Leadership is a subject that although it has been studied for years, a final definition of it has never been found. At this time, the most widely accepted definition is "a process by which leaders motivate followers towards a goal"; within this definition, however, there are many theories about how this process is carried out (Sorenson pg. 5). The path-goal theory of leadership is one of these theories. This theory gives leaders guidelines for how to give their subordinates direction to help them reach a specific goal. These guidelines vary depending on the follower's characteristics and the situation.

Path-goal theory is becoming more widely accepted by leadership researchers as the best leadership theory, but there are still many questions that are posed about it (Northouse pg. 97). What are these leaders and followers, and how does this theory change with different situations? What is a goal, and exactly what is a process? The answers to these and many other questions present path-goal leadership theory as an axiomatic system which involves proofs much different than those used in mathematical disciplines.

The first necessary component of an axiomatic system is to have undefined terms. In path-goal theory, the undefined terms are leader, follower, process, situation, and desire. The first four present themselves as more sensible since they are part of the most widely accepted current definition of leadership mentioned previously (Sorenson pg. 5). (Here it is important to note that using the terms definition and theory in the discipline of leadership are not the same as using these terms in the mathematical sense. In leadership these terms are used more loosely and interchangeably, but in mathematics definitions, theories, and other statements such as propositions and lemmas are on different levels of

importance.) Also since leadership itself is only a theory and not subject in which a final

definition has been reached, the objects involved in it, that is leaders and followers, must

not be defined. Process and situation must remain undefined since the number of

variables that determine these is so great (Northouse pg. 89-90). Desire however, seems

to be an easily definable term. It is the leader and follower's drive, but this is where the

problem arises: the word drive has not been defined. So the next question would be what

is drive? Well, it is a desire. Although there are other words that could define drive,

eventually an individual would always return to desire. The last necessary undefined

term is desire, since, in order to complete an activity, an individual, either a leader or

follower, must posses this.

Before it is possible to understand the axioms it is necessary to define some terms

in the mathematical axiomatic sense. First, a group is more than one leader or follower.

This definition is necessary in order to be able to talk about leaders and followers without

distinguishing one from the other. The second definition, motivation, utilizes the

meaning of group and is the effect one member of a group has on another, or on itself.

Motivation is a key part of leadership, and is one of the most studied aspects of it. The

process and how it ends are addressed in the next two definitions. The first, an outcome,

is what the group is motivated towards during the process, and the second, a goal, is what

the group desires to be motivated towards during the process. It is important to make a

distinction here between goal and outcome. A group will start with a goal and try to

work towards it, but ultimately might get a different outcome. With these definitions, the

first axiom can be proposed.

The path-goal theory of leadership is only one theory of an overarching concept, and therefore the first axiom is one that holds for all current theories of leadership. The basic leadership axiom is "leaders motivate followers towards a goal through a process" (Sorenson pg. 4-6). It is important to note that this axiom is carefully written so that it holds for current ideas on leadership. In the past leadership was considered more as simply the effect a single leader had on followers and how they either coaxed them or forced them to achieve some objective. This past idea is still incorporated within the axiom, but the basic leadership axiom includes more possibilities than this "Great Man Theory" involves (note here that throughout this essay, people will be used as a model of this system since this is the sense in which it is most usually thought; this is, however, only a model and leadership encompasses more than just people). A theorem that arises from this axiom is that followers motivate leaders. This is important to note because the idea of leadership as a process and not just a person creates a reciprocal relationship where leaders do not just have an effect on followers, but followers also affect leaders.

Before presenting the first axiom that holds true only for path-goal leadership theory another definition is necessary. Characteristics are motivational desires of followers and situations. This definition was the most difficult to construct, since in our normal sense, a situation cannot have a desire. However, since both situation and desire are undefined terms, an individual must keep an open mind, and situations can have desires. The second axiom is leaders must change their motivation process depending on the follower's characteristics (Northouse pg. 90). It is necessary to consider the different motivation processes as well as the different characteristics of followers and see exactly

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how a leader must change their process and to have a better understanding of the theory

or leadership.

There are four motivation processes, each of which will be considered a definition

in the mathematical sense. The definition of directive motivation is a leader motivating

followers with multiple goals. When using a business situation as a model of this

axiomatic system, this is one in which the leader presents everything a follower must

complete in a very structured manner. The supportive leader definition states that leaders

motivate followers in the same way they motivate themselves. It is possible to think of

this as treating each person in the group as you would treat yourself. Participative

motivation is when leaders motivate followers to motivate themselves. This definition is

more difficult to understand, but the idea behind it is that leaders get input from followers

and attempt to encourage followers to make the ultimate decisions on their own. The

final motivation process is achievement-orientated motivation and is defined as leaders

motivating followers towards the most desired goal (Northouse pg. 90-1). The

components of the characteristics of followers must be defined, in order to have

something to compare the motivation processes with.

There are many characteristics of followers, but research has found that there are

four different ones that are most relevant to the ways in which a leader affects followers

(Northouse pg. 93-4). The need for affiliation is the desire of a leader or follower for a

group. In a general sense this is the idea of wanting friends or people to associate with.

A preference for structure is the desire for multiple goals. A person who has a high

preference for structure is someone who wants every small part of their task laid out for

them, and enjoys being told what to do; they do not like ambiguity. The definition of the

desire for control is the desire of a follower to motivate itself. The final definition of

follower characteristics is self-perceived level of task ability, which is the desire to do a

task without motivation. In a model of human behavior, this is the idea that people can

perform tasks without thinking much about them. These are the characteristics that have

been found to have the most effect on the motivation process. However, there are other

terms this essay does not mention that can affect it, but since their effect is small,

researchers omit them from this system. Individuals who formulate the theory of path-

goal leadership attributed this to the method used to prove this axiomatic system, which

is discussed later in this essay.

Two more definitions are necessary before presenting the theorems associated

with axiom two: increase means to become more desired and decrease means to become

less desired. The following four theorems which result from the previous axioms, and the

definitions relate the changes in subordinate characteristics to the necessary changes in a

leader's motivation process. The first theorem is if a follower's need for affiliation

increase, then supportive leadership must increase . Secondly if a follower's preference

for structure increases, then directive leadership must increase. The third theorem states

that if a follower's desire for control by a leader increases, then directive leadership must

increase. A corollary to this is that if a follower's desire for control of itself increases,

then participative leadership should increase. Finally, if a follower's self-perceived level

of task ability increases, then directive leadership must decrease (Northouse pg. 93-4).

While these theorems address the ways in which a leader must adjust to the followers, it

does not address one of the most important parts of today's leadership theory: situation.

The final axiom of path-goal leadership involves situation, the context in which the interaction occurs. This third axiom states that as the situation's characteristics change, leaders must change their motivation process. Unlike the second axiom, which is followed by theorems that apply to specific follower characteristics, axiom three does not have any theorems related to it. This is due to the complexity of situations and the variety of different variables that affect each situation (Northouse pg. 94-5). For example in a business world model of this axiomatic system, a situation could the relationships of each individual involved, past performance, current office gossip, differing home lives, and many other factors that would make the situation unique. These complexities and the proofs of the components of this axiomatic system are based on statistical data.

Unlike mathematics, leadership does not have formal proofs. Instead, researchers use statistical data to prove that theorems and axioms hold. Since the model in which most people are interested involves people as leaders and followers, research groups collect data for a variety of models involving people. Individuals then study the data, and if one action seems to appear repeatedly, it is more closely evaluated. An example of this is the theorems of the leadership styles that should be used for each of the follower characteristics in a business model. Followers who tend to have more of a desire for affiliation usually perform better under supportive leadership. However, this conclusion is not true for everyone, because each person is different, and will thrive under different conditions. However, If the tendency appears as particularly strong in the data, then it is said to prove the conclusion that is made from it. This method of proof may not seem

strong to mathematicians, since it does not hold for every example, but for individuals

who study leadership, this data is sufficient (Bass pg. 207-219).

Although the proof techniques for leadership theory and mathematical theory may be very different, it is possible to present leadership theory as an axiomatic system. Like Euclidean and non-Euclidean geometries, there are different types of leadership theory. Similar to the axioms of neutral geometry, the first axiom presented in this essay holds for all leadership theories. The axioms of each individual theory, however, have great variances as the systems are developed more. The similarities and differences between leadership theory and mathematics theory demonstrate both the ways in which seemingly different disciplines share ideas, and how these ideas can be manipulated to create the necessary information.