

# What Are Systems?

*by Sophia Tutorial*



## WHAT'S COVERED

In this lesson, we'll look beyond individual interactions between people in order to discuss systems as another way of better understanding conflict. The particular areas of focus include:

1. Components of Systems
2. Human Systems
3. Conflict in Human Systems

## 1. Components of Systems

As human beings, we gather into groups, and those groups are part of systems.

All **systems** have basic structures and dynamics that affect how they function. Systems exist to provide a product or a service.

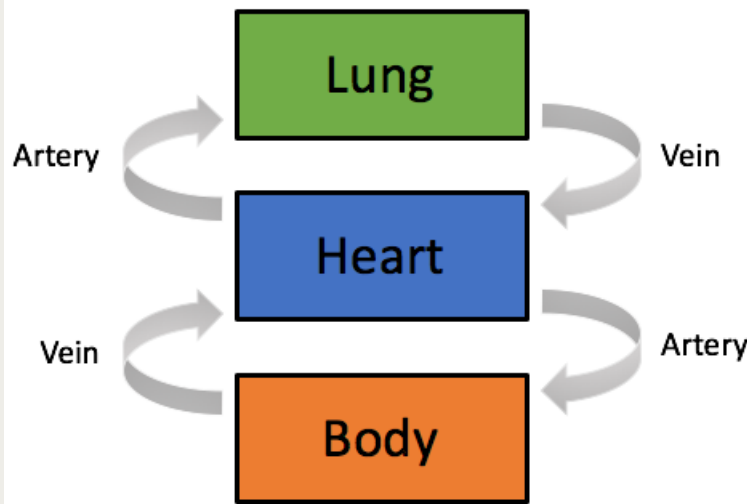
This product is called the **output**, while the **input** is the ingredients needed to create the product.

There are **components** within a system that perform these functions.

### IN CONTEXT

To some extent, we're all familiar with the circulatory or cardiovascular system in the human body.

The circulatory system exists to bring nutrients from food and oxygen from air. Thus, the input is the food and the oxygen, and it comes in through other systems in the body, namely the respiratory and the digestive system. The digestive system does things to the food so that by the time it gets into the arteries and veins, and circulates through the body, the food has become nutrients, or things that we need for health.



The heart is the central organ in this system, and it functions as two sets of pumps. One is the upper chambers, or pulmonary chamber, of the heart, which has arteries that pump blood into the lungs. When you think about it, all this system really does is take blood out of the heart and into the lungs, then take oxygen from the lungs and back to the heart. It's basically a back and forth motion.

The other set of pumps is the lower chambers of the heart, which take blood from the heart and move it all throughout the body, circulating it. In the case of the circulatory system, the system components are the heart, veins, arteries, and capillaries. These components behave in a particular way that leads to an outcome.

When each of these components is performing its particular **behavior** in the way it's supposed to, the entire system works brilliantly as a unit, and we don't even have to think about it.

However, these parts are all **interconnected**, meaning that an issue with one of them is going to affect everything else.

🔗 **EXAMPLE** In the case of the circulatory system, a clogged artery is going to affect the whole system. Or if the heart isn't beating quite right, the other components of the system won't be able to do their jobs properly.

With this interconnectivity between all the components, there's a **structure**. The structure is the relationship between all these parts.



#### BIG IDEA

A system is almost like a superhighway working miraculously on its own. The components each have a job; they behave in a particular way, and they're connected to one another through a particular structure.



#### TERMS TO KNOW

##### System

A set of components whose behaviors affect one another causing a sequence of related events leading towards an outcome (transformation of inputs into outputs).

##### Outputs

The "product" created from the impact of a system on "ingredients" (inputs).

### **Inputs**

The "ingredients" put through a system to be transformed into "product" (outputs).

### **Components**

The specific elements that make up a given system.

### **Behavior**

The action of a given component within a system.

### **Interconnectivity**

The influences of behavior of system components on each other.

### **Structure**

The set of relationships between components and their behaviors within a system.

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## **2. Human Systems**

This is true in human systems as well. The elements are operating like a superhighway so that we don't even have to think about; it just works.

### **IN CONTEXT**

Think about airports as a travel system. People are the components within that system, and they serve a lot of different functions that have to work together in order to make the system work. As you've probably travelled through an airport, you know that some of these components are security, baggage claim, ticket agents, gate agents, pilots, and flight attendants.

Then, of course, there are the people who perform the more technical functions, such as air traffic control and the mechanics who make sure the planes are ready to fly. All of these people are really components within a system.

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## **3. Conflict in Human Systems**

Because of the structure and the interconnectivity of the components within a system, anything that affects one component will affect the whole system.

This can happen even in a smaller human system, such as an office or a team at work.

### **IN CONTEXT**

Say you have to give a presentation on an important project that you've just completed. You were waiting for some research that the researcher needed to deliver to you so that it could go into the presentation. There are also a couple of writers who are putting together different sections of the presentation.

They're handing it off to you for review and editing, and then you're going to put it into a PowerPoint. You want somebody on the staff to look at that PowerPoint to make sure it looks presentable. Then, when it's time to deliver the presentation, you need the IT department to make sure there's a working projector and laptop.

As you can see, there are a lot of different components involved to make this system operate. There's a structure, and a relationship between these individuals.

All of it is interconnected; if something goes wrong at any point in this system, things might not turn out so well.

If there's a conflict with one of the writers, or if the researcher does not get the research to you on time, that is going to slow the system down and would definitely be an opportunity for conflict resolution.

In conflict resolution, we talk about **decomposing** a system, which is the process of analyzing a system and seeing it as a collection of subsystems. A **subsystem** is a system that's part of a larger system.

All of the systems we've talked about in this lesson are part of larger systems, and when you decompose a system, it's easy to see how all these parts are working together.

Having that insight could be very helpful in determining what might be troubling the system, or making it less efficient than it could be.



#### TERMS TO KNOW

##### **Decompose**

The process of analyzing a system as a collection of smaller sub-systems and components.

##### **Sub-System**

A system which serves as a component of a larger system.



#### SUMMARY

In this lesson, you learned about the **components of systems**, or the parts that are working together to produce a product or service. All of these components are interconnected, so something that affects one component will affect the entire system. You now understand that **human systems** also function in this way. People working together in a setting such as an office all have their own roles that they play within that system. Therefore, **conflict can occur in human systems** when one person isn't performing their function in the way that the rest of the team expects. This is why breaking down or decomposing a system during the conflict resolution process can be a helpful way of pinpointing what exactly is causing the conflict within the system Good luck!

Source: Adapted from Sophia tutorial by Marlene Johnson.



#### TERMS TO KNOW

**Behavior**

The action of a given component within a system.

**Components**

The specific elements that make up a given system.

**Decompose**

The process of analyzing a system as a collection of smaller sub-systems and components.

**Inputs**

The "ingredients" put through a system to be transformed into "product" (outputs).

**Interconnectivity**

The influences of behavior of system components on each other.

**Outputs**

The "product" created from the impact of a system on "ingredients" (inputs).

**Structure**

The set of relationships between components and their behaviors within a system.

**Sub-System**

A system which serves as a component of a larger system.

**System**

A set of components whose behaviors affect one another causing a sequence of related events leading towards an outcome (transformation of inputs into outputs).