

The Laborless Mode of Production

“Nor was this appropriation of any parcel of land, by improving it, any prejudice to any other man, since there was still enough and as good left, and more than the yet unprovided could use. So that, in effect, there was never the less left for others because of his enclosure for himself. For he that leaves as much as another can make use of, does as good as take nothing at all. Nobody could think himself injured by the drinking of another man, though he took a good draught, who had a whole river of the same water left him to quench his thirst. And the case of land and water, where there is enough of both, is perfectly the same.

John Locke, *Second Treatise of Government*, Chapter V, paragraph

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This quote is referred to as the Lockean Proviso. It is considered to be the foundational philosophical justification for property and the enclosure of natural resources into property. Corporations use labor as a natural resource that is mixed with the corporation’s plan and new property is created. This property comprises the labor of all the workers and the entrepreneur. All of their labor is combined together and assigned to the corporation. As Hobbes would put it, they formed a Covenant of Commonwealth. This property is sold and the market proceeds are given to the corporation in the market. That corporation then decides how to portion out the proceeds to the folks whose labor was enclosed to make the new property. The money paid to the various people is the very money used to purchase the property previously produced, in the market. The wages circulate the money back into the hands of the corporation, paid to labor, used to buy products at market, handing it back to the corporation. This enclosure of labor and then its sale as property is just when two conditions are satisfied: first, all the money paid at market to the corporation is distributed justly within the business to balance purchasing power, and second because there exists demand in the market for their labor, sufficient to access the products for sale.

When a corporation employs a laborless means of production, it can produce for sale commodities that no one labored to create. Workers may have labored to set the system up, but for each unit of salable new property, there was no new labor mixed with it. This makes the ownership of the property dubious, because no labor was mixed with natural resources resulting in new property. Dubious ownership of the newly created item makes the justness of sale of this “property” dubious. Most of all, the ability for skilled labors to sell their labor in a market is infringed, by the robots outcompeting labor in the market generally. The issue is the quantity and quality of jobs remaining as automation starts its ramp up. The aggregate labor market taken as a whole is shrinking for human labor because robotic labor is consuming so much of the market. The enclosure of the whole of the labor market by corporations employing automation is not leaving enough jobs for the number of people on earth that have only labor to sell.

Robots do to the labor market what Locke is warning against, they are not “leaving as much as another can make use of”.

Automation seems to violate the Lockean Proviso with respect to the labor market.

Labor as the basis of production is a defining feature of the Capitalist Mode of production, as well as Socialist and Communist projects. None of these theories can cope with the lack of labor in production, on a fundamental level.

In the Capitalist mode, value circulates through the virtuous cycle, one of the nodes is wages paid to labor. Value in this mode is produced in the process of production. The laborer produces their wages worth of value plus the profit value in the production process. This product is sold by the business at market for a price and the entire price is given to the business. The money received is paid out as income, which is the demand side of the equation in the marketplace. Take labor out of the equation and you remove both cost and demand. Capitalist mode of production can not exist without realizable demand in the marketplace because of a demand-side cavitation, breaking the informational link between supply and demand.

In the Socialist projects, it is the laborers that have the right to run society because they make everything. The assumed means of production for the socialist project matches the capitalist, but the difference is that the state guides investment on behalf of the laborers. Faced with the redundancy of their power base, there would be perverse incentives for socialists with automation. The motivation would be to restrict the roll out of labor elimination, for the sake of control. This will either work and produce misery and deprivation, or fail to stop automation and cause instability. In either case, the best interest of the folks living in that society will not be as well served as if control were hyperlocal.

The Communist project implies that the laborless mode of production is possible and desirable. This at first blush seems compatible, and superficially it is. The core difference lies in the role and composition of the state and property. Communism implies that the state has withered away and property is no longer enforced. Elimination of state and property do not help the creation of automated production of any kind and in fact hinder it. For a successful robotic factory, a peaceful coexistence with the state and the legacy capitalist markets is both desirable and necessary. Participation in capitalism might be optional, but coexistence is necessary to preserve the vast knowledge accumulated in the legacy businesses and production systems. This accumulated knowledge is what is enabling the robotic mode of production in the first place. The very nature of the revolution to sweep away capitalism and install communism will be sweeping away the very means that theoretically made the project possible.

Adam Smith, David Ricardo, and JM Keynes each assert that value derives from labor. Despite the differences among them theoretically, they each founded their theories on the prime nature of the labor theory of value, each referencing Locke's formulation of property as the justification. I agree with that explanation of value and must now point out what happens when the labor content of a commodity trends toward zero in each of these theoretical frameworks. Since

labor theory of value is the keel of each of them, ripping it out of the argument will not leave a leak free theory. The keel in this case is Locke's formulation of property. Our analysis of Locke's formulation of property means that output of automation does not contain anyone's labor, and so can not justly be property. This is just to state formally that one cannot use Marxist nor Classical economics to describe the relations of production within the Laborless Mode of Production. Those theories are for the industrial capitalist mode of production, and criticisms therein. When applied to the Laborless Mode of production, economies using these theories become unstable and break down, in ways we will explore together.

Within the confines of a means of production that required labor, these positions were contentious, but each raising valid concerns. Capitalism, Socialism and Communism just aren't theories that can describe a world that has laborless production springing from the overabundance of the current capitalist mode of production.

Let us explore a mode of production that is not based on labor. Let us explore the Laborless Mode of Production.

Laborless Mode of Production

Before robots and automation raised the issue of Laborless production urgently, this mode of production was achieved with a much different kind of accumulated knowledge.

A primary example of this form of accumulated knowledge is the food forest. Living within a food forest, with a community that cares for your wellbeing, is a good way to illustrate the concept at work. There are a few modern, and some ancient and continuous examples you can visit today <Citation needed>. In a food forest, one is never more than a short walk from more than enough food for yourself and family. These forests take time to construct, and a tremendous knowledge of the complex interactions of the various plants, animals and fungi that work together to produce abundant food output. Once built though, accessing the abundance is as easy as walking up and taking it. This abundance provides for generations, in some cases thousands of years. The trees provide material to build homes as well as food. A home like the forest itself, may take labor to build, but provides that value for hundreds of years.

Living in a place that had been constructed to provide continuous abundance means your relationship to labor is different. No one specializes in food production, because that just happens around everyone. It's hard to sell a melon next to a melon tree. labor is no longer associated with survival. As a result, labor might be a seasonal activity associated with a festival to build the new homes for the year, or a rare ceremony that happens once in a hundred years to build new sections of forest. In between the festivals folks live their lives how they see fit. They take care of each other, make art and tools, take care of the structures built by those long gone, to pay forward the work they had done that is presently benefiting themselves. Many humans live like this now, many more lived like this through thousand year stretches of history. There is growing evidence that

the Amazon Rainforest itself was deliberately constructed by ancient humans as an enormous food forest, catering to the wants and needs of those humans. This relaxed lifestyle is not anathema to our humanity nor detrimental to our creativity and compassion.

The basic requirements for the Laborless Mode of Production: Production of goods that do not need marginal labor. That labor is freed for other purposes. Once necessary goods are produced in a laborless way, all other production is optional, so the stakes are much lower. The social relations around laborless production need to take this change in state. Requiring labor in exchange for products with no labor is a breakdown of the labor market. Remember that (ala Adam Smith) money itself is just other people's labor owed to you. <we need to make this point before now> How can you require someone's labor in exchange for a thing it didn't take any labor to produce? How do you allocate what is produced?

In a food forest community, the group of people affected by decisions of allocation is small enough to meet and discuss solutions to common problems. With the abundance providing for all, the collective effort is only needed to maintain the abundance. Disputes can be local and personal and imbalances can be negotiated by the community. <suddenly introducing the idea of local. is this supported?> These communities could benefit from being an ancient traditional culture with conflict resolution, or an intentional community set up with self-awareness to deal with conflict resolution. These communities must have social relations that bind them together in the absence of production as an organizing principle.

The market system that most of us live in has finally produced technology so productive that we have systems that can produce value exclusively in the laborless mode. Because the means of production is robotics, the activation energy of deployment is high. As a result, robotics was not rolled out, all at once, across the whole market system, accompanied by new social relations to deal with distribution. As convenient as that might be, it's laughably impractical. What we see instead are individual corporations shifting into the laborless mode of production and selling products into the market system, obliterating competition - one industry sector at a time.

To clarify, let's compare this production mode back to the fruit tree, extended in time. The people that planted the tree and tended to it before it bore fruit are long gone. The tree makes valuable products long into the future beyond the life of the folks that set it up. The fruits produced now contain no living person's labor, nor the labor of anyone to whom anyone alive owes them a debt. They are laborless commodities, produced at zero marginal cost. Just extend this laborless production concept in your mind to include factories that produce lots of different things besides fruit, then you have in mind the Technocopia Plant.

In the laborless mode of production, it is not production that organizes society, it is exchange. Production happens (in varying degrees for various commodities) automatically. Sure, some work is certainly needed, for consumption or mainte-

nance, but not enough to be an organizing principle of the society itself. It is the act of exchanging our labor for each other's benefit that forms the structure of society instead.

Robotics can be used as a new means of production

When talking about Robotics, we need to understand it as a potential new means of production, but not all robots are used like that. Only some configurations of robotics count as this new means of production.

Automation in factories takes on 2 kinds, human assisting, and human replacing. When a corporation makes the decision to deploy automation they can either do it in a way that the human marginal labor is producing more value, or the marginal labor is reduced or eliminated.

If adding automation kept the same workers working, but produced a higher price and higher pay for the worker (Econ 101), then robotics is being applied to support labor in the capitalist mode of production. The key to the distinction is the participation of humans in the marginal act of production.

If robotics is used to reduce the amount of labor in a product and so results in lower wages, it is evidently moving towards a laborless means of production.

If a piece of automation can provide market salable value without any labor in the marginal act of providing it, relative to the amount of labor to provide an identical second product, then it can be said to be a laborless means of production.

Robots' software takes on the role of labor power

The Industrial means of production require people to run the machines and produce value. For any single product produced with a machine, there is a marginal component of labor contained in each product because labor is required to run the machine at all. The person adds the skill and discretion of how the machine is directed and fed. Their contribution is to observe, know what to do, and do it. To sense, think, and then act. To reproduce this aspect of production, the laborer needs food, shelter and rest. To multiply this aspect of production requires the same amount of food shelter and rest for the second unit of laborer.

What differentiates the robotic means of production is that it has a different mechanism for sense, think, act loops. Robotic means of production uses software for this aspect of production. To reproduce this aspect of the means of production requires a few pennies of electricity. To multiply this aspect of production requires a few tenths of a penny's worth of disk space.

Industrial products contain labor, so they can require labor in the market to access the output. Products from Robotics Means of production do not contain labor and so can not justify requiring labor for access.

The Relations of Production

Now that we have established the robotic means of production and established how labor is or is not involved in production, we need to consider the relations of people to the outputs of production. Historically in economics tests, these folks would be referred to as laborers, but in this case they do not labor in production. Since we can not talk meaningfully about how any one person within a community could have a different labor quantity within an item of production, we can only talk with justice about how each person accesses the outputs of production, undifferentiated from other members of the community. The reason members of a community need to be looked at undifferentiated is because there is no information pathway of labor content in production.

In the industrial means of production, each item produced contained some amount of the labor of the workers operating the machines. This labor component set guardrails on the price of a commodity at the market. The market price could not fall below the amount of labor in the commodity because then it would fail to reproduce that labor to make another one in the future. The price can not rise too far above the labor component or another producer would arbitrage down the price with a cheaper product. If a product contains no marginal price, then there are no guardrails on price. The price of any commodity being produce somewhere in the market leveraging the Laborless Mode of Production can fall to zero and obliterate the market for labor in other parts of that industrial sector. To prevent this, corporations will set up IP or Monopoly barriers and use that to spike prices. Because there is no labor, there is no way to communicate appropriate price information through the market mechanism for laborlessly produced goods.

In the laborless mode of production, a clear and distinct line is drawn between labor exchange and production. These are effectively different domains. This split is due to the lack of information pathway between production and consumption. This split is conceptual, not literal of course, corporations continue to sell laborless products into the market to this day and will continue to do so. The split is a way of understanding the types of commodities that operate in the industrial mode of production vs products produced in the laborless mode of production.

Given that labor is not involved in production, let us consider all the other things humans do for each other. These interactions can be said to follow the structure of Trust Loops in Chapter <What Is Exchange>. Humans do favors for each other, and trust the other person to pay it forward, with the expectation it comes back around. Since labor can not exchange for production, there is no real way to model money into labor exchanges, as money is a finite commodity that now represents labor in a different mode of production. In the laborless mode of production money is replaced by Trust Loops and a gift economy.

Production management in the laborless mode of production, if we extend current trends into the future, needs a series of informational inputs that are now missing. Labor is not a component of the marginal cost of production, and the world no longer contains vast pools of laborers with money to spend.

Decisions need to be made on the capacity of the laborless means of production, production of long-term fixed assets such as housing or organization infrastructure. Decisions also need to be made regarding access, who has access and how access is regulated. Since the stakes are very low, as over production is not wasting anyone's labor, then the obvious conclusion is to exchange waitlists for idle stock, waiting for future growth. For production cue capacity, there are well-established examples from computer science, algorithms to ensure buffers never overflow model exactly production expansion. How to weight those algorithms and how much excess capacity are the sorts of decisions community groups would decide when determining how to be excellent to one another.

We must take a moment here to highlight the importance of the decisions surrounding production queue control. These decisions can be made by communities, for their own benefit, and that is my preferred configuration. It should be noted, however, there is no technological determinism at play here. One would need to set that decision structure up intentionally, and work hard to establish it. The legacy logic leftover from industrial production would imply lean production and maximization of profit. This decision could of course be made. Using logic from the previous mode of production in this one will produce unpredictable imbalances in access to necessary commodities for vast swaths of humanity.

As we will discuss in Chapter <A Technocopia plant : What> there is a particular configuration of the laborless mode of production that utilizes robotics, vertical farming, solar power, bio materials, and digital production called a Technocopia Plant. This plant can be paired with a social structure similar to that of a Makerspace. Members of the organization all pitch in a share of labor worked in the industrial means of production, in the form of money. This money goes to vitamins <not yet defined> purchased in the market system to maintain or expand the Technocopia Plant. Products are a vast database of uncountable configurations of different products producible with a technocopia plant. Any member can queue up a product from the database to be produced for them, and the Plant will report back how long it will take to produce it. Community decisions are made to set how the queue interacts with additional members, and how production is interleaved to accommodate every request, large or small, without clogging production for other members. This is not a particularly difficult problem in practice, as production queue management is already an often solved problem in makerspaces. By maximizing robotic production of goods, and gradually reducing inputs to those available anywhere on earth, the amount of labor needed to live one's whole life becomes miniscule. This mostly frees individuals up from external domination, free to pursue good endeavors with others. Production of material then becomes, to most folks experience, an act of nature, something that just happens and provides for us the benefits. Those interested in the Plant and interested in maintaining it would know how it all works, but most folks need know only how to pick and enjoy the fruit.

Early Food Forests

Historically the laborless mode of production has existed in many places and in

a few general configurations. Tropical fruit forests, nut grove based societies. In both cases access to abundant food requires no, or very little, unpleasant labor.

In the case of tropical forests, there is abundant food ready for consumption throughout the year. The variety and locations of trees were chosen so that at any given point in a year a few of the surrounding trees were in fruit, supplemented by roots and game. The abundance is year round, and the labor to collect it is minimal, or nothing more than a leisurely walk in the forest with friends. Since the food is directly available all year round, there is no need to collect and store the food, nor prepare it for that storage. When the food is to be consumed, any labor put in to crack a nut, peel a fruit or dig a tuber is consumed by the one who applied the labor. There is no need for labor exchange with respect to necessary objects of consumption. It should be noted that there are still humans living within the Amazon Rainforest enjoying the fruits of the construction labor of ancestors millennia ago.

In the nut grove societies of the Pacific coast of the Americas there is a slightly different configuration. These groves gave a vast overabundance, but just once a year. The communities had to coordinate storage, but the act of collecting them was nothing more than a leisurely stroll in the woods with friends, once a year as a festival. The rest of the year folks would eat from the stock of nuts, stored in common. In this case there was still a small amount of necessary labor to capture the vast abundance of the laborless production, but that labor was just shared in a festival, for a very short portion of the year.

Both of these food forests of old represent examples of humans living within a laborless mode of production. They do work, collaborate and trade, make art and socialize, all the activities humans normally do. But they do not have labor as the central organizing principle, they have different organizing principles. Most importantly I want to highlight that this idea is not new, nor is it unusual in the span of human history. Humans have chosen to live this way in the past, and we are free to choose to live this way again.

Machine age and industrial production mode

At the start of the Machine Age the dominant mode of production was already capitalism. The new means of production allowed the birth of industrial capitalism. The logic of this mode of production was to view structures like communally held food forests and just so much unenclosed land for them to mix with labor and make property. This blunder failed to understand, nevermind respect, the vast knowledge and labor that went into setting up a food forest the size of the original Amazon Rainforest, and other vast food networks maintained by scholars in the Americas. The machine age largely smashed and enclosed food forests when it encountered them during the age of European colonization. Capitalists, using justifications of Lock himself, would look at Humans living free and abundant lives and recoiled in horror. Religious magical thinking, and racist magical thinking lead to disregarding explanations of the vast technology they were perceiving. Because the Europeans were so unaccustomed to seeing

such abundance and human freedom they simply couldn't understand what they were looking at. They regressed to magical thinking and simply destroyed everything they could, calling it "progress" and "civilizing". Apocryphal stories of Humans living in the Americas being overawed by the vast sailing ships, unable to comprehend what they were looking at, seem to pale in comparison to the colossal misunderstanding and subsequent destruction of the European colonizers towards the systems of abundance they came across

As the machine age rolled out, with the food forests of old rotting beneath it, the industrial capitalist mode of production came to dominate production and the social relations of the majority of humans on earth. The industrial capitalist mode of production is enormously productive, far more than any other mode before it, but the structure extracts a steep price in miserable labor. The whole system is based on the vast majority of people spending the vast majority of their time miserable, taking orders, unable to leave, unable to disobey, unable to change the social arrangement. Capitalism is freedom only for the corporation, the leviathan is free, but no one within is free. Each individual has none of the Grae-Growian freedoms when participating in the industrial capitalist mode of production, and they are forced by conditions to spend every waking minute within that mode of production, either as producer or consumer.

The machine age destroyed many of the ancient food forests, but amongst the machines a new form of abundance was invented.

The first machine example was the first punch card loom.

The earliest transition from purely the industrial mode of production to a new machine based laborless mode of production can be claimed to be the Punch Card Loom. This is debatable, of course, but we will start here because the innovations made here have a direct thread leading to modern computers and robotics.

At the time of its invention, patterns woven into rugs involved a direct creative process. The weaver would decide the color of thread to use for the next pixel of the weave, and select that thread visually, and pull it into place with his fingers. The inventor of the punch card loom invented a system that used holes punched in little wooden cards that controlled the which colors to select for any given weft of the loom. The cards arranged in order would produce exactly the same image woven into the fabric every time. The task of thinking about the image, identifying the color thread, and putting it in place moved from a human into the first robotic program. The sense, compute, act loop moved from a human to a program and a robot.

This seemingly small change has had a massive implications for the course of production and humanity.

From humble beginnings in the punch card loom the process of combining computation with actuation a vast domain of invention was opened up. Humans are creative, and when given a new tool, we applied it all over the place. The

punch card loom technology became the player piano, and this innovation was the first time a robot can be seen to put a human out of work.

Time marched on and punch cards were adapted to be the first programs for the first programmable computers. Just like the punch card loom, the holes in the cards contained programs that were run by a vast machine to solve computation tasks. Punch cards became magnetic tape, then magnetic disks, then flash memory. Computers went from room sized, to desktop, to handheld, to microcontroller sized. With the miniaturization, the price performance of computation fell by half every 18 months.

In parallel to computing technology the industrial production equipment was beginning to incorporate more and more computation. As innovations in pure computing capabilities were pioneered, production would pull in the capabilities expanding productivity.

The transition in mode of production from industrial capitalist mode to the laborless mode thanks to robots will happen in specific factories first. As with the punch card loom, one aspect of the production was rendered laborless, and so it can be sold with maximum difference between cost and price, where prices are generally set by the rest of the labor market system. A single commodity is not subject to the demand-side cavitation seen when labor is displaced from the labor market. That means at first the laborless production did not violate the lockean proviso as it interacted with the market system. In fact it is a very desirable and competitive means of production within a capitalist mode of production. Where it goes from valuable and highly productive, to problematic, is when the volume of useful production increases to the point that the labor market is being eclipsed by laborless production.

There are potentially infinite configurations of the Laborless Mode of Production. This infinity of possibility comes from the possible ways humans could choose to arrange the relations of production. There is not a defined limit to the possibilities. The three we will here be discussing are two existing examples and the eminently possible Technocopia Configuration. More imaginative possible future configurations of the Laborless Mode of Production will be discussed in the chapter <The Five Futures> This Section is to provide examples of the theoretical framework laid out in this chapter.

Technocopia Plant Means Of Production

The means of production in a technocopia plant are vertical farming, robotic agriculture, fully autonomous material processing, and direct digital production. This collection of robots, machines and knowledge represents a huge accumulation of knowledge over thousands of years. This means of production is configured such that the vast quantity of the components of the machine are made within the machines, and this machine produces all of the food, shelter, healthcare, communication, transportation and education equipment needed for the population that holds the machine. The source code to run the machine as well as all of the designs for this machine are open source, as are the products produced by

it. No labor is involved with any production, and the maintenance is kept up by one of the 5000 or so people that are supported by the machine.

Materials of production

The materials that the Technocopia plant operate on are sunlight, air and vitamins. The input for all of the products of the machine itself are internally sourced. The vast array of plants grown in the vertical farm section provide not only food and medicines, but also the feed stock for the industrial processes. These plants in turn get energy from the LED lighting, and raw material from the air. Plants grow out of the air, not out of the ground. The energy for the LED lighting is captured by the solar panels on the roof, a major gain in efficiency is achieved by using PV and LED over direct sunlight. The water for the plants can be sourced from rain capture, air wells (industrial sized dehumidifiers), or if freely available, surface water.

Vitamins might be items such as silicon processors or bearings, or NPK fertilizer. These items are largely produced with automation at the moment, so conform to the laborless mode of production. Access to them is through traditional market means. This awkward arrangement is entirely due to these automated production systems being designed as part of the capitalist mode of production. It is possible for a group of people to set up equivalent laborless production and mediate access to the produce in away that is entirely compatible with the technocopia plant constraints. In the meantime there will be a small amount of labor in the traditional market system necessary for the smooth deployment of the Technocopia Plants. This awkwardness is why the goal of the Technocopia mode of production is to get rid of as many vitamins as possible from the designs of the products of production.

Relations of Production

Given the means of production as described, let's look at how humans currently manage vast complex factories of varieties of goods today. Let's look at Makerspaces, specifically Noisebridge in California. Makerspaces are organizations that pool member dues to rent a building, fill it with the highest tech manufacturing tool they can get their hands on, and then make those tools freely available to the membership. Noisebridge has only one official and permanent rule: Be excellent to one another. Since this is obviously vague, the process is that once a year they have a special party. At this party they sit and seriously discuss what being excellent means to the community members. They discuss how they expect to behave with respect to one another. They then adopt the outcome from the discussion as the rules of operation for the upcoming year. Afterwards they celebrate with a feast and a dance party. I feel like we all have a lot to learn from this example.

When dealing with a fully automated means of production, access to the output needs to be governed by some rule set that everyone in the community can agree on. Since no one's labor is involved in production, using their labor to meter access to output makes no sense. And since no one's labor is involved in

production, the rules for distribution should apply to everyone, in the same way liberty is a right ensured to all by the government because all people were created equal. The queue management algorithm is the set of rules that determine how peoples orders for stuff get processed through the queue. As we learned from computer science, queue management is complicated, but a solvable problem. One solution is to use the buffer expansion pattern. Assume production capacity is analogous to the size of your buffer. You want to make sure that if you get a burst of orders that you have enough spare buffer to absorb it. So when you get to over a certain percentage of the capacity, you should begin production of expanded capacity, since that is a non-zero-time event. It will take time to produce that extra capacity, by which time the production demand should be met. The community just needs to decide on the coefficients for when the capacity production begins.

As for the question of how much each person gets, thats also managed by whats called a multi-feed queue. Multi-feed queues balance multiple, or long duration production orders, against orders placed by others. You also do not want to have a situation where production is idle for too long. You can allow anyone to queue up anything the want produced, but of course everything takes time to produce. Time on the production queue is also mediated against the time on the queue of others. This may sound complicated, but this algorithm manages queues of trade orders in every bank all over the world, this is used by hackerspaces to manage access to 3d printer resources, and is generally not difficult to tune a few coefficients to get whatever result desired. Because it's an algorithm, it can not favor any individual or class of person, and so allocates the resources as they are produced by robots, to each as they have need or want of them. As with the expansion coefficients, the makerspace community will decide each year how these coefficients are set for the year.

The core thrust of the relations of production in the technocopia plant configuration is that labor and production are separate things. Labor exchanges are for humans exchanging labor with humans, production is using laborless means to produce things. These can not be exchanged, so they must be managed with human social structures.

Permaculture Means Of Production

In permaculture, one needs the appropriate seeds, environment, and topology knowledge to establish a new food forest. These forests can not be built everywhere, and the type of forest it's possible to build depends entirely on the natural conditions. That said in nearly every climate humans currently inhabit it is possible to design and build a food forest to sustain humans.

Materials of Production Just as with the Technocopia Plant configuration, the materials are the air, the sun, and the vitamins in the soil. It may be necessary for humans to help out by evening out the fertilization of minerals in the soil, but once established, the nutrient loop will recycle the minerals back through the soil and into the forest. If properly set up, and maintained, this means of

production requires no labor to supplement any materials into the system. The production is laborless, starting with the acquisition of raw materials to work on. The energy shines down from space, the material is ingested as CO₂ gas into the plant's stomata, and the rain falls from the sky, into the soil, and into the roots. Humans added the knowledge and arrangement of these natural resources such that there is abundance produced continuously, and so the system self maintains.

The downside of this means of production is that it does not include the full complement of modern technologies. Medicines and the production equipment needed for them are a distinctly modern invention, and natural systems do not equate. This is a totally free mode of living, but total freedom is dangerous and littered with preventable tragedy.

Relations of Production

As with the Technocopia plant, the relations to production are free from production having a marginal component of their labor. Any social arrangement is possible, since none is enforced by the act of production. No hierarchies are present in the production process like they are in the modern corporation, and so there would be no day-to-day experience of hierarchical domination. Humans can engage in gift economies, trust loops, and an uncountably large number of different arrangements. With no social relation tied to production, it is truly a wide open field of possibilities.

Capital-parasitic Means Of Production

This means of production follows the Technocopian Plant for designs and capabilities, but makes a specific distinction where the designs and means of production themselves, are kept secret. With this means of production a person or corporation would gain absentee control over a Technocopia Plant and use the output to sell in the marketplace for other peoples labor (money). Since the products do not contain labor, this money collected is a pure rent. As we saw in Chapter <Personal Property: What> rents are unjust. Collecting labor based value from a laborless means of production breaks the virtuous circle, violates the lockean proviso with respect to the labor market, and constitutes an unjust rent. This extraction without equivalent labor makes this type of business not symbiotic, but parasitic on humans who sell labor. Capital behaves like a parasite, so the name for this configuration is the capital-parasitic mode.

Materials of Production

As with the Technocopia Plant configuration, allowing unlimited capacity, and unlimited capacity expansion. Capital can be used to set up this first capital-parasitic plant, but after the initial setup, the plant can expand its own capacity without much additional capital expenditure. The throughput of the machine consumes no labor, so any price charged at the market will be pure rent. The majority of the materials come in through the air, and the few vitamins consumed teather priced to a lower bound. A clever corporation will be motivated to reduce and eliminate the vitamin content in products for this reason. From the

corporation's perspective, this represents the potential for a total vertical, and total horizontal monopoly.

Relations of Production

As with the other two configurations, there is no labor contained in the products of the capital-parasitic configuration. In the other two configurations the decisions about production are managed by and for the people, democratically. The corporation employing a private capital-parasitic means of production would be governed by the same shareholder value theory that governs all modern corporations. The corporation would be motivated to seek and extract the maximum rent possible. The question that is unanswered, how do people close the loop with the corporation? Where do people get the money to buy products with no jobs being offered to produce products?

The money captured goes back into capital, producing more of the same parasitic effect. This loop tends towards instability as capital is used to produce parasitic automation, the automation collects neat rent income, and with no one to spend the income on, the money is best invested in additional capacity. The parasitic-capital configuration of the laborless mode of production tends towards system instability.

With this definition of the Laborless Mode Of Production, let's explore the ways this mode can be configured, and what possibilities await humans within this mode.