

SYSTEMS ~n~ PRACTICE

Online

*A Systems Approach to
Organizational Development*



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Unit One

Introduction



Learning Objectives:

- ▶ Acquire a thorough understanding of the basic concepts of Systems Theory (ST)
- ▶ Examine its (ST) scope and impact on the performance of modern organizations
- ▶ Explore performance management
- ▶ Learn and develop the critical skill of structure and system analysis
- ▶ Identify a list of opportunities to improve organizational performance

The relevance of Systems Theory (ST) lies in the fact that it is the dominant school of thought that best describes the behavior of modern organizations. Hence, comprehending the core concepts of this theory can facilitate the true understanding of modern organizational performance. This course introduces the core concepts of Systems Theory as they specifically pertain to explaining organizational behavior. Further, the course explores practical means for applying those concepts to improve the overall performance of modern organizations.



A Tri-Phased Approach to Learning

Unlike traditional textbooks, this text follows a tri-phased approach to learning. The three phases are Description, Prescription, and Application.



Description: this phase lays the core conceptual foundation through which a thorough understanding of organizational behavior can be attained. In this phase, the three core concepts of ST are introduced and explained in a clear and persuasive manner.

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Prescription: once a solid conceptual foundation has been laid, the learning approach shifts to a prescriptive mode. This phase connects the abstract nature of conceptual knowledge to the daily workings of organizational structures and processes. This phase explores how such concepts can practically and directly improve the actual performance of modern organizations. In short, once the diagnoses are completed, what prescriptions are warranted?



Application: this phase is designed to facilitate the final transfer of the learned described knowledge and warranted prescriptions into skills that can improve the overall organizational performance. In short, the final phase explores the question: how can we transfer our knowledge into power by conducting structure and system analysis in hopes of improvising practical remedies to solve existing organizational challenges?

Core Concepts of Systems Theory

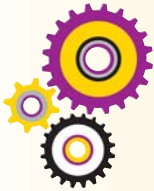
The text focuses on the three core concepts that make up Systems Theory. The full comprehension of those concepts will enable the learner to gain a thorough understanding of the structure and behavior of various forms of modern organizations. Those core concepts are:

- 1) the interconnectedness of various segments within the organization and its interdependence on various external environmental elements
- 2) the concept of equifinality
- 3) the view of the modern organization as a transformation box (T-Box)

Each concept is introduced and clearly explained. The introduction is then followed by a thorough discussion of the scope and impact of each concept on the overall behavior and performance of modern organizations. Each concept will help form a solid foundation upon which critical analytical skills needed to understand the behavior of modern organizations will be built.



Theories & Paradigms



A Holistic Paradigm of Interconnectedness & Interdependence

General systems theory is built on the foundational belief that the world is made up of interconnected systems and subsystems that affect and are affected by each others' performance. **Simply defined, systems theory (ST) is the art of seeing wholes as opposed to the parts that make up that whole.** Such a view encompasses all fields, disciplines, and sciences. As it relates to organizational behavior, systems theory suggests that a modern organization is essentially a system made up of interconnected subsystems, where the performance of each affects and is affected by all others. Further, the organization as a whole has interdependent relationships with the various elements of its environment.

In organizational management context, application of systems theory causes a manager to perceive a modern organization as an open-system made up of interconnected subsystems (departments/divisions), where the performance of each affects and is affected by the performance of all others. In addition, the organization as a whole system has interdependent relationships with the various elements of its environment such as government, religion, culture, etc.

The Role of Theories

Theories have been formulated throughout human history and form the basic foundational block of the overall human knowledge base. Theories play a significant role in explaining the way things are, hence shaping human behavior. Simply defined, **a theory is a set of concepts put together in an attempt to explain some aspect of life.** Most commonly, a theory embodies the opinions of an individual or a group of individuals used to explain a phenomenon, a pattern of behavior, or other aspects of the universe or human life. Examples include various theories on the origins of life (evolution / intelligent design), the order of the universe (general theory of relativity / quantum physics), and human motivation (Maslow, Herzberg, or McGregor). Each variation of those theories explores questions and subsequent answers to explain some aspect of life. This course focuses on organizational behavior and is based on systems theory because it is the dominant school of thought that can best describe the structure and behavior of modern organizations.

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Theories & Paradigms



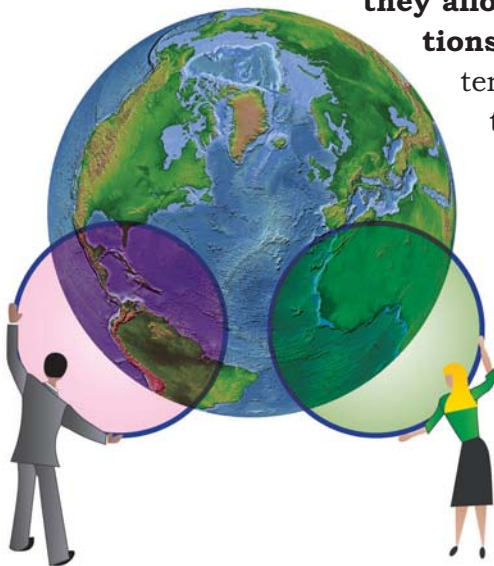
Paradigms - Meaning & Significance

In addition to understanding theories, another significant word that needs to be fully understood is 'paradigm.' **A paradigm is the mindset or the frame of reference governing the way we interpret environmental stimuli or explain the behavior of others.** It is the mental vision that allows us to ascertain the invisible and intangible nature of ideas, concepts, and theories.

Everyone has a paradigm. Many people do not even realize that their paradigms define how they perceive the world around them. Think back to the time when you were seven or eight years old. Your paradigm was probably your family, your school, and your neighborhood. You probably assumed that everyone went to school, or had gone to school, at times determined by someone else, completed homework assignments, watched TV, and played with friends after school. Now think about your current paradigm. Is it the same as it was when you were seven? Of course not; you now realize that not every child attends school or has access to TV. **Paradigms are critically important because**

they allow us to interpret the world around us. In organizations they are essential. One paradigm in particular, systems thinking, allows us to properly understand, effectively analyze, and significantly improve organizations performance.

The significance of paradigms lies in the fact that paradigms determine our behavior



Our paradigms are the mental vision with which we understand concepts and theories

Examples of paradigms influence are prevalent throughout human history. One can reasonably argue that the essence of 'Nature' has not changed during the recorded human history. What has truly changed is the human view of the role of Nature and its impact on human life (Berman, 1987). The persistent duel between creation and evolution is the clearest example supporting such an argument. Which is true? Both camps are 'convinced' that they are right and the others are wrong. The simple fact of the matter is such 'convictions' are a function of the power of projection each human experience in the form of a paradigm.

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Theories & Paradigms



Paradigms in the Sports World

The comedian George Carlin presents a humorous example of two divergent paradigms: football and baseball. Without repeating the entire routine, Carlin recounts the basic rules of each game:

The object of baseball is to "go home." The objective of football is to march down the field to the end zone and score a touchdown, or, 'go to the opponents' home'.



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- Time in baseball is inexact; it is defined in terms of innings and there is no limit on the length of time an inning may take. In football, time is rigidly controlled. There is exactly 15 minutes of playing time in a quarter. Four quarters comprise a regular game. Overtime periods are also subject to a rigid set of rules.

, Practices and strategies that are based on the appropriate paradigm are essential to winning each game. In short, adopting the appropriate paradigm is essential to winning the chosen game.

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The power of paradigm depicts exact acts as opposites. Murder or the taking of innocent lives is a criminal act that is prohibited and punishable in the greatest percentage of societies. However, the killing of other humans who do not share the same ideology or who have materialistic wealth that another desires, is accepted as a 'legitimate war'. In essence, war is nothing more than legalized mass murder. Human warfare kills innocent civilians while both sides effectively argue that the same acts committed by the other side are wrong. The limiting power and strength of each side's mirrored paradigms have in the past and continue to prevent them from seeing that they are essentially killing their own people. Many of the new ways of seeing things are mere reflections of older paradigms presented in a new light.

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Theories & Paradigms



The visible and impressive 'success' accomplished by western societies was built on a mechanical approach to human behavior, that is to suppress emotions and focus on appearance and behavior. The previous use of the word hence depends on what one values or what one should value in a 'civilized' society (Berman, 1987).

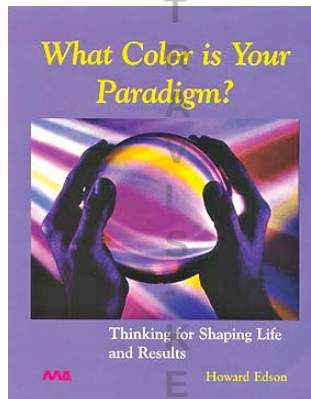
During a visit to England, Gandhi was once asked what he thought of western civilization. He responded, "You know, it wouldn't be such a bad idea." While the reporter's question highlighted British materialistic accomplishment, Gandhi's focus was on the missing emotional attributes of the same 'civilization.' What Mahatma Gandhi saw was the mechanical aspect of England and did not seem to see enough human values. His religious and humanistic view of life was far from the mechanical attributes projected in the 'civil' structures he observed (Berman, 1987).

One of the most influential popular management books, *The Seven Habits of Highly Effective People* (Covey, 1989), included a definition of paradigm as a map, model, perception, explanation, or theory. Covey presented two types of paradigms: paradigms of the way things are and paradigms of the way things should be (p.24). Covey used the term as a way to describe the pattern of perceptions an individual used to interpret

observations of the world and to develop responses to these interpretations.

Covey's definition was far more personal.

In Covey's description, paradigms are personalized and unique to the individual. A person's paradigms should be aligned with these natural laws and the extent to which an individual's paradigms match these laws, the more effective that person is likely to become.



Management Paradigms

In a more recent writing, Covey provided examples of paradigms within the field of management. He referenced four common theories in management:

- scientific management
- human relations
- human resources
- the whole person paradigms

Each of these provided an increasingly complex view of the employment relationship and proposed a different set of 'rules' to guide managers in the pursuit of organizational objectives. In fact, it is possible to argue that each presented the means to establish and interpret organizational objectives. Figure 1.1 describes these management paradigms and reflects their chronology through the 20th century.

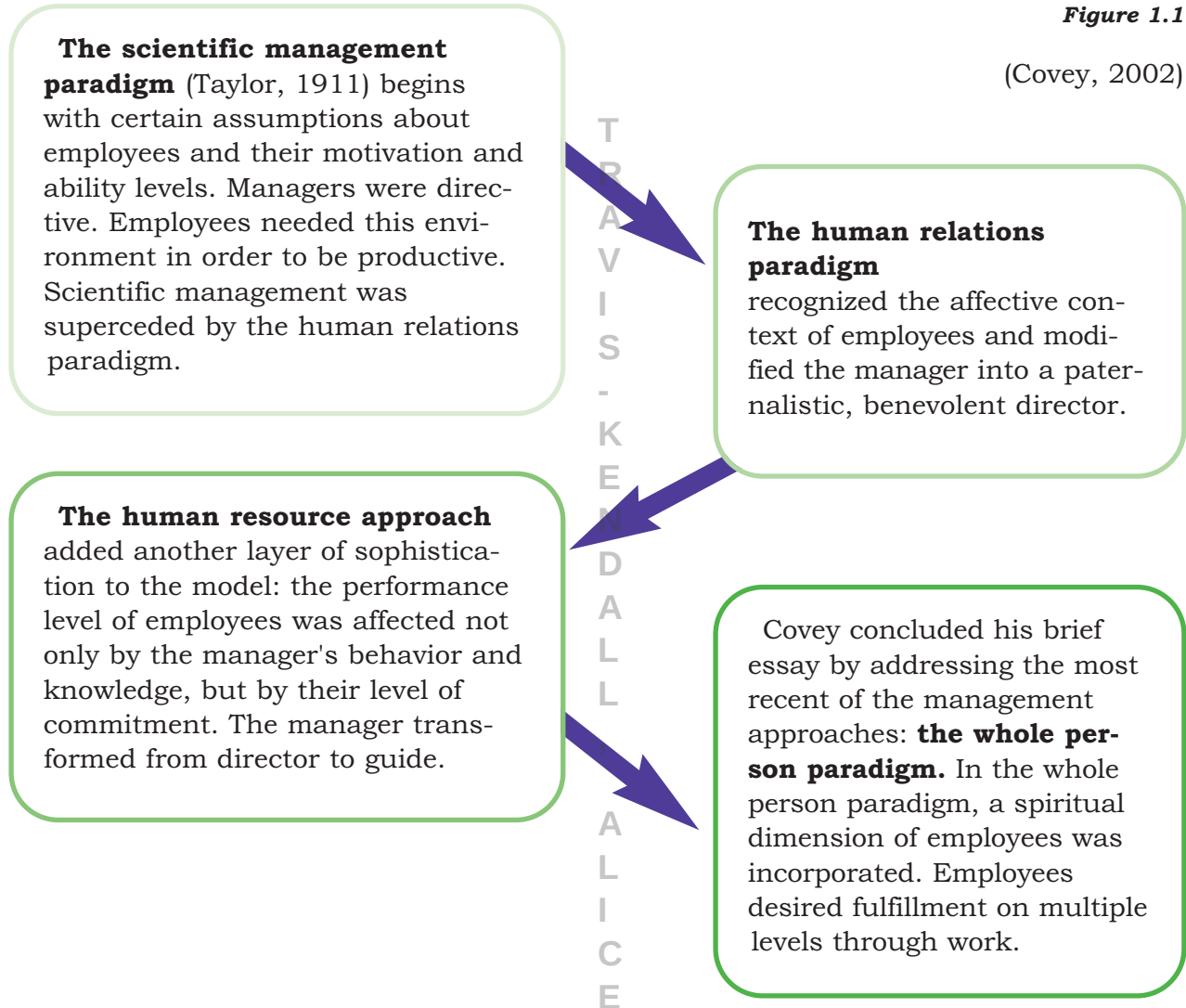
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Theories & Paradigms



Figure 1.1

(Covey, 2002)



Our paradigms greatly influence our perceptions of events and ultimately determine our reactions and responses to such events. A paradigm is based on a holistic framework for explanation and interpretation of the results of exploration. Paradigms must extend beyond establishing the questions to be asked; paradigms must address how the results of inquiries are filtered and used in further inquiry. This is the great danger of paradigms. *If paradigms become delimiters rather than guides, the progress of a true discovery process is restricted.* One must fully appreciate the potential danger of existing paradigms. If paradigms become dogma, their value to the advancement of understanding is significantly limited.

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The Paradigm of a Modern Organization

The importance of a paradigm lies with its ability to greatly influence if not outright determine attitudes and reactions to various stimuli.

The view of an organization must specifically recognize the power of paradigms and how adopting the appropriate paradigm is critical to the long term survival of the organization. **One paradigm exists which offers the best opportunity to understand how organizations function.**

This paradigm is embodied in what is commonly known as systems thinking and is largely based on the core concepts of general systems theory. Thinking systemically allows us to effectively structure any modern organization and efficiently design its systems (Figure 1.2).

The importance of this paradigm lies, almost entirely, in the role it plays as the mental vision faculty that allows us to see the way things are or the way things ought to be. Adopting a systems paradigm facilitates a better understanding of the 'proper' organizational behavior. Hence, greater understanding based on environmental reality forms a solid foundation upon which a more effective structure and a more efficient system can be established.

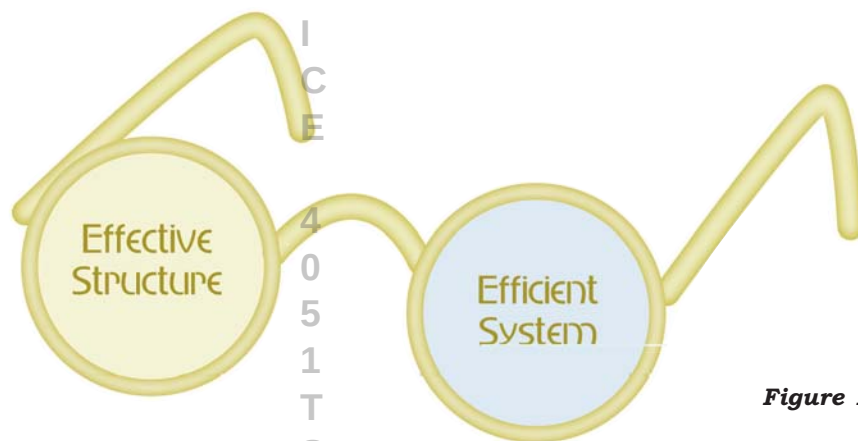
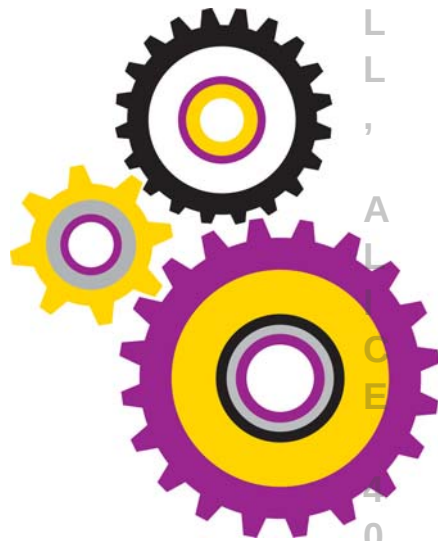


Figure 1.2

**Systems
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Unit

II

Interconnectedness

Unit Two

Interconnectedness

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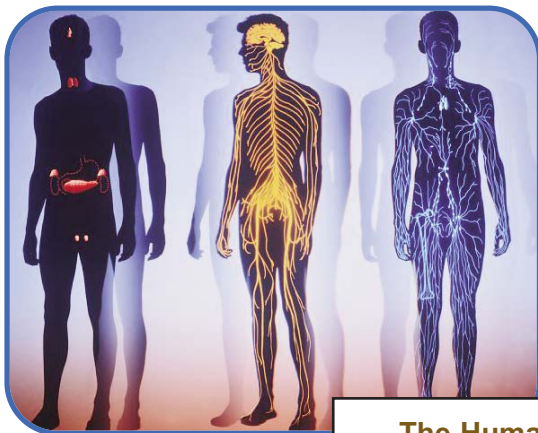
There Are Three Core Concepts of Systems Theory:

1. Organizational Interconnectedness & External Interdependence
2. Concept of Equifinality
3. Modern Organization as a T-Box

Concept I: Interconnectedness and Interdependence

The first foundational principle of systems theory is the concept of interconnectedness.

Prior to the development of the systems approach, the dominant paradigm for organizational analysis was the mechanistic approach. The mechanistic approach treats the various elements of the whole as discrete and independent segments. Consequently, under mechanistic thinking, in order to solve a problem, each element of the situation is identified and examined independently. Solutions are based on identifying 'problems' in particular areas and solving them independently of others without considerations to what effects the proposed 'solution' may have on other elements within the system.



In medicine, understanding cancer research has taken the mechanistic approach by focusing on the individual cell. Curing cancer means eliminating the problem in the cell through such remedies as chemotherapy.

Viewing cancer from a systems approach shifts the focus from individual cellular abnormalities to why cancerous cells form in the first place.

The Human Body Represented by System & Structure

<u>System</u> Sum of all functions needed to maintain life		<u>Structure</u> Arrangement of body parts to accomplish needed functions:
• Digestive System • Respiratory System • Nervous System	• Circular System • Skeletal System • Nervous System	• Legs designed to walk • Arms attached in the middle to operate • Neck to support the head • Fingers and thumbs designed to grasp

Figure 2.1

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In short, systems theory specifically rejects the narrow focus adopted by the mechanistic view. Instead it treats all parts as interrelated and, to a great extent, interdependent. This focus on the "big picture" in which not only the various elements and their internal functions must be accounted for and understood, but also on a diverse set of interactions among the internal and external elements of the system must be incorporated in any analysis.

Interconnectedness simply highlights that all parts of a system are related. **Changes in one part of the system tend to lead to changes in other parts of the system.** We need to understand interconnectedness in order to understand modern organizations.

A primary reason for this is the **complexity** of the current society in which a modern organization exists and functions. This can be illustrated by comparing the steps necessary to construct a log house and the steps necessary to construct a jet.

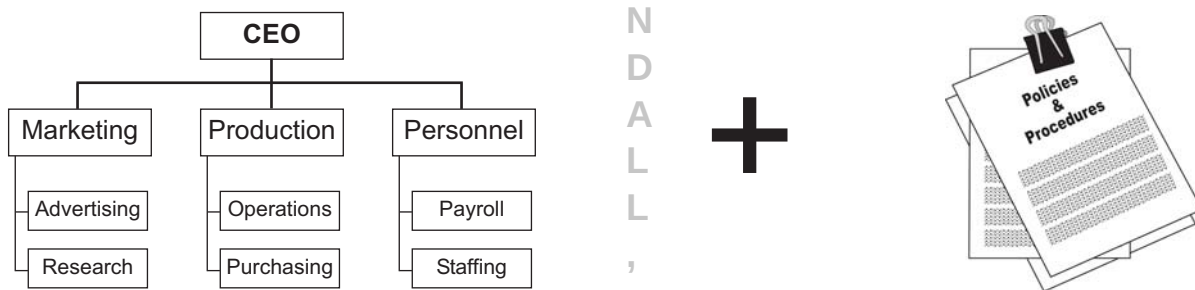


Figure 2.2 - A mechanistic view of an organization reveals the organizational structure with policies and procedures, each individual and separate.

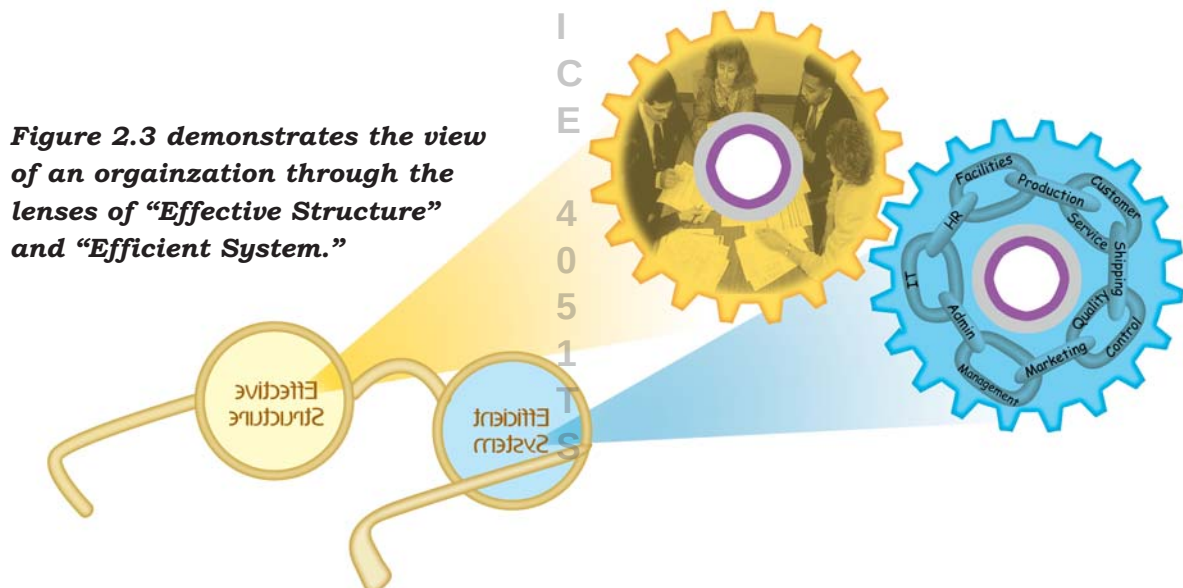


Figure 2.3 demonstrates the view of an organization through the lenses of "Effective Structure" and "Efficient System."

Pharmaceuticals: A Mechanistic or Holistic Approach?



"Interconnectedness" refers to a systematic approach to looking at an organization as a whole rather than as the sum of separate units. Decisions, made within the framework of the interconnectedness concept, take the view of the entire organization not a single unit or department. Using a single department or unit as the basis for a decision is characteristic of the mechanistic approach. A mechanistic approach to medicine would lead to diagnoses based only on a single organ of the body. Instead, doctors seek to apply a holistic approach that looks at the systems within the body (nervous, circulatory, etc.) and at the body as a whole. However, there exist examples in the recent past indicative of a mechanistic approach that led to unforeseen consequences when drugs were introduced into a wider population.

Vioxx was a very popular prescription drug used to treat arthritis pain and inflammation. While Vioxx was effective in most patients in reducing inflammation and thus pain levels, it also caused dangerous, and sometimes deadly, side effects in other systems of the body. Among the serious side effects unknown at Vioxx's intro-



duction were asthma and other respiratory complications, psychological effects (anxiety and depression), gastrointestinal problems, and most serious, strokes and cardiovascular failure. The treatment of one disease led to unintended and undesirable effects in many other systems of the body. A holistic approach would have anticipated the wide range of effects based on the chemical composition of the drug and side effects of other drugs.

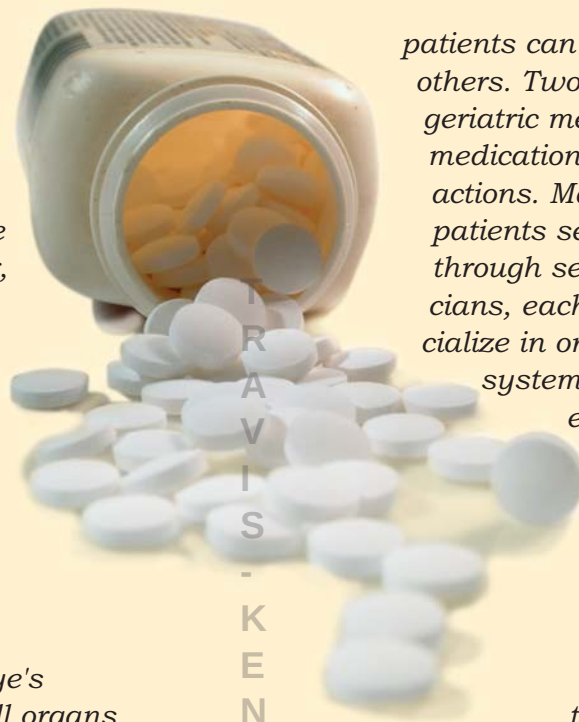
For several decades, physicians routinely advised women entering menopause to consider hormone replacement therapy to avoid health risks, such as osteoporosis, associated with post-menopause. The prevailing wisdom was that the effects of hormone replacements were minimal in relation to the benefits. However, more recent research associated hormone replacements with several serious health risks, including cancer. Again, a therapy designed for a specific set of symptoms created an additional, unintended, outcome in other areas of the body.

A third example is the common, over-the-counter drug: aspirin. Aspirin is widely considered to provide safe, effective relief of pain and fever. More recently, connections have been established between aspirin and the preven-

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tion of strokes and heart attacks, as well as the potential for survival of strokes or heart attacks if taken during the initial phase of the events. However, even after decades of use by millions of people, a previously unknown side effect, Reye's Syndrome, was discovered in children who took aspirin while suffering from viral infections, such as a cold, flu, or chicken pox. Reye's Syndrome can affect all organs and systems of the body, but the most acute symptoms are usually in the brain and liver.

An interconnected approach to medicine considers all of the potential effects on the body as whole. Even treatments that may be safe and effective for many



patients can be deadly for others. Two major issues in geriatric medicine is over-medication and drug interactions. Many senior patients seek treatment through several physicians, each of whom specialize in one particular system, organ, or disease. As a result, prescription of drugs that may counteract one another, or in combination be very safe, become

lethal, is a serious concern for patients with multiple health issues. An interconnected approach reviews the implications of any one treatment in conjunction with the patient's overall situation and other treatments to avoid these potential risks.

System theory's foundational concept suggests a view of a modern organization as a whole made up of interconnected segments, where, to varying degrees, the performance of each segment affects and is affected by the performance of all others.

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In Colonial America, many colonists built their own homes. The process was relatively simple although it required knowledge of basic construction principles and some basic skills in carpentry.

One person could assemble a log house within a relatively short period of time; this was a necessity since most colonists arrived in a location in the spring and were forced to create a viable shelter before the winter. The number of steps necessary to construct a basic log home (the basic log house during this period was a one room dwelling with a fireplace and dirt floor) could be measured in double digits. Trees were cut, stripped of branches and leaves, and re-cut to meet the necessary dimensions. Logs were stacked and clinking (usually a combination of mud, grass, and other binding materials) was stuffed to fill gaps.



Compare this to the construction of a jet. Literally millions of steps are necessary to build and assemble a jet. In order to



create a jet, it is necessary to mine minerals to create aluminum and steel. The ore must be refined, and so forth. The number of steps necessary to construct a jet numbers in the millions and requires literally hundreds of persons to complete. A comparison of organizations further illustrates the difference in complex modern personnel decisions versus filling the same roles in earlier times.

In the colonial period, the economy was agrarian. The single family, or extended single family, was the model. A family with multiple children, as many as possible, provided the labor necessary to operate the average single family farm. Obviously, from the very beginning, there were exceptions to this from large plantations to urban craftsmen. However, the small farm, with labor primarily drawn from the immediate family provides one paradigm for an organization.

In this paradigm, the organizational structure is simple and well-defined

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based upon socio-cultural guidelines.

The father was the head of the organization in regard to production activities; male children, based on the order of birth, were the other leaders within the organization. The mother was the head of the "support" functions within the organization; supported by the female children.

Eventually, spouses of children, as they joined the family, would be worked into the structure based upon their role as defined by their spouse.

This model varied in some ways, but questions about responsibilities and obligations were basically negotiated within this relatively small group of related people. In the small family unit, decisions can be made based upon personal knowledge. If one adult child was adept at mathematics, this child could be assigned responsibility for managing the bookkeeping for the family.

The modern organization, for example the organization necessary to build a jet, requires a more complicated structure. Thousands of unrelated persons must work together, completing millions or billions of individual steps in the production process. To complete a process with many individual steps requires more employees.



More employees necessitate a wide variety of managerial decisions. In the organization with thousands of employees, the chief executive cannot know which employee is adept at mathematics through personal knowledge. A mechanism must be created to identify an employee with these skills. This requires other employees, human resource managers, be available to determine what skills are required for a particular position and how to identify the employee, or potential employee, with these skills. The organization cannot depend upon that single employee to perform all of the accounting function; specialization must occur. In order for specialization to occur, the process of managing the accounting function must be analyzed and broken down into subprocesses. Again, this requires additional employees. Layer upon layer, the complexity of the organization builds.

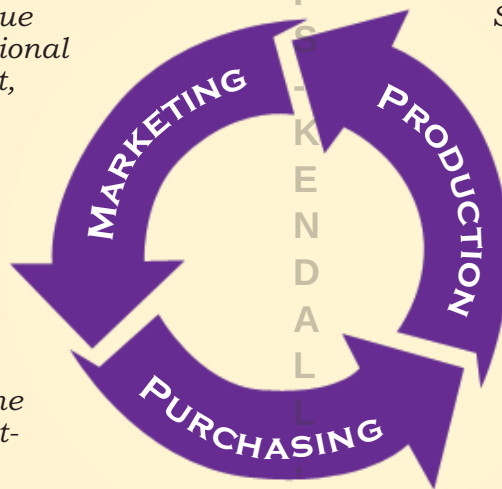
An Example of Interconnectedness

Assume you work for a small company that produces only one product: latches for automobile doors. The company is organized along functional lines. There is a purchasing department, where raw materials such as steel are bought from vendors, a production department, where the latches are actually produced, and a marketing department which actually sells the latches to major automakers.

Each of these departments has a specific, unique purpose. In a traditional organizational chart, the connections though the organization are through department managers. However, although the organizational chart does not show it, there are still connections between the work of each department.

Imagine that the Marketing Department obtains a much larger order from a customer than is expected. The Marketing Department does not share this information with the other two departments. The inventory of finished product will be exhausted; the orders placed by other customers will be delayed. The Production Department, now aware that the inventory of finished product is not adequate to meet the demand, schedules its employees to work overtime to replenish the inventory. However, after a day of running the department at maximum capacity, the Production Department shuts

down. Why? Because the Production Department has used all the available steel in the raw material inventory. It can no longer produce any additional product because it does not have the required materials. At this point, the Purchasing Department becomes aware of the situation and immediately orders additional steel. In the meantime, the customers who did not receive their orders have begun to complain to the Marketing Department.



Systems thinking allows the analyst's mind to recognize and account for a variety of organizational elements. As a result, **it is impossible to move to a view of any element of the system as completely independent or discrete.** It also forces an investigation of the cause/effect nature of relationships. This investigation, because of its scope,

can never be completed. Thompson (1967) describes this as the basis for organizational rationality.

Organizations seek to avoid uncertainty. They take a variety of approaches to achieve this, such as seeking to regularize input and output functions or forecasting, and that requires the ability to identify causality in the environment and the interrelationships within the system.

The realization that everything is related to everything else is one of the most practical

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applications of systems thinking (Kaplan et al., 2001). Such a realization is directly responsible for a major shift in the modern managerial paradigm. The old paradigm of focusing on the task at hand and directing all efforts to solving one problem at a time has shifted to highlight the importance of interconnectedness between organizational structural components and work teams. **A holistic paradigm that views the organizational structure as a whole composed of interdependent parts is the easiest way to insure a fully functional structure and an operating system free of costly and wasteful inner-friction.**

In aligning the inner components (subsystems) of an organization, a holistic view yields an effective structure made up of components well connect-

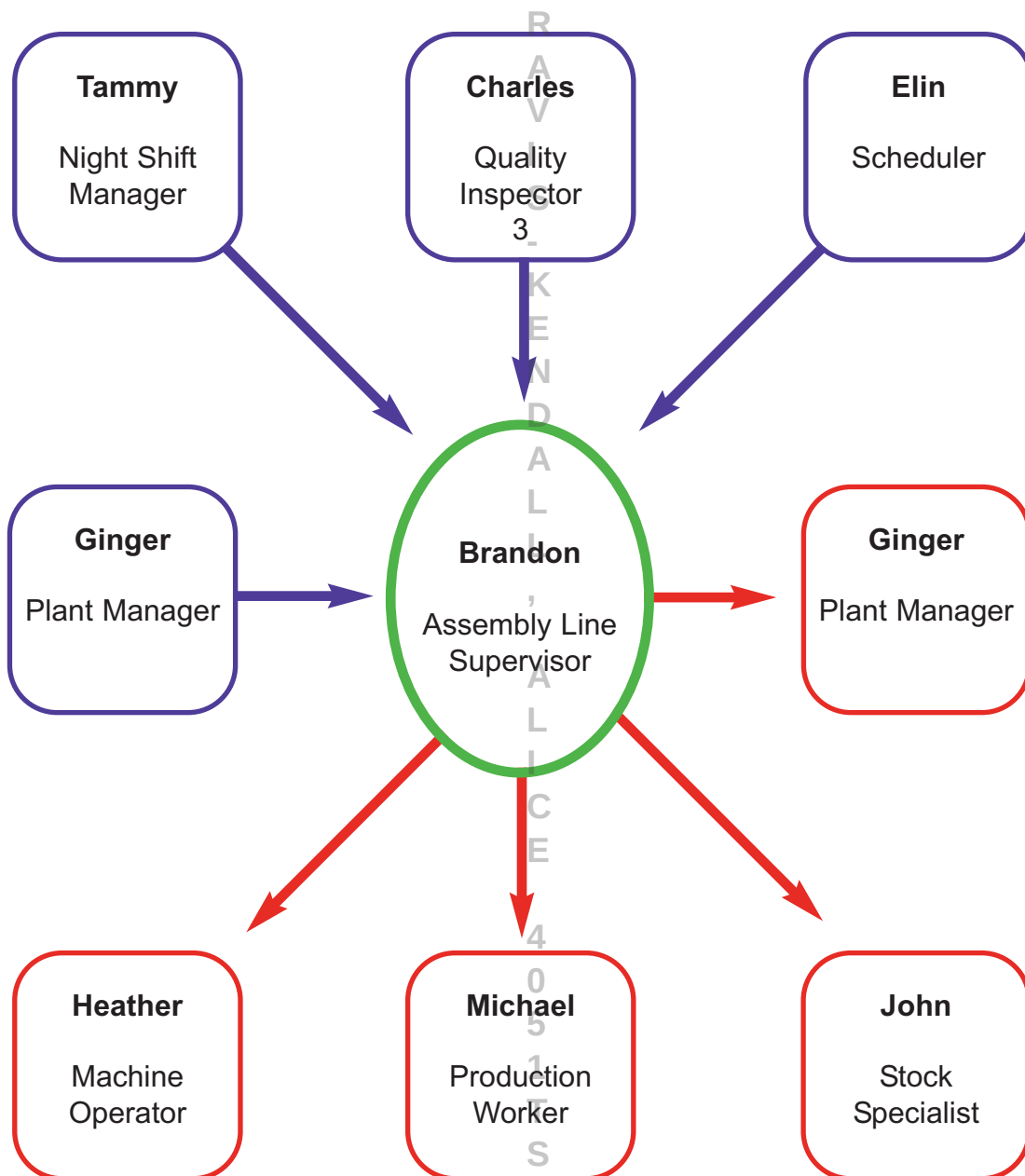
ed to each other based on the common purpose that serves as a shared vision. Also, such a paradigm highlights the importance of interdependent relationships between the system and other environmental systems and forms the premise for the recommended holistic approach to organizational management and task design (French & Bell, 1995). Finally, this paradigm highlights the infinite interconnectedness of systems across industries, sciences, and geographic diversity.

The direct implication here is that, to varying degrees, the overall performance of the organization affects and is affected by the performance of its subsystems as well as the performance of its suppliers and other organizational systems within the environment.

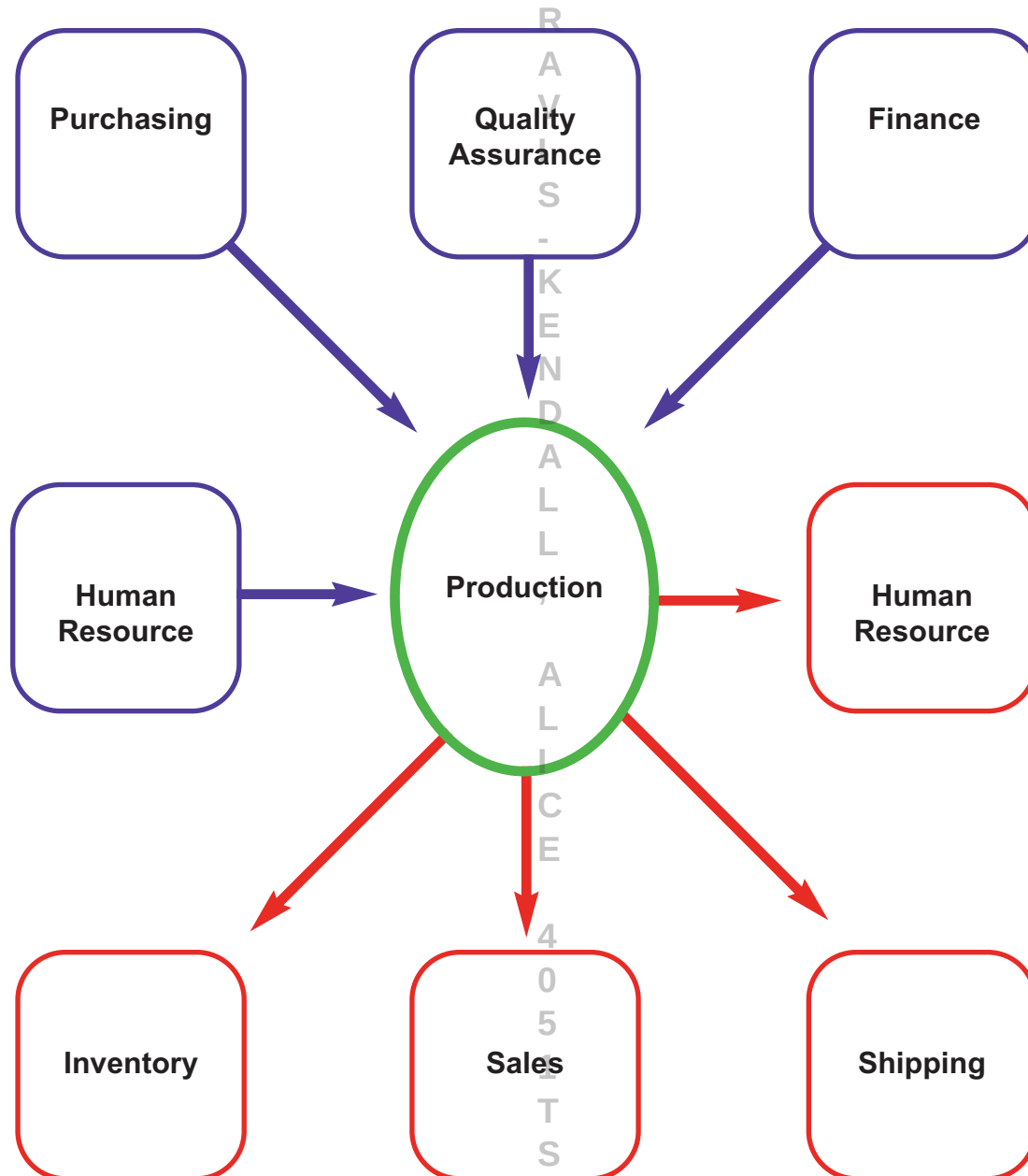
The next 6 pages illustrate examples of interconnectedness in different types of organizations: a tire manufacturer, a college, and a hospital. Study the examples and compare them to your own organization.



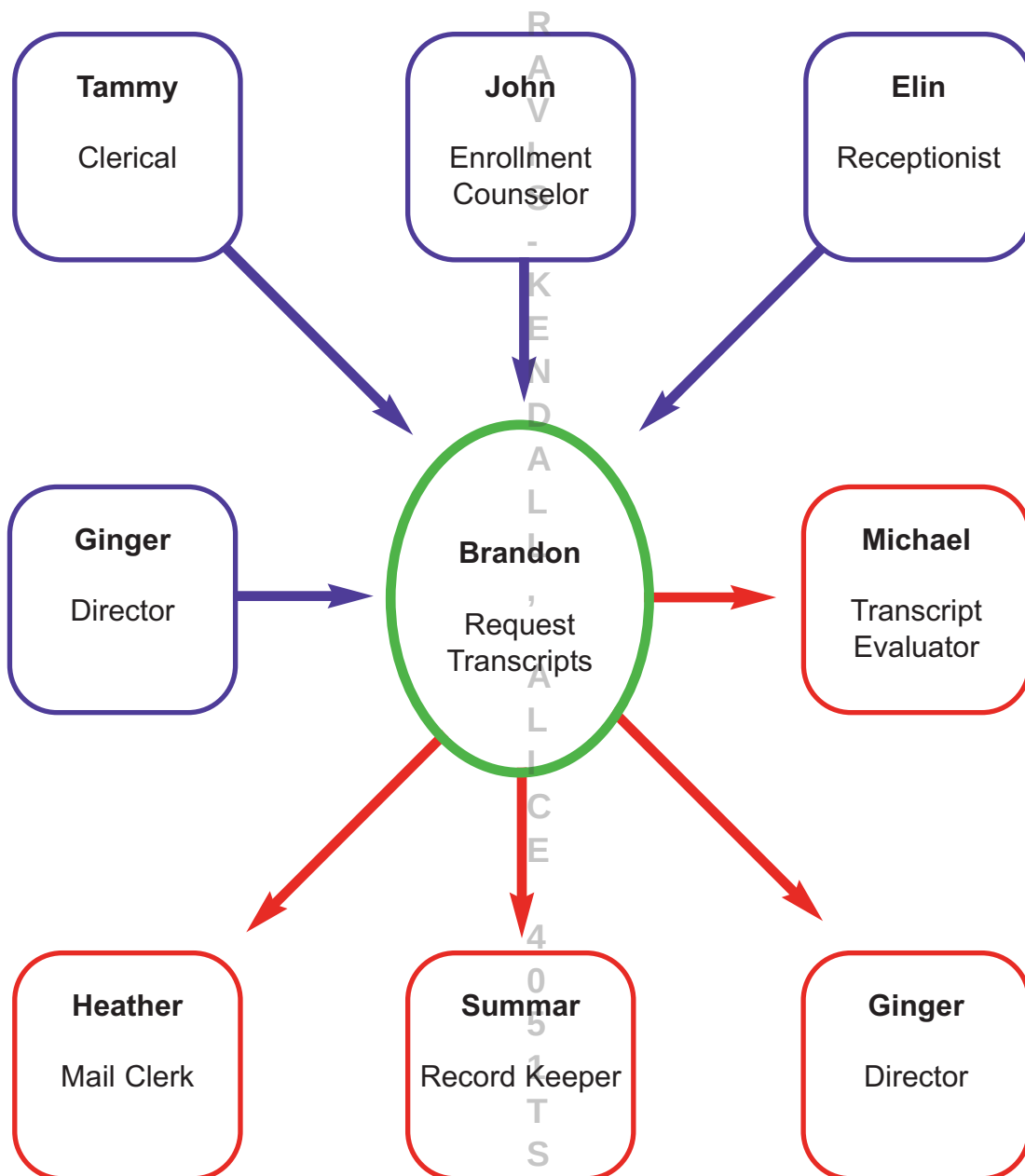
INTERCONNECTEDNESS STRUCTURE WORKSHEET
PERSONAL LEVEL
MANUFACTURING EXAMPLE - GOODYEAR TIRE CO.



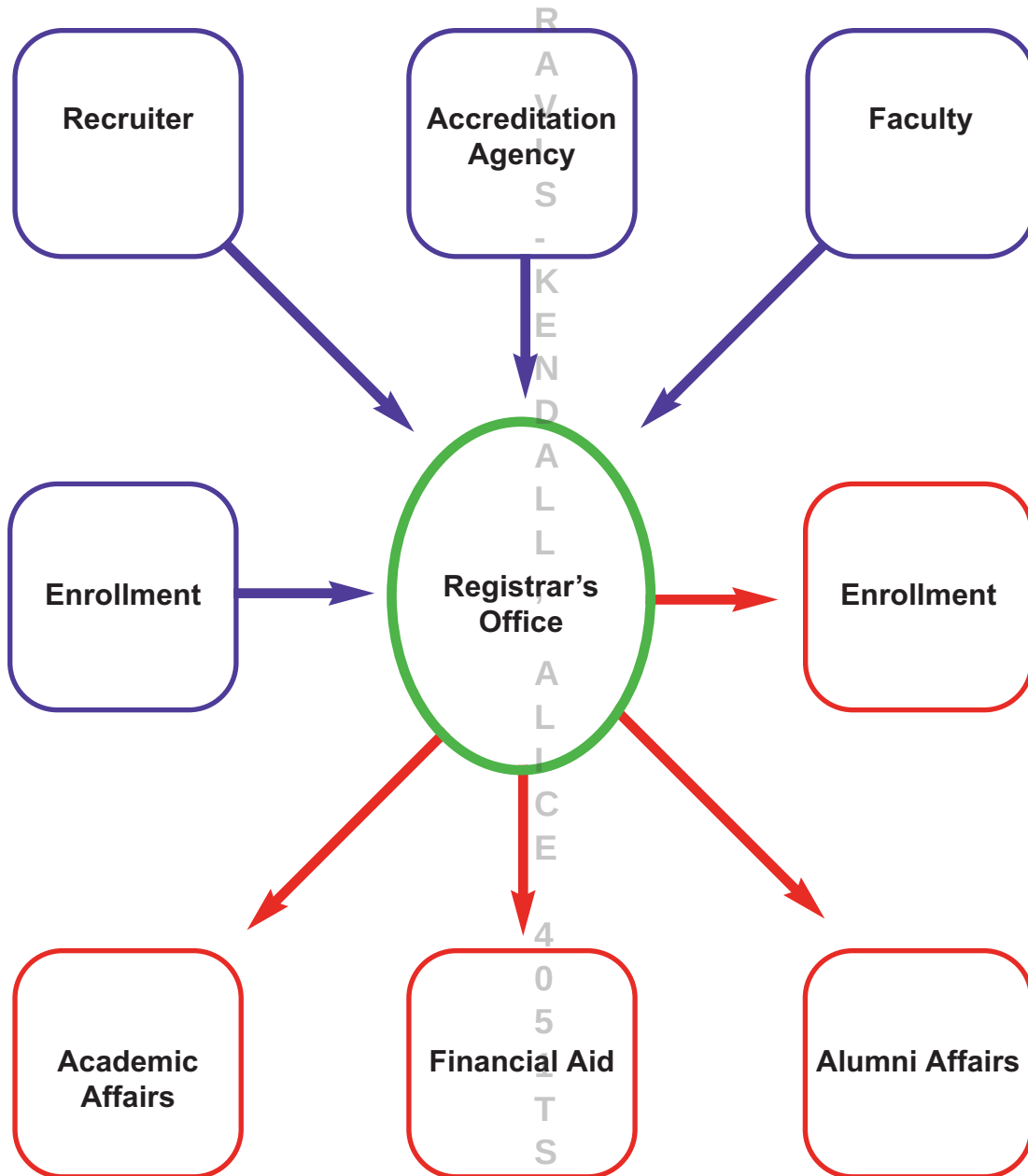
INTERCONNECTEDNESS STRUCTURE WORKSHEET
DEPARTMENTAL LEVEL
MANUFACTURING EXAMPLE - GOODYEAR TIRE CO.



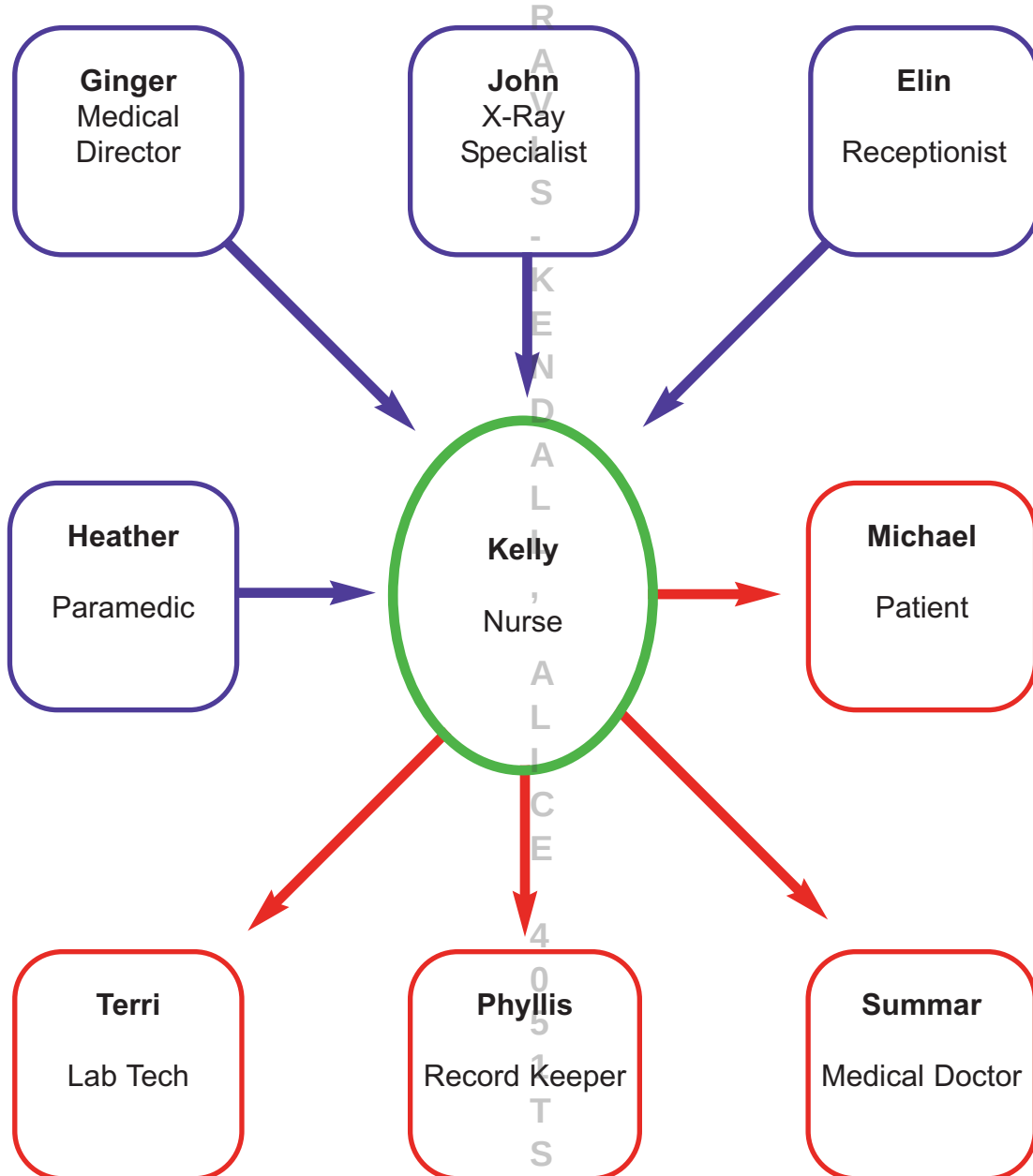
INTERCONNECTEDNESS STRUCTURE WORKSHEET
PERSONAL LEVEL
SERVICE EXAMPLE - A COLLEGE



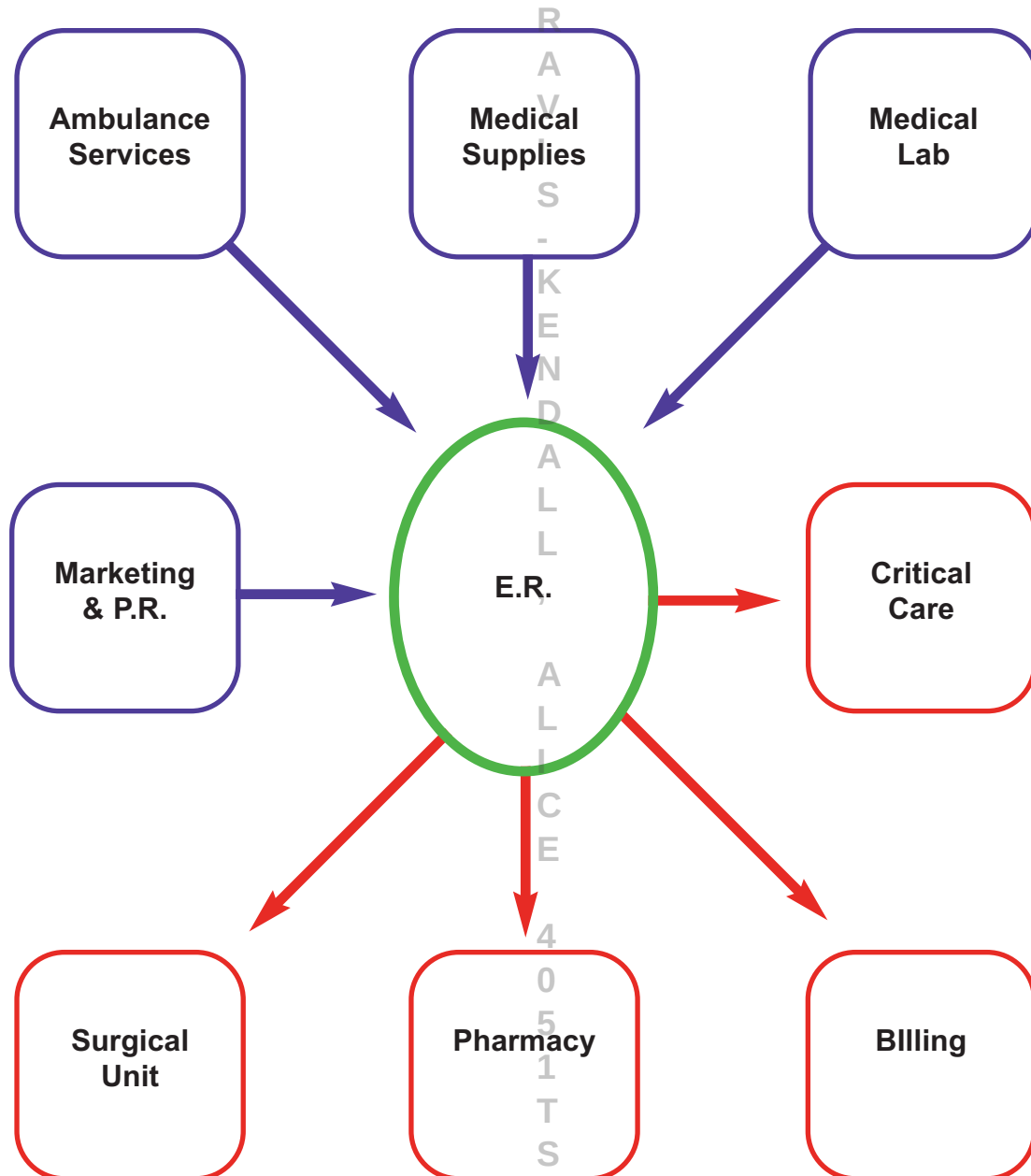
INTERCONNECTEDNESS STRUCTURE WORKSHEET
DEPARTMENTAL LEVEL
SERVICE EXAMPLE - A COLLEGE



INTERCONNECTEDNESS STRUCTURE WORKSHEET
PERSONAL LEVEL
SERVICE EXAMPLE - HEALTHCARE



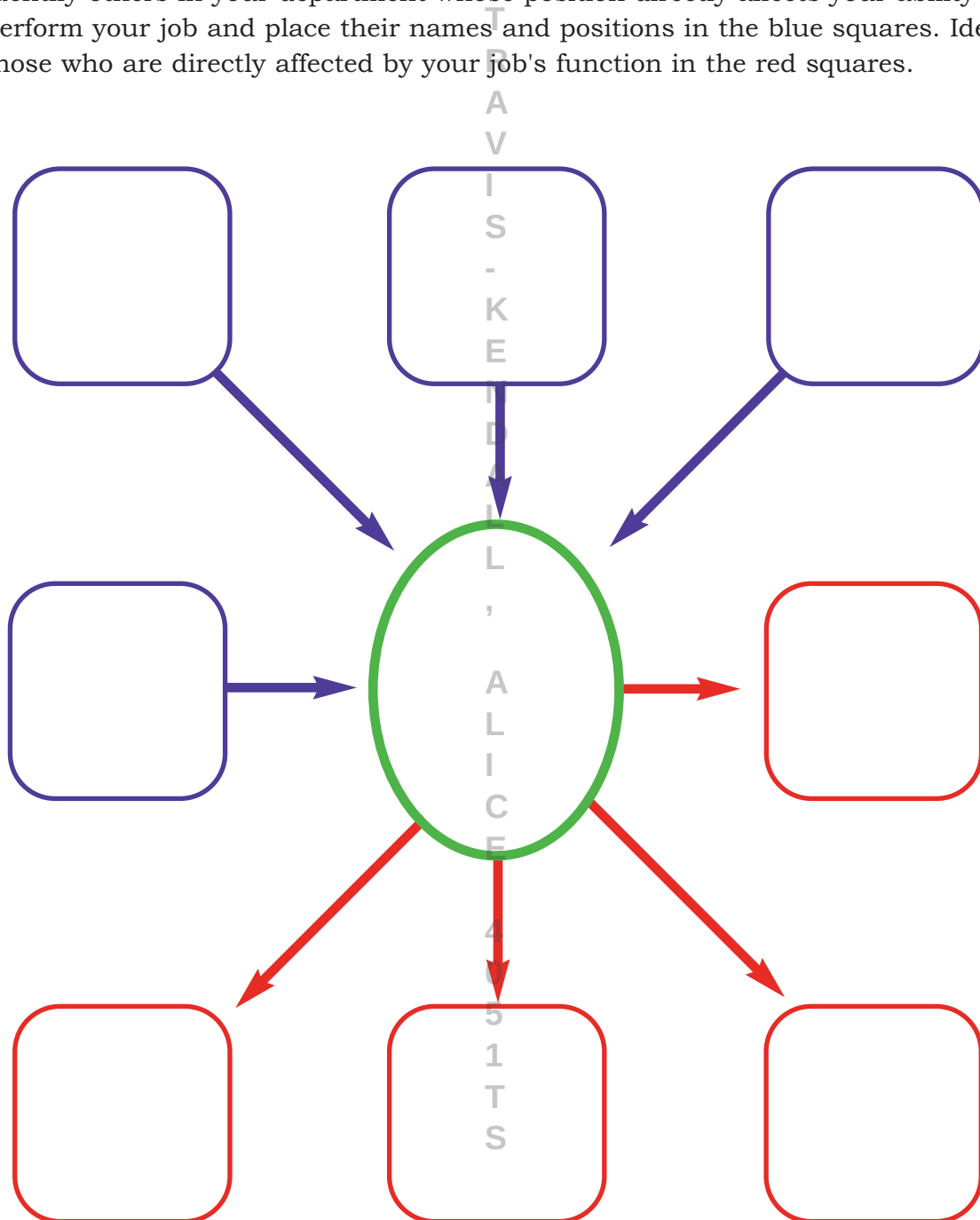
INTERCONNECTEDNESS STRUCTURE WORKSHEET
DEPARTMENTAL LEVEL
SERVICE EXAMPLE - HEALTHCARE



*This is a copy of the online form you will fill out in
the COMPLETE section of this unit's coursework.*

INTERCONNECTEDNESS STRUCTURE WORKSHEET PERSONAL LEVEL

- Start by placing **yourself (your function)** in the center oval.
- Identify others in your department whose position directly affects your ability to perform your job and place their names and positions in the blue squares. Identify those who are directly affected by your job's function in the red squares.



This is a copy of the online form you will fill out in the COMPLETE section of this unit's coursework.

INTERCONNECTEDNESS STRUCTURE WORKSHEET DEPARTMENTAL LEVEL

- Start by placing **your department** in the center oval.
- Identify other departments within your organization whose performance may affect the performance of yours and place them in the blue boxes. Next, identify departments affected by the performance of yours and place them in the red boxes.

