**INTRODUCTION TO ACTOR NETWORK THEORY**

**by Simon Moss**

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| **Introduction** |

Actor network theory, or ANT, is not a theory as such. Instead, actor network theory is really an approach, or even a mindset, promulgated by Bruno Latour, Michel Callon, John Law, and other scholars during the 1980s. In particular, to explore some phenomenon—such as conflicts, changes, and other events, researchers who adopt this approach examine, and then describe, how specific networks of people, organizations, animals, objects, texts, and many other materials shape and affect one another. These descriptions can then generate a more comprehensive and nuanced understanding of how some setting, event, or phenomenon begins, evolves, persists, and evaporates over time.

**Historical priorities**

Historically, ANT was initially utilized to study localized settings, such as boardrooms or science laboratories. Specifically, ANT was often applied to understand how particular scientific principles and technological advances evolved.

**Unique features**

Perhaps the most unique and contentious feature of ANT is that researchers who adopt this approach treat humans and other material actors equally. They do not afford humans privileged status. To understand some setting, phenomenon, or event, they allocate equal attention to humans, texts, objects, and other materials. For example, these researchers might recognize that a sign in a laboratory and a manager might affect technicians to similar extents.

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| **An example: ANT analysis diagrams** |

Before learning about actor network theory, you could first read about ANT analysis diagrams, a technique that Payne (2017) recommends. These diagrams facilitate the application of actor network theory. Furthermore, these diagrams illustrate some key features of ANT.

**Why do individuals enrol in a PhD?**

To illustrate these ANT analysis diagrams, consider a researcher who wants to explore the response of peers, academics, teams, and other entities to PhD candidates who experience a misfortune in their lives. The researcher was informed that a particular candidate had recently experienced a miscarriage. To explore the response of various individuals and teams at the university, the researcher

* interviewed colleagues and supervisors of this candidate
* read a chain of emails from these individuals, after receiving their consent
* followed the movement of a Hallmark card that was distributed to colleagues and supervisors—a technique called follow the actor (Latour, 2005)
* scrutinized relevant university policies, and
* observed several events that were organized to support this candidate

To analyse the data, the researcher applied several key principles. Specifically, the researcher

* attended equally to the data about humans and data about other relevant groups, materials, texts, and artefacts.
* read and rearranged the data repeatedly
* refrained from imposing categories or themes prematurely—a tendency that can stifle insight (Mitchell, 2019)
* arranged some of the materials into a collage (cf. Crang, 2003), partly to override the temptation to conceptualize these events as a linear sequence
* oriented attention to competing or multiple perspectives (Mitchell, 2019)

Once this procedure was completed, the researcher constructed a diagram, called an ANT analysis diagram (Payne, 2017), to represent some of the associations or connections between the various actors: the humans, materials, texts, and other entities that initiated, modified, and sustained the support towards this candidate. The following figure is an extract of this diagram.



This diagram contains some key features that are helpful to ANT. For example

* the rectangles are the actors—humans and materials that are relevant to the circumstance
* most of these actors are assumed to be fluid: their properties will evolve, depending on the relationship with other actors.
* actors that are immutable are surrounded by double lines; no immutable actors appear in this diagram
* actors that are especially unpredictable, like fires, are surrounded by dotted lines
* diamonds clarify the relationship between two actors
* rectangles with rounded edges represent the properties of actors
* boxes within boxes—although not included in this diagram—shows how actors may constitute a network of sub-actors, like cars entail many connected parts or organizations entail many interrelated teams

Even this simple diagram offers some insight into the forces that initiate or disrupt a network. To illustrate, whereas a friend of this distressed candidate inspired peers to develop a website, the supervisor, after consulting a policy, mobilized a committee, and the committee prohibited the website. Admittedly, in a typical study, the researcher would construct several distinct, but usually inter-related, networks to describe a circumstance.

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| **Key assumptions that underpin ANT** |

ANT does not comprise a particular sequence of research methods. And indeed, at least initially, this approach might seem hazy. But, gradually, as you read more studies that have applied this approach, you will start to appreciate the benefits and perspectives of ANT. The approach will begin to crystalize in your mind. To help you in this endeavour, the following table outlines some the key terms, assumptions, and practices.

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| Terms, assumptions, and practices | Details and justifications |
| The aim of research |  |
| When applying ANT, researchers strive to describe the initiation, evolution, maintenance, and dissolution of some phenomenon—from specific behaviours or events to large organizations and social movements | * They might, for example, want to understand how people organize a petition or establish a gang |
| To achieve this goal, researchers attempt to describe how relevant humans, concepts, and materials are related to each other in a dynamic network. |  |
| In this endeavour, researchers actually treat humans and other materials equally, called **symmetry** | * If researchers assign special privileges or status to humans, they can overlook the key functions of other materials, like signs, documents, or other artefacts |
| Therefore, in this model, an actor is anything that elicits or undergoes some change—or performs some function—with one or more other actors | * Actors can include people, organizations, objects, concepts, texts, symbols, and artefacts * Most researchers actually utilize the term actant instead of actor—primarily to demonstrate that actors do not need to be human or sentient * Admittedly, contrary to the beliefs of some critics, researchers do not assume that every actor, such as humans and objects, is equally influential. * But, they assume these differences should emanate from the data and analysis rather than be assumed in advance * Like all actors, humans and materials affect each other. A broken computer can elicit frustration in humans. But the humans can then break the computer |
| Actors cannot be understood or assigned meaning outside their relationship with other actors | * For example, the meaning we attach to a gun changes if seized by a police officer instead of a burglar. * That is, we can blame conflicts on only the association or relationship between a gun and a person—rather than either actor alone |
| Networks |  |
| When researchers adopt ANT, their objective is to describe the relationships between all the relevant actors—that is, how the actors affect each other | * This series of relationships between actors generates is called a network |
| The relationships between these actors, and hence the networks, are assumed to evolve continually | * Because of this shift, researchers strive to describe only an immediate phenomenon rather than uncover objective, universal truths |
| If the relationships between these actors are maintained, this network will seem stable. | * For example, the parts of a car can be regarded as distinct actors in a network * While these parts are effectively coordinated, the network—the car—is perceived as stable * Once these parts are no longer effectively coordinated, the network or car dissolves; the driver then perceives the parts as distinct entities |
| As this example with the cars demonstrates, everything can be considered as either an actor in a network or a network | * When researchers explore how people travel to work, the car is merely an actor within this network * When researchers explore how car parts interact with one another, the car parts are regarded as the actors and the car is regarded as the network. The parts are like black boxes; that is, the researcher is oblivious to the assemblages of each part * Yet, the parts are then examined closely, the black box is essentially opened * Proponents of actor network theory inspire researchers to identify black boxes in the settings they study—and then to explore the assemblages within each box. |
| Knowledge in this network does not reside with one person or text but is a product of the entire network | * Knowledge is derived from the relationships between these disparate people and materials |
| The characteristics of actors, such as the beliefs and roles of individuals, need to be changed and updated continually to maintain connections or relationships with the other actors. | * These changes might include negotiations, persuasion, or manipulations * Collectively, these changes are called **translations** |
| This translation entails four distinct phases or moments (Callon, 1986): problematization, interessement, enrolment, and mobilization | * During problematization, an actor—often an individual or team—identifies a specific problem that needs to be solved and convinces other actors to form a network to solve this problem * During interessement, an actor assigns roles to actors—including individuals and materials—roles these actors could perform to solve this problem * During enrolment, the other actors begin to embrace, modify, and coordinate these roles; the actors might negotiate these roles with one another * During mobilization, an actor ensures that all other actors are represented by one or more legitimate speakers |
| Researchers do not strive only to describe the network of relationships between actors but also the flow of interactions across this network | * They might, for example, strive to describe the flow of information across a network |
| Usually, to describe some setting, event, or phenomenon, researchers will construct several networks rather than only one network | * They might construct a diagram that depicts the relationship between these networks * In these diagrams, they might represent a complex network as a single point or node—called **punctualization**. * When punctualization is applied, the network, in essence, becomes an actor of another network |
| The research procedure |  |
| To begin the collection of data, researchers usually choose and then follow one actor or case study | * The actor might be a key human * Or the actor might be some important material—such as an application form that is distributed across individuals |
| The researcher then explores how this actor is related to the other actors | * The researcher might conduct interviews, analyze texts, observe events, or record video footage |
| The researcher orients their attention to actors that initiate some change or leave some trace | * For example, some humans might only distribute a document to someone else * These humans do not leave a trace and are called intermediaries * Other humans might highlight parts of this document first and then distribute this document * These humans do leave a trace and are called mediators * Material objects can also be intermediaries or mediators. * Researchers tend to focus their attention on mediators rather than intermediaries |

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| **Examples of ANT** |

After reading the previous section, ANT might still appear somewhat hazy. To clarify your understanding of ANT, you should read about some typical projects in which ANT was applied. The following table outlines some of these examples.

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| Research question that  ANT was applied to investigate | Key details |
| How do medical practitioners decide which antibiotics to prescribe in hospital (Mitchell, 2019) | * Examined a pilot study, conducted by medical students, on routines that practitioners apply to prescribe antibiotics in hospitals * The researcher followed a clipboard that contained information that various stakeholders, such as medical consultants and nurses, use to reach decisions around antibiotics * The researchers showed how relevant information is often retained in separate places, impeding decisions |
| How do students decide whether to enrol in a computer course at university (Payne, 2017) | * The researcher uncovered many distinct networks—such as various actors in the university as well as public information—that sometimes interact with one another * The researcher also uncovered how concepts, such as intrinsic motivation affect commitment. In this example, the concepts of intrinsic motivation and commitment were regarded as distinct actors |
| How do scientists promote their work (Latour, 1983) | * This study describes the activities that Pasteur undertook to promote his work, such as how he persuaded other stakeholders—such as doctors and scientists |
| How do distinct stakeholders navigate conflicts over land conservation (Bennett, 2017) | * This study highlighted the agency of trees: for example, some posters indicated that “Birch trees are taking over” ascribing fault to the trees and not the local owners. * The community meetings are also actors that transcend individuals but demonstrate their own properties; they affect how people act * This study thus illustrates the range of actors that proponents of ANT might explore |
| How did milk evolve as an essential item in modern society (Nimmo, 2011) | * This example revolves around how many actors—the development of railways, the nature of cows, and many other features—cohered to contribute to the distribution and prevalence of milk |
| How do features of classrooms affect learning? | * When lecture rooms are flat rather than tiered, lecturers can shift around the room more readily * Because the chairs are attached to wheels, during tutorials, the lecturer will often roll to other students unobtrusively, without disrupting the conversation of other students. That is, because the height of this lecturer does not change as she approaches, the movement is not as conspicuous * The lecturer tended to rotate around the tables in a clockwise pattern, so her movements were predictable and regular * Lecturers may use digital projectors to display changing information and whiteboards to display material that is relevant to most of the lecture * Remote control devices and laser pointers enable lecturers to shift around the room, extending their presence across the space |
| Which characteristics and circumstances affect the distribution of tourists around the world (Dedeke, 2017; Jørgensen, 2017) |  |

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