Anarchy - The state of nature as an initial position--no laws, rules, or property rights enforcement.

Appropriability - Ability to force payment for giving benefits of a good to others.

Assumptions of Perfect Competition (Sufficient assumption)
1. Homogeneous Product
2. Large number of small, homogeneous sellers
3. Large number of small, homogeneous buyers
4. No restrictions on freedom to enter or exit
5. Perfect knowledge
6. Perfect mobility

Average - It is the ratio of the dependent variable to the independent variable.

Basic Structure of Model - Attempts to find generalized, yet realistic, behavior rules for a rational government similar to the rules traditionally used for rational consumers and producers.

Club Good - it is a good whose benefits are excludable at a reasonable costs. Club goods usually possess partially rival benefits.

Coalition - A team having agreed upon goals.

Collective Action - arises when the efforts of two or more individuals are needed to accomplish an outcome. Activities that involve the furtherance of the interest or well-being of a group are often examples of collective action.

Common-property Resource - A resource used, if not necessarily owned, in common by all of the community members. Neither exclusion nor discrimination is permitted with respect to its access.
**Comparative Statics** - An analysis of the relative equilibrium positions that result when the structure of a system changes. It is "timeless" analysis, since no examination of actual paths of movement is attempted.

**Competitive Behavior** - The degree to which individual firms indulge in active competition with one another.

**Competitiveness of Market Structure** The degree to which individual firms have power over that market, power to influence the price or other terms on which their product is sold.

**Consumer Equilibrium** - $\text{MRS}_{xy} = \frac{P_x}{P_y}$.

**Consumer Surplus** - The difference between the consumer's derived value and his/her expenditure. It is the "triangular area" below the demand curve and above price.

**Contextual Knowledge** - is cognizance of the basic forces relevant to some given field of operation

**Continuity** - Any continuous curve in commodity space connecting a bundle A, which is inferior to the bundle B, with a bundle C, which is preferred to the bundle B, must pass through a bundle D which is indifferent to bundle B.

**Cooperative Game** - players act together to maximize some joint payoff that is later divided among them.

**Cultural Evolutionary Games** - behavior towards one’s neighbor is acquired by imitation. Closeness in space or time means that there is a greater likelihood that a player or nation will interact with another that uses the same strategy.

**Difference Principle** - The welfare of the worst-off individual is to be maximized before all others, and the only way inequalities can be justified is if they improve the welfare of this worst-off individual or
group. The principle produces a lexicographical ordering of the welfare levels of individuals from lowest to highest.

**Diminishing MRS** - An individual's personal substitution valuation of any good depends on the relative amount he/she has of that good; the more one has, the lower is one's personal substitution value of the good (i.e., the more willing one is to trade the good for another good). Gives rise to convex-to-origin shape of indifference curve

**Dominant Strategy** - gives a greater payoff regardless of the other player's actions.

**Dynamics** - An analysis of the time path of variables and their influence on the time path of other variables.

**Economics** - The study of the efficient allocation of scarce resources among alternative ends. Furthermore, economics examines the distribution of these ends. Growth and stabilization are also examined. **Alternative Definition** - The study of allocation and distributive actions in the presence of constraints.

**Economies of Scale** - a fall in cost per unit as output levels increase.

**Elasticity** - It is the percentage change in the dependent variable divided by the percentage change in the independent variable. It is also the ratio of the margin to the average.

**Elasticity of Demand** - % change in quantity demanded divided by % change in price. Typically a minus sign is attached to the elasticity of demand to make it a positive number. Elasticity is a unitless measure.

**Equilibrium** - A position of rest where opposing forces are in balance.

**Evolutionary Equilibrium** - is a resting point of a dynamic process among diverse types of players where successful strategies or types are able to gain a dominant position by replicating themselves more frequently.

**Evolutionary Game Theory** - studies the population dynamics of repeated
game. Unlike standard repeated games, the number and type of players are allowed to change over time in evolutionary games.

**Excess Demand** - quantity demanded minus quantity supplied

**Externalities** - Occurs when a decision variable of one economic agent enters into the utility (production) function of some other agent and no mechanism exists to compensate for the resulting costs or benefits.

**Firm Supply Curve in Perfect Competition** - The marginal cost curve above min average variable cost.

**First-Mover Advantage** - an agent who gains a strategic advantage by moving first.

**Fitness** - determined by the payoffs that a player receives through its strategy. The likelihood that an agent survives to reproduce is positively related to its payoff received through its interactions.

**Free Rider** - someone who contributes less than they should to the public good. A free rider relies in whole or in part on the contributions of others.

**Fundamental Hypothesis** - Parties formulate policies in order to win elections, rather than the reverse.

**General Equilibrium** - Concerned with interactions among all markets and sectors. General equilibrium occurs when all markets clear so that excess demand is zero.

**Governments** - Organizations that have a sufficient monopoly of control to enforce an orderly settlement of disputes with other organizations in the area--it is the final guarantor behind every use of coercion in the settlement of disputes.

**Grim Strategy** - starts by cooperating and switches permanently to defection following the opponent’s first defection.
**Incoherent Dynamic Choice** - a society seeks its best-ranked alternative, but chooses instead the worst-ranked alternative by the end of a sequence of decisions.

**Incumbent** - Existing officeholder.

**Indifference Curve** - A curve depicting all combinations of goods yielding a constant level of satisfaction.

**Industry** - Group of firms selling a well-defined product.

**Information** - Data about the current developments in and status of those variables which are the object of contextual knowledge.

**Internalization of an externality** - When an imposer of an external cost (benefit) is made to compensate (is compensated for the benefit).

**Isoquant** - All combinations of inputs that yield the same output level.

**Justice** - Is introduced into the collective decision process through the nature of the information made available to individuals in the original position. Thus emerges the fundamental notion of *justice as fairness*.

Screen out:
1. tastes
2. natural talents
3. social position
4. income
5. wealth
6. which generation

Since all individuals have access to same information implies that all will reach same conclusion as to the set of just principles to be embedded in a social contract. Equality in the original position leads to unanimity over the social contract.

**Kin Selection** - where offsprings interact with siblings in the subsequent period. Strategic choices are programmed by the player’s genetic code and are not conscious choice.
Law of Diminishing Returns - As additional units of a variable factor are applied to fixed factors, the resulting increase in output will, after some point, be successively smaller.

Leadership - The ability to influence voters to adopt certain views as expressing their own will.

Margin - the slope of a function--it is the change in the dependent variable divided by the change in the independent variable.

Marginal Rate of Technical Substitution - MRTS - The amount of labor that can be substituted for capital and still maintain the same level of production (minus slope of isoquant).

Marginal Revenue Product - MRP - The additional money earned by an additional unit of a factor of production

\[
MRP = MP @ R \text{ or } VMP = P @ MP
\]

Market - (Lipsey-Steiner-Purvis) definition from the point of view of a household, the market consists of those firms from which it can buy a well-defined product; from the point of view of a firm, the market consists of those buyers to whom it can sell a well-defined product.

Market - A mechanism or place for the voluntary exchange of property rights.

Market Failure - The inability to account for all relevant benefits and costs - failure of a more or less idealized system of price-market institutions to sustain desirable activities.

Market Structure - Type of market that firms operate within (e.g., monopoly, perfect competition)

Monomorphic - population of a single type of player.

Monotonicity of Taste - Commodities are goods for which more is always preferred to less.
**MRS\textsubscript{xy}** - Marginal rate of substitution between good x and good y. MRS is the amount of y that the individual is willing to sacrifice for a unit of x and still maintain the same amount of satisfaction. Minus slope of indifference curve.

**Nash Equilibrium** - results when an agent chooses his or her best or optimizing choice for one (or more) variables, given that the other players have chosen their optimizing or best responses for this (or these) variables. At a Nash equilibrium, neither player would unilaterally want to change his or her choice.

**Nonexcludability** - Inability to prevent a consumer from receiving the good's benefit once the good is provided.

**Nonrivalry of Consumption** - (jointness in supply, indivisibility) - One person's consumption of the unit of the good does not detract from the consumption opportunities of other people from that same unit.

**Normative Proposition** - That which is based upon value judgement, and as such, not provable by use of facts. What should be done.

**Open-Access Resources** - a resource that is owned in common with no limits of access.

**Opportunity Costs** - Every time one is forced by scarcity to make a choice, one is incurring opportunity costs. These costs can be measured in terms of the value of foregone alternatives.

**Ordinal Analysis of Consumer** - Households can rank bundles as preferred, indifferent, or inferior.

**Original Position** - total equality.

**Pareto Optimal** - A position where no one can be made better without hurting at least one individual.

**Pareto-optimal move** - A move that helps at least one person and hurts no one.

**Pareto-superior position** - is a position where at least one person's welfare
has been improved and no one has been hurt.

**Partial Equilibrium** - Examines isolated market ignores "spillover" and feedback effects from other markets.

**Pavlov Strategy** - player repeats a strategy that gives a high payoff and switches from a strategy that gives a low payoff.

**Pigouvian tax or subsidy** - the distortion introduced by an externality is corrected by imposing an equal and opposite tax or subsidy distortion so as to equate marginal social benefits with marginal social costs. For a tax, the tax equals the marginal external costs imposed.

**Political Party** - A coalition seeking to control the governing apparatus by legal means.

**Positive Proposition** - That which is based upon fact, and therefore may be proved or refuted by use of facts. What will happen.

**Prisoners’ Dilemma** - a noncooperative game with the trademark ordinal matrix. In a PD game, each player uses its noncooperative strategy.

**Private Good** - A good which is rival and excludable.

**Privileged Group** - includes at least one person whose net gain from providing an activity is positive even if they have to do it alone.

**Producer Surplus** - The difference between the firm's sales and its variable cost. It is the "triangular area" above the supply curve and below the price line.

**Production Efficiency** - maximum output for a given amount of input.

**Production Efficiency** - $MRTS_{KL}^P = MRTS_{KL}^R$ for all firms.

**Production Possibility Frontier** - A graphical depiction of the necessity of choosing between competing goods for production, the inability to produce combinations of the two goods greater than allowable due to scarce resources, and the opportunity cost of having to give up some
of one good to make more of the other.

**Profit** - Revenue minus cost.

**Profit** = TR - TC.

**Property Rights** - A claim of ownership (written or implicit) which gives to the possessor control of the benefits (or costs rendered).

**Public Choice** - The application of economics to nonmarket decision making or the application of economic methods to the study of political processes.

**Pure Public Good** - A good which is nonrival and nonexcludable.

**Rationality** - Only if human actions form some pattern can they ever be forecast or the relations between them subject to analysis. Behavior reasonably directed toward the achievement of conscious goals. Means not ends judged rational.

Down's model is based on the assumption that every government seeks to maximize political support.

1. government seeks to maximize political support.
2. government exists in a democratic society where periodic elections are held.
3. primary goal is reelection and election of those parties out of office.
4. party receiving most votes controls the entire government until the next election.
5. government can't hamper operation of other parties.

**Reciprocal Externality** - both players impose external effects on one another.

**Reliability** - Behavior is predictable.

**Repeated Game** - is a particular game, complete with its strategies, players, and payoffs, that is played over and over again. Three key ingredients
are unchanged from period to period.

**Responsible** - Policies in one period are consistent with its actions or statements in a preceding period.

**Rules for Profit Maximization (Short-run)**

1. MR = MC (1st order condition)
2. MC cuts MR from below (2nd order condition)
3. P > AVC (shut-down condition) then you would produce (also produce if TR > TVC)

**Second-Mover Advantage** - an agent who gains a strategic advantage by waiting so as to move second.

**Security Dilemma** - arms race leads to nations growing weaker economically with no true gain in security.

**Social Contract** - A set of principles to apply to the development of the "basic structure of society." They are to govern the assignment of rights and duties and to regulate the distribution of social and economic advantages. It includes:

1. A set of just institutions to mitigate the effects of chance on the positions of individuals in the social structure.
2. Unanimous choice.
3. **Veil of ignorance** - ability to divorce oneself from knowledge of one's own personal attributes and social position.

**Social Optimum** - Marginal social benefit (MSB) = marginal social cost (MSC).

**Spillovers** - public good benefits received from others.

**Stable Equilibrium** - Occurs when a disturbance that moves the system from equilibrium is met with a natural tendency that returns the system to equilibrium.
Statics - An analysis of equilibrium.

Strategic Behavior - a player’s choice depends on that of the other players. Interactive choices that cause agents’ payoffs to be interdependent are known as strategic. Also involves recognition of the interdependency.

Strong Sustainability - Natural K cannot fall.

Supranational Structure - a government beyond the national level.

Sustainable Growth - growth is sustainable if it does not limit the options still available to future generations. The preservation of these options may be presented in vastly different fashions) e.g., constant real consumption through time, or a constant welfare level through time.

Technology of Public Supply - the association between individual contributions and the total quantity of the public good.

Terrorism - The premeditated use, or threat of use of extra-normal violence or force to gain a political objective through intimidation or fear.

Tit-for-Tat - player begins by cooperating and then matches the opponents’ previous-period play.

Top-Level Equilibrium - \( MRS_{xy}^i = MRS_{xy}^j = MRT_{xy} \) for all individuals (i.e., slopes of indifference curves equal slope of production possibility frontier.)

Transaction Benefits - Benefits that are associated with the mode of allocation.

Transaction Costs - Costs that are associated with the mode of allocation.

Transitivity of Indifference - If AIB and BIC, then AIC.

Transnational Terrorism - Concerns terrorist activities involving terrorists, institutions, government participants, or victims from more than one nation. Incidents originating in one country and terminating in another
are transnational, as are incidents involving the demands made of a nation other than the one where the incident occurs.

**Two previous approaches to government:**

1. The state as a separate person with its own ends not necessarily related to ends of individuals--called the *organismic approach*

2. Only individuals as having end structures => incomplete since ignores conditions.

**Two Principles of Justice:**

1. Each person is to have an equal right to the most extensive basic liberty compatible with a similar liberty for others.

2. Social and economic inequalities are to be arranged so that they are both (a) reasonably expected to be to everyone's advantage, and (b) attached to positions and offices open to all.

**Uncertainty** - Any lack of perfect knowledge; most uncertainty can be removed by acquiring information.

**Unidirectional Externality** - only one person imposes the externality on others.

**Unstable Equilibrium** - Occurs when a disturbance that moves the system from equilibrium is met with a natural tendency that removes the system further and further away from equilibrium.

**Weak Sustainability** - a zero downward change in total capital stock over time. Total $K = \text{human } K + \text{manmade } K + \text{natural } K$ must not fall. Natural $K$ can fall if another form of capital makes up of the fall.