (IoT) is emerging as a distinctive communication system (Bunz & Meikle, 2018; Howard, 2015), which carries new categories of information about the natural environment; communicates the contribution of industries, agriculture, transportation and energy systems, and more, to a green transition (or not); and enables agency at a distance in unprecedented ways. Standing on the shoulders of Stuart Hall’s (1973) seminal intervention, “Encoding and decoding in the television discourse,” this paper outlines a model for environmental communication studies about IoT and other digital communication systems.

The first section of the paper briefly reviews the trajectory and continued relevance of the encoding-decoding model, even as classic reception studies have been subsiding since the 1990s (Jensen, 2021). The main section adapts Hall’s (1973) model to the study of discourses about and with the natural environment through reference to another nascent subfield – human-machine communication (Guzman et al., 2023). Whereas the term ‘discourse’ centered attention on the ‘codes’ that variously enable the processing of information by machines and of meanings by humans, Hall’s contribution duly looked beyond media contents to provide a comprehensive systematic of three factors which condition the encoding and the decoding of discourses: frameworks of knowledge, structures of production, and technical infrastructures. Depending on the local and global institutionalization of these three factors for the Internet of Things, it potentially provides a feedback or early-warning system for accomplishing the green transition, as suggested so far by a technical literature on ‘green IoT’ (Zhou et al., 2021). The third and final section outlines a research agenda for further environmental communication research that takes on board the transition from media to communication systems. The conclusion of the paper addresses a set of ethical and political issues associated with ‘green IoT’ as a “vast machine” (Edwards, 2013) of climate modeling, which follows from the basic feature of digital systems that individual as well as corporate users leave behind bit trails within the machine (Jensen & Helles, 2017).

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