What is a Network?

What are the Basic Elements of a Network?

We always encounter networks. They are everywhere. There are networks, for instance, at home, at school, in the community, in the church, in the workplace, at the malls, and in nature. There are even networks inside our own bodies (the cellular and neural networks, for instance). Furthermore, we always hear the word “network.” We often hear some people talking, for instance, about their social network (that is, their friends in Facebook) and about networking (usually in the business context). Gross and Sayama (2009, vii) observe that the said word is also “one of the most influential buzzwords seen in almost every corner of science, from physics and biology to economy and social sciences.” But what is a network? Let us begin with how some scholars understand it. For Anders Kariqvist (1995, 82), it represents “the idea of connections between entities in space.” For Charles Kadushin (2012, 14), it “contains a set of objects … and a mapping or description of relations between the objects or nodes.” And for David Batten (1995, vii), it is “a system in which some elements are connected to other elements in a systematic way.” For our purposes, we can think of a network as any system or group of interconnected people or things.

A network has three basic elements. The first are the actors (or nodes). They are the entities that are interconnected in some systematic way. Actors in networks are generally composed of humans (such as friends, peers, colleagues, co-nationals, and others), non-humans (such as computers, non-human organisms, ecological systems, and others), or both humans and non-humans (such as people who are operating machines). They can be individuals (such as individual persons and particular computers) or collectivities (like corporations, teams, universities, governments, or other networks).

The second are the links (or ties) among the actors. Any collection or group of objects is not automatically a network. What will make it a network is the existence of links among its objects or actors. Links refer to the connections among the actors in networks. They define the relationships the exist among the actors. Links can be any relationship like marriage, friendship, kinship, professional, and others.

The third are the flows, referring to the things that are being exchanged (given and received) by the actors through their links. They are, as it were, what flow or pass through the links. The actors are not connected without a reason. They are connected because there is something that they want to exchange with one another. Flows are usually information (data or knowledge) and resources (such as money, people, goods, and equipment). But flows may also be beliefs, power, norms, attitudes, and values.
Each of these components has certain attributes or characteristics. For instance, we can have a network where the actors are Filipino, female, and 18 years of age and above. Their links are their being K-Pop enthusiasts. And their flows are information about K-Pop (like updates on the lives of their favorite K-Pop artists and schedules of K-Pop concerts). Another, we can have a network consisting of Philosophy Departments in the Philippines, whose links are their interest in promoting Filipino Philosophy and whose flows are information about conferences and lectures, and resources that include publications, research materials, and philosophy lecturers. In some cases, the attributes of actors can also be the attributes of the links. In the case of a family network, for instance, the actors are family members and their links may just be their being family members.

What is a Local Network?

How are Networks Classified?

To understand the nature of local networks, we need to examine how networks are classified. We earlier noted that a network has three basic elements, namely the actors, links, and flows; and that each of these elements has certain attributes. Classifying networks usually simply highlights a certain attribute of their actors, links, or flows. Given that a network can have many attributes, a single network can thus be classified in various ways. Let us have, as an example, a network whose actors are male batchmates of ABC Elementary School. Their links is their interest in basketball. And their flows are information about basketball. How should we classify this network? In terms of actors, we can classify it as a male batchmates of ABC Elementary School network. In terms of links, we can classify it as a basketball network. In terms of flows, we can classify it as an information network (or to be more specific, a basketball information network). In what follows, let us examine some of the general classifications of networks (some of them shall be discussed in more detail in the following chapters).

Human and Non-Human Networks

Networks, in terms of their actors, can generally be divided into human and non-human networks. Human networks are networks whose actors are humans. Examples are networks involving family members, peers, classmates, colleagues, and co-nationals. On the other hand, non-human networks are networks whose actors are non-humans. Examples are networks involving televisions, radios, mobile phones, non-human organisms, computers, and railways. There are also networks that involve both humans and non-humans as actors. Examples are ecological systems that involve both human and non-human members of nature, and networks involving humans and machines such as those found in some factories.

Social and Computer Networks

Basically, what we call social networks are human networks, for when people connect with one another they are in effect socializing with one another. So social networks have been existing ever since
humans began to connect with one another. Nowadays, however, social networks are usually aided by technology (by facilitating the links), in particular using telecommunication networks like the internet and mobile phones, through e-mails and social networking websites like Facebook and Twitter. (Because of the current practice of social networking to use these websites, these websites are sometimes referred to as “social networks.”) With the use of these technologies, social networking has become convenient, fast, and wide-ranging.

A computer network is a group of interconnected computers exchanging information and sharing some other devices such as a printer. The range or geographical coverage of a computer network varies from a computer network at home and school to a computer network involving an entire country and whole world. As computer networks are usually made the models for studying networks, some usually associate the word “network” to computer network. Though different, social network is closely linked to computer network in that social networking today is done using computer networks such as the internet.

Local and Non-Local Networks

A standard way of classifying networks is in terms of their geographical boundaries or coverage. Networks, in this regard, are either local or not. Let us examine what this means particularly in the contexts of computer and social networks.

A local computer network corresponds to what is called LAN, which stands for local area network. A LAN covers a relatively small area such as a classroom, school, or a single building. LANs may be wired, wireless, or a combination of both. A LAN is wired when it uses the transmission technology of Ethernet, which connects devices through data cables. It is wireless when it uses the transmission technology of WIFI, which connects devices through radio waves. LANs are contrasted with WANs, which stands for wide area networks. A WAN covers a larger area, such as cities, an entire country, or the entire world. A WAN actually interconnects multiple LANs to cover a wide area. The internet is considered as the largest WAN. Though no longer recognized, an intermediary level between LAN and WAN was previously identified. It was called MAN, standing for metropolitan area network (which covered big cities).

What about local social networks? What is their geographical coverage? This is something that has not been clearly settled. For our purposes, we can take the local government as our model. After all, a government is a good representative of a social network. A local government is usually contrasted with a national government. In our country (with a presidential form of government), a local government is the kind of government in operation on the levels of a barangay, municipality, city, province, and region. The national government, in contrast, is the kind of government that manages the entire country. It is thus the central government managing all the local governments. In this light, a local government is any level of government below a national government.
We can understand the geographical coverage of social networks (at least in the context of our country) in a similar way. Specifically, we can understand a local social network as any level of social network below a national social network. A national social network covers the entire country, but local social networks cover all kinds of social networks below the level of the national social network. This will include all social networks on the levels of home, neighborhood, barangay, community, school, and city up to the levels of provinces and regions.

Once the geographical coverage of a social network goes beyond the national level and operates across many countries (or covers the entire world), it becomes a global social network. Thus, if your social network only involves your friends in your community or school, what you have is a local social network. If your social network involves all your friends in the entire country, what you have is a national social network. But if your social network involves all your friends in the world, what you have is a global social network.

It shall be observed that the coverage of local computer networks is smaller than local social networks. Once a computer network covers an entire city or region, it is no longer local; but a social network covering an entire city or region is still local. A computer network and a social network both covering an entire country, however, are both non-local. The computer network is classified here as WAN, and the social network is classified here as national. In the context, however, of the interest to analyze the political, economic, and social aspects of our local networks, what we are referring here are our local social networks.