

Chapter XXIII

Actor Network Theory and IS Research

Amany Elbanna
Loughborough University, UK

ABSTRACT

Actor network theory is a sociological theory that emerged as a useful vehicle to study technology and information systems. This chapter gives the reader some background about the development and emergence of this sociological theory. It reviews some of the premises of the theory and introduces the reader to key concepts and ideas. It also presents some of the critique of the theory, ANT authors' response, and the implication on IS research. This chapter also gives the reader an overview of the application of ANT in different streams of IS research.

INTRODUCTION

Actor Network Theory is one of the emerging theories in IS research. It advocates the intertwining of the social and technical agency to constitute a performing network. This chapter provides a general overview of the premises of the theory and the main ideas of the founding authors. It also reviews the main areas where ANT is criticised in order to indicate the theoretical shortcomings and expected strengths that the theory offers for IS research. The chapter ends with a critical review of ANT's application in the IS field.

BACKGROUND

Actor Network Theory appeared more than two decades ago in the sociology of science, mainly to investigate the emergence of scientific knowledge. One of its earliest landmark publication is Latour and Woolgar's (1979) *Laboratory Life*, which was an immediate success and is said to be "the best known book in science studies" at that time according to Susan Star (Star, 1988). This book documents the creation of a scientific 'fact' through an ethnographic study of a scientific laboratory, which opened the door to a series of laboratory

studies and descriptions of ‘fact-making’ that follow this ethnomethodological approach.

The theory draws on a variety of fields, such as linguistics (specially semiotics), anthropology, and the ethnomethodology tradition in sociology. It consistently argues that scientific knowledge is a product of a network of heterogeneous materials that is partly social, partly technical, and partly natural. Its field of study is extended from investigating the creation of scientific knowledge to studying technology and the construction of technological artefacts. Its focus is also extended from the production of knowledge towards agents, social institutions, machines, economic markets, and organisations to form a comprehensive theory. ANT creates a ‘thick description’ of the interaction between technology and society involving a wealth of detailed information (Bijker, Hughes, & Pinch, 1987), as well as a distinctive view of the constitution of society.

The development, amendments, and grounding of the theory took place over a relatively long period through the collaborative and cooperative work and discussions of a group of sociologists. Most of them—especially in the 1980s—were associated with, and in several cases located at, the Centre de Sociologie de l’Innovation of the Ecole Nationale Supérieure des Mines de Paris. These pioneers of the theory include Bruno Latour, Michel Callon, John Law, Madeleine Akrich, Steven Woolgar, and Michael Serres (Law, 1992). Much literature was generated by this activity; as Collins and Yearley commented in the early 1990s, “It would not be possible to deal with six books, five edited volumes, and about sixty articles in anything less than a Ph.D thesis” (Collins & Yearley, 1992b). Over a decade later, that number has at least been doubled.

ACTOR NETWORK THEORY: CONCEPTS

ANT has passed through constant reviews, extensions, and amendments from its key authors.

The theory’s developers have also continuously changed topics, field sites, styles, and concepts in their journey to establish their approach within sociology. This makes it a moving target (Latour, 1999a) and reviewing its concepts is far from a straightforward task. The theory has also changed as it moved from one domain to another and from one researcher to another, in time and place. Law, for example, admits that the form taken by ANT of Paris in the 1980s is quite different than the ANT of the 1990s that is used in different places (Law, 1997).

Although it is possible to identify certain common ANT preoccupations and concerns in the literature, “there is no orthodoxy, no one “right way” of developing the approach. This also means that Actor Network Theory is not a single orthodoxy, a fully consistent body of writing with its holy scriptures” (Centre for Science Studies, 2001). As there is no ‘unity’ for the theory and both commonalities and differences coexist between ANT authors, it is the researcher’s task to decide which part of the theory to review and apply in his study. This section introduces the reader to the ANT concepts of society, network, and translation.

Society

ANT fundamentally reviews the notion of society by arguing that “society is constructed, but not just *socially* constructed” (Latour, 1994b, pg.793; 1999b, pg 198). It suggests that society is constructed through intertwining networks of heterogeneous materials: some of these are human and others are non-human, and their intertwining constitutes ‘the social’. This contends that all artefacts incorporate social relations and it is not possible to define a social structure without the integration of non-humans into it, as every human interaction is sociotechnical (Latour, 1994b).

In order to account for humans and non-humans, and to treat both the social and the technical symmetrically, ANT authors developed a distinctive language that is intentionally “neutral”

15 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/actor-network-theory-research/35843

Related Content

Radio Frequency Identification Technologies and Issues in Healthcare

Amber A. Smith-Ditizio and Alan D. Smith (2018). *Encyclopedia of Information Science and Technology, Fourth Edition* (pp. 5918-5929).

www.irma-international.org/chapter/radio-frequency-identification-technologies-and-issues-in-healthcare/184293

Computational Color Constancy

Simone Bianco and Raimondo Schettini (2015). *Encyclopedia of Information Science and Technology, Third Edition* (pp. 5879-5886).

www.irma-international.org/chapter/computational-color-constancy/113045

Piezoelectric Energy Harvesting for Wireless Sensor Nodes

Wahied G. Ali Abdelaal (2015). *Encyclopedia of Information Science and Technology, Third Edition* (pp. 6269-6281).

www.irma-international.org/chapter/piezoelectric-energy-harvesting-for-wireless-sensor-nodes/113083

Augmented Reality Based E-Learning Applications

Utku Kose (2015). *Encyclopedia of Information Science and Technology, Third Edition* (pp. 7507-7518).

www.irma-international.org/chapter/augmented-reality-based-e-learning-applications/112452

A CSP-Based Approach for Managing the Dynamic Reconfiguration of Software Architecture

Abdelfetah Saadi, Youcef Hammal and Mourad Chabane Oussalah (2021). *International Journal of Information Technologies and Systems Approach* (pp. 156-173).

www.irma-international.org/article/a-csp-based-approach-for-managing-the-dynamic-reconfiguration-of-software-architecture/272764