Absolute and Relative Surplus Value

**Technical Change:** A change in the labor process affecting the productivity of labor.

For given number of worker-days $N$,

$$S = N(L_D - V_{LP})$$

For a given number of worker-days, $S$ can be increased by

1) $L_D$ increasing

2) $L_n$ (or $V_{LP}$) decreasing
Absolute and Relative Surplus Value (cont.)

**Absolute surplus value:**
an increase in S due to $L_D$ increasing

**Relative surplus value:**
an increase is S due to $L_n$ decreasing

$L_n = V_{LP} = \sum \lambda_i b_i$

Thus, the capitalists can get relative S in economy as a whole by

a) Lower real wage fall ($b_i$ falls)
b) Increase in labor productivity in wage goods ($\lambda_i$ falls)
The capitalist class as a whole can get relative surplus value in three ways:

1) Drive down the real wage ($V_{LP}$ falls).
2) Increase the average intensity of labor in the economy as a whole.
3) Technological advance that increases the productivity of labor in wage goods industries.

Marx focused on #3.
Technical change and the individual capitalist

**Story:** One capitalist innovates
- gets extra surplus value (superprofits)
- imitation by other capitalists
- extra surplus value is competed away

Social effect: Taking account of effect on entire economy, $s/v$ rises for capital as a whole.

Note: Relative surplus value can also be obtained by single capitalist by
1) reducing the real wage below the social average
2) increasing the intensity of labor above the social average
There are limits to both of those methods.
Technical change and the individual capitalist

Social Value ($\lambda^S$): SNALT required to produce a commodity.

Individual Value ($\lambda^I$): The hours required to produce a commodity for an individual capitalist.

Example:

20 MP + 10 L $\rightarrow$ 1 unit of product initially.
Innovating capitalist changes the labor process
20 MP + 5 L $\rightarrow$ 1 unit of product

Hence, $\lambda^S = 30$ but now $\lambda^I = 25$ for innovating capitalist.
Technical change and the individual capitalist

20 MP + 10 L $\rightarrow$ 1 unit of product initially.

20 MP + 5 L $\rightarrow$ 1 unit of product for innovator

200c + 50v + 50s = 300V for industry

200c + 25v + Xs = 300V for innovator

X = 75

Thus,

S = V^S \lowercase{c} – c – v where V^S = socially defined value of output.
Technical change and the individual capitalist

Result of TC by individual capitalist:

\[ S_0 = V_0^S - c_0 - v_0 \]
\[ S_1 = V_1^S - c_1 - v_1 \]

Thus, subtracting first equation from second equation, and recalling that social value does not change, we have

\[ \Delta S = -(\Delta c + \Delta v) \]

If \( \Delta c + \Delta v < 0 \), then \( \Delta S > 0 \)
Imitation of a new technology

New technology:
20 MP + 10 L $\rightarrow$ $30\lambda$ before innovation
20 MP + 5 L $\rightarrow$ $30\lambda^S$ after innovation, before imitation

After imitation:
20 MP + 5 L $\rightarrow$ $25\lambda^S$ after imitation

Before innovation: $200c + 50v + 50s = 300V$
After innovation & imitation: $200c + 25v + 25s = 250V$

Before innovation: $r = \frac{50}{250} = 20\%$
After innovation and imitation: $r = \frac{25}{225} = 11.1\%$
This assumes no change in s/v in economy.
Once the innovation has been imitated throughout the industry, then the social value of the product falls. Unless the product is a luxury good, this reduces the value of the subsistence wage basket, and so $s/v$ rises in the economy as a whole.

**Sequence of steps of whole process of TC:**
Drive to increase $S$ by individual capitalist
TC that cheapens the commodity
Initial superprofit for the first innovator
Imitation which causes superprofit to disappear
$s/v$ rises for capital as a whole.

**Note:** Effect on rate of profit not obvious since $c/v$ likely to increase.