Comparative Advantage
Econ 201/Haworth

Assume that you have 2 countries, Country X and Country Y, and that both of these countries produce wheat and rye. If we make all the same assumptions from class (each country produces just 2 goods, when at full employment each country can produce one of four possible combinations of wheat and rye, each county has a set amount of available labor, capital, etc). Given those assumptions, here are the PPC tables for each country.

Country X:	**A_1**	**B_1**	**C_1**	**D_1**
Quantity of Wheat:	0	20	50	60
Quantity of Rye:	30	20	5	0

Country Y:	**A_2**	**B_2**	**C_2**	**D_2**
Quantity of Wheat:	0	15	30	45
Quantity of Rye:	90	60	30	0

Although you will want to verify this, we know that the opportunity cost for each country is as follows for each good (and that it doesn't matter which pair of points we move between when calculating this opportunity cost, because opportunity cost is constant in both countries).

Country X:
Opportunity cost of producing each additional unit of wheat = ½ unit of rye
Opportunity cost of producing each additional unit of rye = 2 units of wheat

Country Y:
Opportunity cost of producing each additional unit of wheat = 2 units of rye
Opportunity cost of producing each additional unit of rye = ½ unit of wheat

Based on these calculations of opportunity cost, we can see that Country X has a comparative advantage in producing wheat and Country Y has a comparative advantage in producing rye.

Assume that both countries decide to utilize the Law of Comparative Advantage. In order to determine how implementing this law affects these two countries, we need to have a starting point and an ending point. Let's assume that our starting point is for demand in Country X to dictate that Country X must produce at point B_1 (i.e. consumers want 20 units of wheat and 20 units of rye). In Country Y, demand dictates production at point C_2 (i.e. consumers want 30 units of wheat and 30 units of rye). When implementing the Law of Comparative Advantage, Country X will specialize in producing wheat (i.e. move from producing at pt B_1 to D_1, and Country Y will specialize in producing rye (move from producing at pt C_2 to A_2).

Let's illustrate that change in a table (W = units of wheat, R = units of rye). Note that after specializing, Country X will produce 40 more W than they need to meet demand, but will be short 20R. In Country Y, they have an extra 60R, but are now short 30W.

	Country X	**Country Y**
Pre-trade output/consumption	20W, 20R	30W, 30R
After specializing	60W, 0R	0W, 90R
Extra units (due to specializing)	40W	60R
Units short (due to specializing)	20R	30W

As this situation creates an opportunity for trade between these 2 countries, in order to facilitate that trade, we will need an exchange rate. I.e., we need to know how many units of wheat Country X must give up in order to get the rye from Country Y that they need. Let's assume that the two countries agree upon an exchange rate of 1W for 1R.

How many units of wheat and rye should be traded? Country X needs at least 20W (the amount they are short) to meet domestic demand and can trade away as many as 40W (the extra amount they have). Country Y can similarly give up as many as 60R to get the 30W that they need.

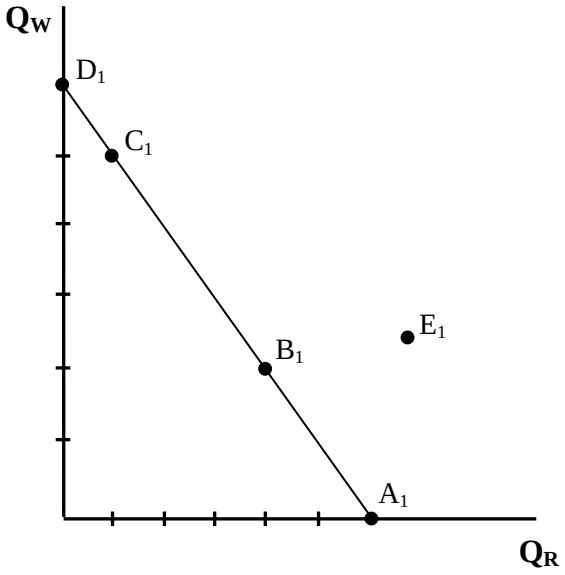
Let's assume that Country X and Country Y agree to trade 35W for 35R. Note that this is just one possible outcome, they can trade any amount between 30 and 40, and we just picked 35 here. When Country X gives up 35W of the overall 60W they've produced, they still have 25W left to consume with the 35R they receive in trade from Country Y. Similarly, Country Y now has 35W and 55R. These post-trade quantities are listed in the table below.

	Country X	**Country Y**
Pre-trade output/consumption	20W, 20R	30W, 30R
After specializing	60W, 0R	0W, 90R
Extra units (due to specializing)	40W	60R
Units short (due to specializing)	20R	30W
Trading arrangement (1W:1R)	Trade is 35W for 35R	
Post-trade output/consumption	25W, 35R	35W, 55R

What can we say about where each country ended up vs where they began? Both countries have

more to consume of both goods after implementing the Law of Comparative Advantage (post-trade) than before implementing this Law (pre-trade).

If you graph the PPC for Country X and then consider where they end up after trade, then you'll have some additional insight into this situation and what "better off" means. Let's consider just the effect of comparative advantage on Country X. In the graph below, we see Country X's PPC. Note that Country X moved from point B_1 to point D_1 when they specialized. In and of itself, this did not make Country X better off, because in order to gain those extra units of wheat, Country X had to give up all of their rye. After trade, however, Country X is able to consume 25W and 35R, which corresponds with point E_1.



Without shifting their PPC, Country X is not capable of producing at a point like E_1, but by utilizing the Law of Comparative Advantage, Country X is still able to consume at point E_1. This result is sometimes also referred to as expanding one's consumption possibilities.