

The compositional point of view  
labour time, partial worker, cooperation

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### **The basic structure of our argument:**

1. Given that we can reconstruct *Capital* in CT terms...
2. We can also define use -sets as logically constrained by the commodity form, rather than as something external to value logic
3. If this is possible, then “real abstraction” can be defined directly on labor-use sets, as logical restrictions of actual labour
4. If commodity use sets are part of the logical space, we can add a operation of resolution-abstraction to them, making intelligible the many ways in which labour-use can be “sliced” in production (generalized theory of partial worker)
5. And we can also affirm that there are sets of parts of labour-use that are distinct from the bundle of employed labour-power (generalized theory of cooperation)

## what is a “resolution”?

- **language approach:** resolutions as operational concepts to move from a domain of predication to one of another scale of analysis (ex: “pieces of wood” → “molecules”)
- **categorical approach:** resolution as endofunctors with certain commutative properties
- **lattice theory approach:** resolution as filters on infinite posets with certain unclear properties
- **computational approach:** resolution as iterational limit on a recursive fractal function
- **fractal geometry approach:** resolution as nondifferentiable paths in fractal space - paths that converge to incompatible limits
- **type theoretical approach:** resolution as sets of fibers whose elements are made indistinguishable from the perspective of a certain functional process.

**what is an “atom”?**

**analytic condition:** to discern a minimal predicate such that two things that fall under that predicate are indistinguishable

**synthetic condition:** an atomic predicate must allow for the localization of other predicates with regards to it, creating a network of compatible predicate-parts

**material condition:** such a network gathers not predicates themselves, but the parts of the world that were discerned through them

**Attribute:** set of possible predicates on parts of a world

**Resolution:** a determination of the base unit that establishes a form of measuring the world (attribute + synthetic characteristics)

**Resolution-range:** the set of possible resolutions that are accessible in a given world (attribute + synthetic+instrumental condition)

**Scale-change:** the case where the change in atomic resolution leads to a material synthesis of the world that does not preserve the minimal and maximal of the origin-world.

**Layer-change:** the case where the change in atomic resolution leads to a material synthesis of the world that adds information that is not accessible through mere predication, but which does not contradict the origin-world.

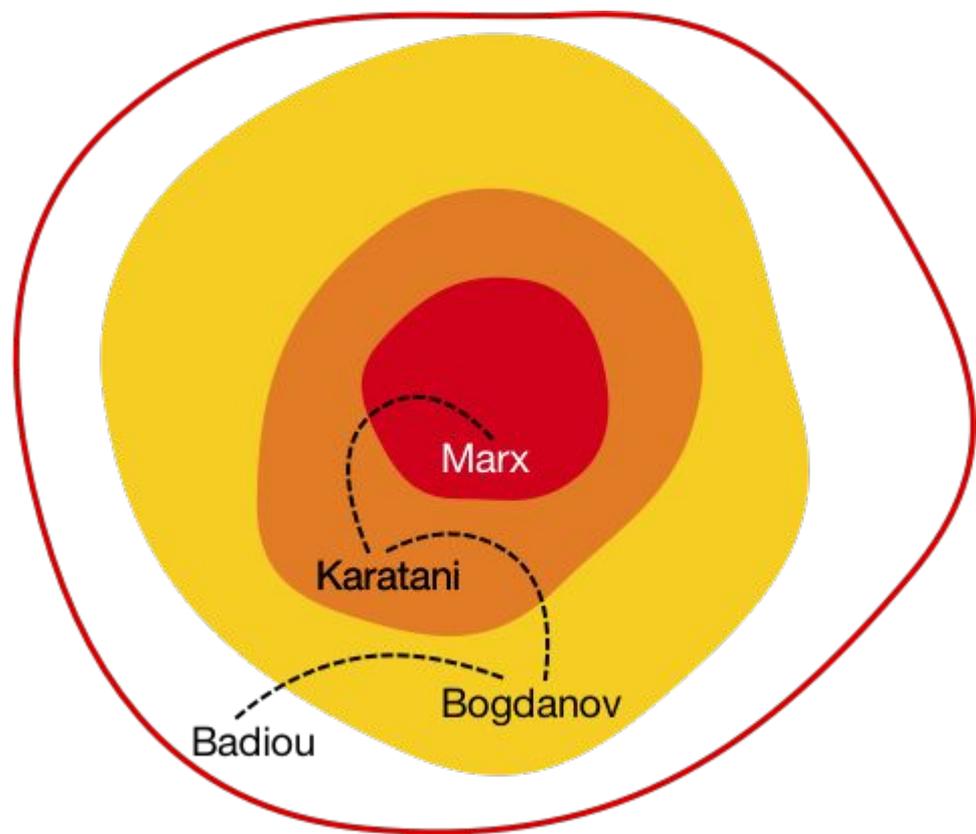
# **The compositional point of view**

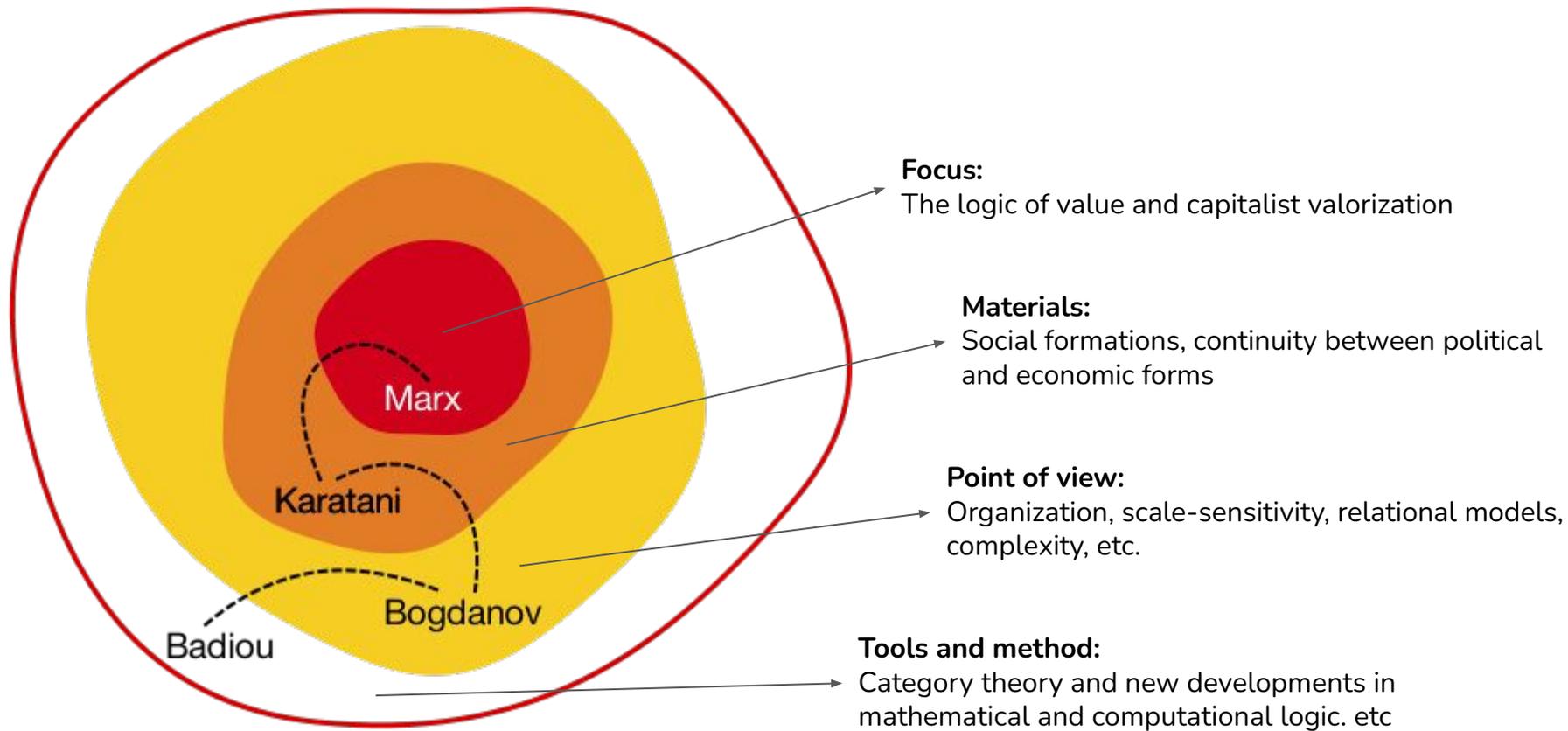
labour time, partial worker, cooperation

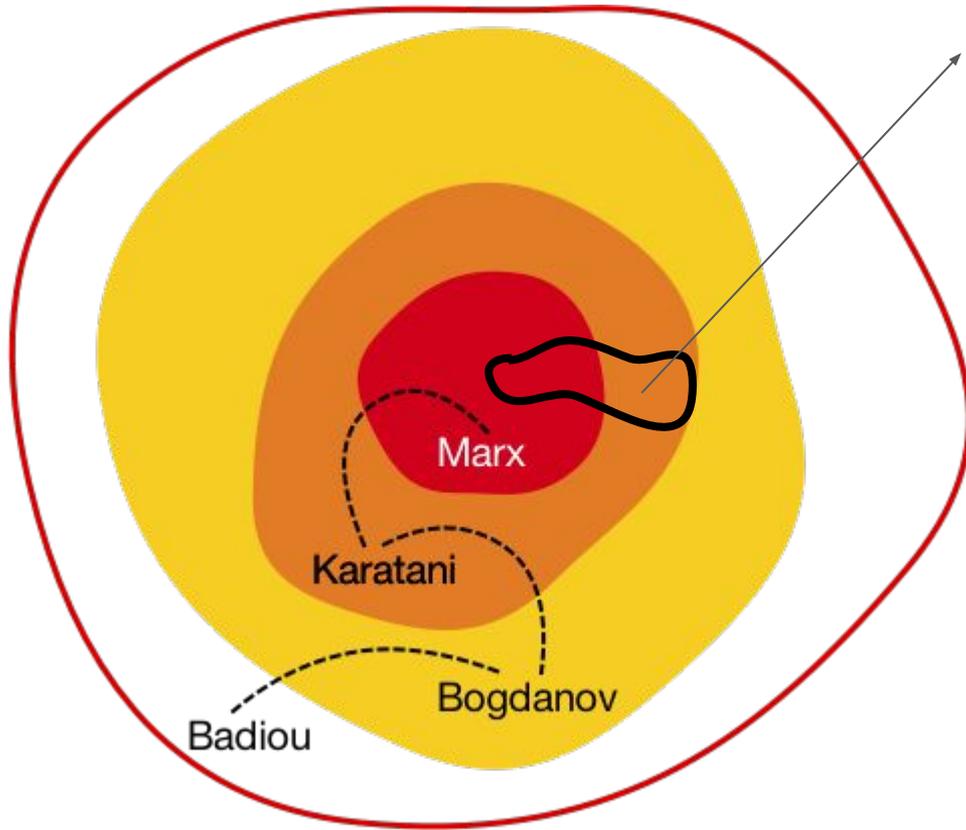
1. Contextualization
2. The compositional point of view
3. The idea of resolution and resolution boxes
4. From labour use to labour time
5. Cooperation, manufacture and modern industry
6. From labour sites to cooperative novelty

**How does this presentation fit into our general research project?**

- 1. Contextualization**
2. The compositional point of view
3. The idea of resolution and resolution boxes
4. From labour use to labour time
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**Objective:**

Theory of collective organization as experimental site for non-capitalist economies

**Focus:**

The logic of value and capitalist valorization

**Materials:**

Social formations, continuity between political and economic forms

**Point of view:**

Organization, scale-sensitivity, relational models, complexity, etc.

**Tools and method:**

Category theory and new developments in mathematical and computational logic. etc

## The compositional point of view

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graph TD; A[The compositional point of view] --- B[Compositionality and generative effects  
(17/08/2020)]; A --- C[Essays in Tektology  
(01/03/2021)]; A --- D[A Primer on Political Phenomenology  
(18/01/2021)]; A --- E[Vibing with algorithmic socialism  
(22/03/2021)];
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Compositionality and generative effects

(17/08/2020)

*A compositional interpretation to emergent effects*

Essays in Tektology

(01/03/2021)

*A “relativistic” theory of organization and cooperation*

A Primer on Political Phenomenology

(18/01/2021)

*Conceptual language that the current presentation is based on*

Vibing with algorithmic socialism

(22/03/2021)

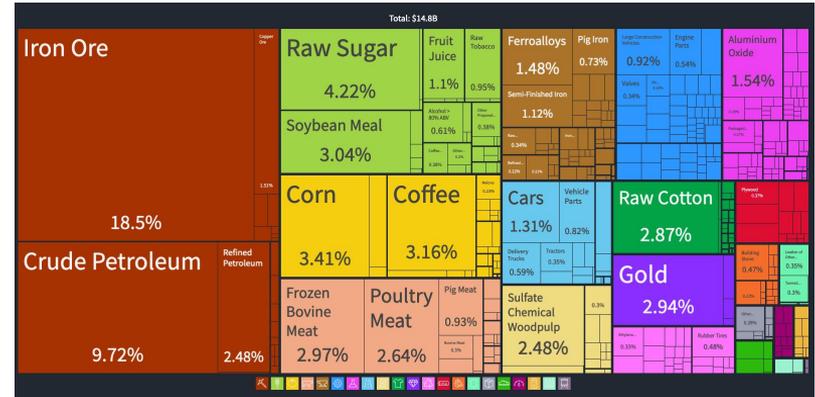
*Debate around production, circulation and the role of technology in socialism*

*Additional connections with previous discussions about capitalism, predication and scale-sensitivity (Caron), the use of partitions as measure of complexity (Renzo), transformations to the measure of value across scales (Raquel)*

What is the underlying “conceptual grammar” that informs our approach to the topic?

1. Contextualization
2. **The compositional point of view**
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The **compositional point of view** is simply the view that **things of some type** are made of **other\* things of the same type**. In the case of commodities, every commodity is made of other commodities.



\*for formal reasons, it is allowed to say a thing is made of itself, but this is the trivial case

The **operational view** (or **categorical view**) adds a key feature: **the possible transformations of a thing determine a thing**. Therefore, to study a “thing of some type” and its internal composition, is to study a **certain collection of transformations**.

There are two fundamental kinds of transformations of commodities: **production** and **exchange**. Compositionality then boils down to two facts:

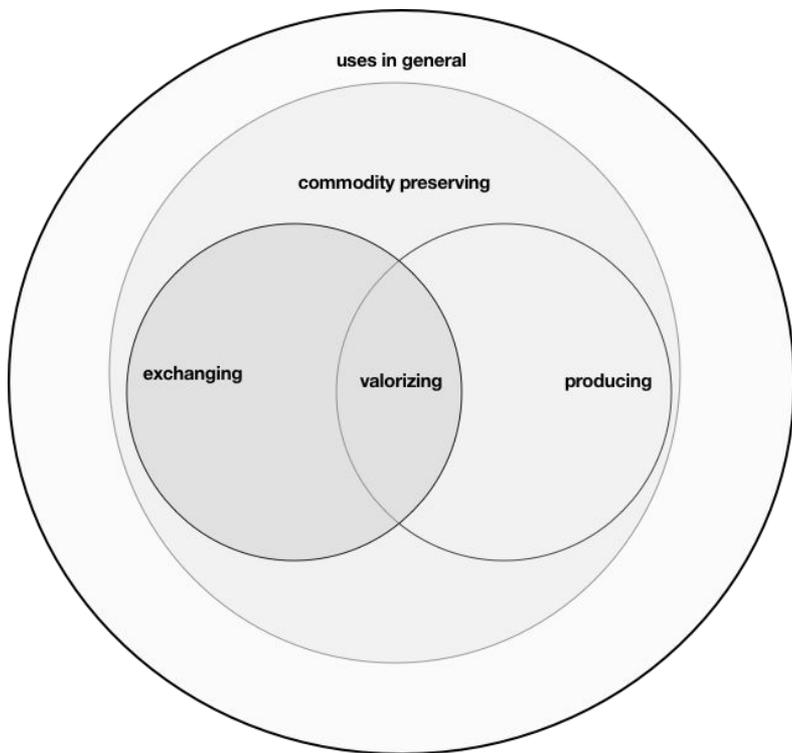
- If I can produce **B from A** and **C from B**, then I can produce **C from A**.
- If I can exchange **A for B** and **B for C**, then I can exchange **A for C**.

Composition is about **both building things up** and **breaking them down**.

We don't need to know all possible ways a thing is built up, because we can isolate the parts of it that are determined by certain conditions or constraints. We call this the **method of logical restrictions**.

Example: we may not know **all of the forces** that act on a physical body, but we can talk about the effect of **gravity**.

Another example: we may not know **all the uses** of a commodity, but we know it can be used to **make a chair**.



The operational space (category) starts out as **all possible** transformations of objects. Commodities are, more broadly, useful in ways that **do not necessarily preserve their commodity-form**.

To apply the method of logical restrictions, we need a **formal language** that can specify **constraints** on transformations. This is the diagrammatic language of **category theory**.

In addition to the diagrammatic language, we can also form an **internal language** for certain special categories. Every statement in this internal language corresponds to a particular object of the category. This is called **categorical semantics**.

The internal language of a category **might be insufficient** to characterize a particular phenomenon or behavior. Then we can **embed** the category in a larger one.

How do we conceive the “space of use” in a scale-sensitive way within our framework?

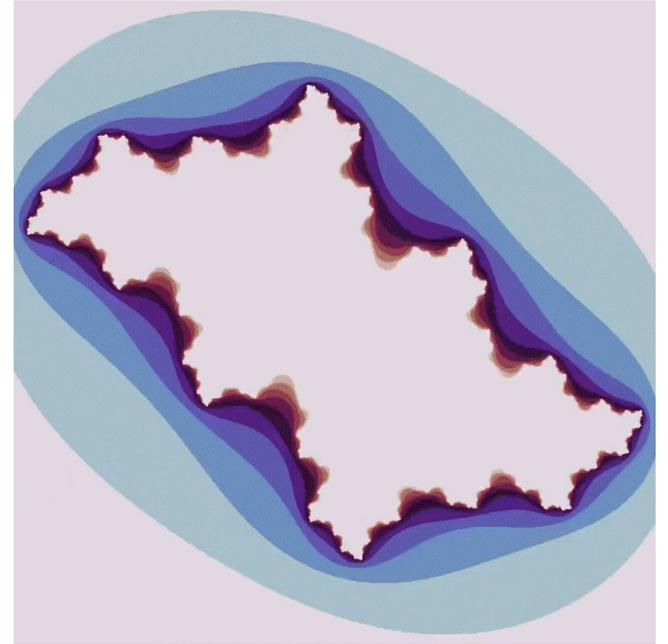
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In the method of logical restrictions, everything lies in the strength of the constraints one can impose on the collection of all transformations. At the zero-level, commodities are an **undifferentiated mass**.

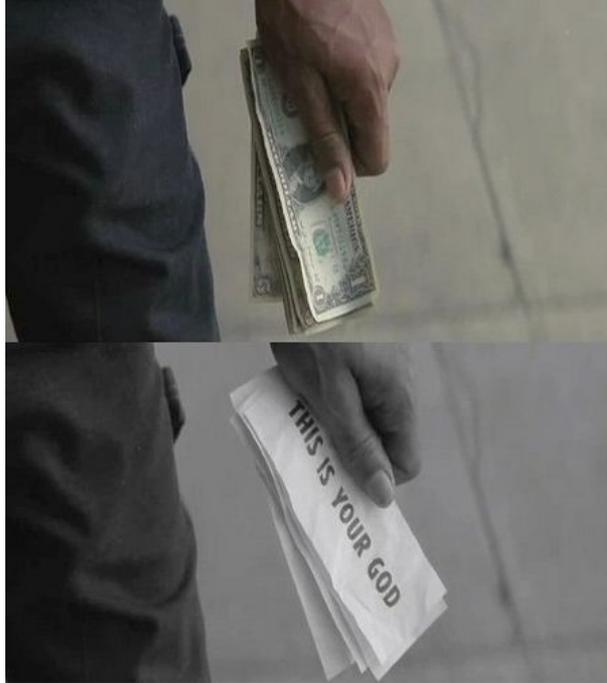
If we constrain **too little**, we cannot capture the kinds of phenomenon which characterize the logic of capitalism (at least to the degree that Marx does).

If we constrain **too much**, we no longer have commodities and commodity-preserving maps.

To explore the space of constraints is to understand the correct **resolution** to view each phenomenon. But resolutions are not only “for us” but also part of the way commodity production actually “sees” the world.



Credit: <https://blbadger.github.io/julia-sets.html>



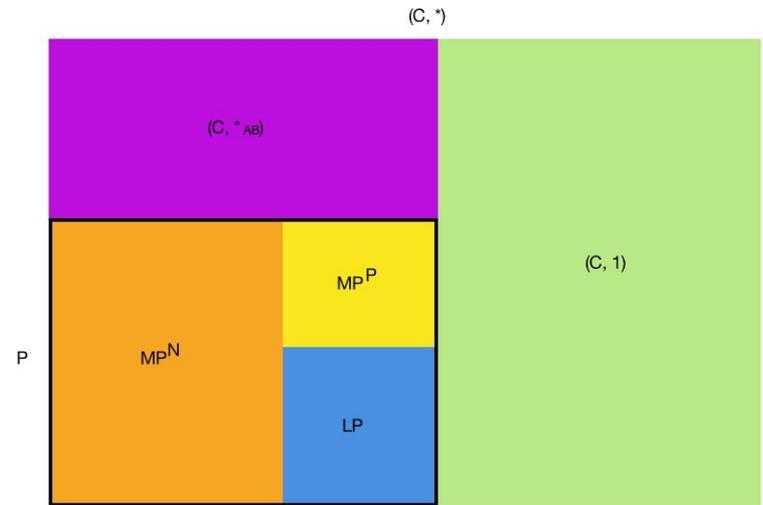
They Live (1988)

To make a wooden pencil, I do not need particular wood from a particular tree, I need particular **type** of wood (e.g. cedar) whose **terms** (e.g. individual cedar wood-commodities) are indistinguishable from the perspective of the pencil making process.

To make wooden pencils **profitably**, I have to consider the cost of the wood and other materials, the cost of labour, land, distribution, permits... but I do not need to see what a worker in my pencil-making factory does in his free time. In other words, capitalism **imposes a particular range of resolutions on the world.**

2.5 We can identify commodities whose uses are *relatively homogenous* w.r.t. some set of operations. Example: pine and cedar wood share the property of being resistant to rot, so they would be interchangeable for certain building projects. In a different case, one may be more favored for aesthetic or traditional reasons. It is therefore useful to view  $\mathcal{C}$  modulo a set of uses, which we call a *resolution*. Specifically, a  $\Delta$ -resolution, also written as  $\mathcal{C}_\Delta$ , is the set of commodities in which those with uses existing in some set  $\Delta$  are indistinguishable.

2.5.1 Categorically, the  $\Delta$ -resolution is described by an *endofunctor*<sup>8</sup>  $\Delta : \mathcal{C} \rightarrow \mathcal{C}$ . This functor “forgets” differences by mapping distinct commodities to the same commodity of a more general “type”, while maintaining the compositionality as detailed in 2.2.4. For example, pine and cedar wood would be mapped to rot-resistant wood. In fact, at an even “higher” resolution, pine wood itself is the result of forgetting the differences between subspecies of pine (e.g. white pine and sugar pine). This is useful because only certain properties are relevant for certain operations. For our purposes, there is no such thing as a resolution-independent commodity, and we assume that  $\mathcal{C}$  contains commodities at all resolutions.

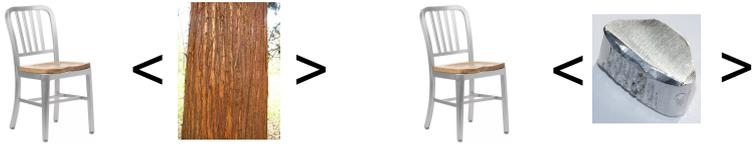




2.5.2 Given two  $\Delta$  functors, let's call them  $\Delta_A$  and  $\Delta_B$  (where  $A$  and  $B$  denote different use-sets), there exists a set of operations  $\alpha$ , one for each  $C \in \mathcal{C}$  which starts from  $\Delta_A(C)$  and goes to  $\Delta_B(C)$ . This set of operations is called a *natural transformation* between  $\Delta_A$  and  $\Delta_B$ , and each of its components we will write with a subscript for its associated commodity, i.e.  $\alpha_C$ . Given any operation  $\psi : C \rightarrow D$ , we have the following *naturality square*:

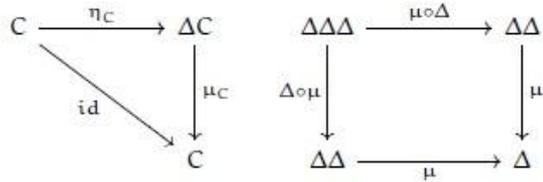
$$\begin{array}{ccc}
 \Delta_A(C) & \xrightarrow{\Delta_A(\psi)} & \Delta_A(D) \\
 \alpha_C \downarrow & & \downarrow \alpha_D \\
 \Delta_B(C) & \xrightarrow{\Delta_B(\psi)} & \Delta_B(D)
 \end{array}$$

2.5.3 The natural transformations are just operations in  $\mathcal{O}$ , but their significance lies in how they commute with the  $\Delta$ -resolution endofunctors. They show that if there are two different ways of "forgetting differences" between commodities, then there always exists concrete operations that connect these



different ways. This might be simply an identity operation [2.3.2](#) if there exists wood that have both the properties listed in  $\Delta_A$  and  $\Delta_B$ . However, there may be other more complex processes. For example, sturdiness and resistance to rot determine two kinds of resolutions, and a natural transformation between them might be to treat wood of one kind with certain chemical compounds to achieve the properties of the other (without necessarily preserving the properties in the initial resolution).

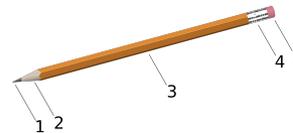
2.5.4 If we apply  $\Delta$  to  $\mathcal{C}$  twice, we get the same result as if applying it once. Therefore, resolution of the commodity world is here formalized as an *idempotent* endofunctor. This means there always exists an isomorphism between two commodities  $\Delta\Delta C$  and  $\Delta C$ . Let us define the set of these isomorphisms as a natural transformation  $\mu : \Delta\Delta \rightarrow \Delta$ . We can also specify a natural transformation from the *identity endofunctor*  $1_{\mathcal{C}}$ , which maps every commodity to itself, to any given resolution  $\Delta$  as the set of commodity operations from  $C \in \mathcal{C}$  to  $\Delta(C)$ , which we write as  $\eta$ . These ingredients allow us to form a monad  $(\Delta, \mu, \eta)$ , obeying the following diagrams:



2.5.5 We can define, for any given  $\Delta$ , another endofunctor which maps each commodity  $C$  to the product of all commodities which would be sent to  $C$  under  $\Delta$ . Formally,  $\nabla(C) : \{\prod D \mid \Delta(D) = C\}$ . Again, there exists a monad for this endofunctor, although this time it is not idempotent. Let  $\eta_C$  be the component of the natural transformation at  $C$ , which takes it to  $\nabla(C)$ . Let  $\mu$  be the same as  $\eta$  from [2.5.4](#).

$\Delta(\text{graphite}) = \text{pencil-graphite}$   
 $\Delta(\text{wood}) = \text{pencil-wood}$   
 $\Delta(\text{eraser}) = \text{pencil-eraser}$   
 $\Delta(\text{labour}) = \text{pencil-labour}$   
 ...

$\nabla(\text{graphite}) = \text{graphite}_1 \times \text{graphite}_2 \times \text{graphite}_3 \dots \text{graphite}_N$





Workers doing various tasks at an Amazon fulfillment center

14.3.2 In order to consider other changes to  $e_R$  we need introduce a new feature into our operad structure, allowing us to speak of decompositions of labour-power which do *not* preserve its form of use - as we will see in the case of serial cooperation. To account for this, we add the powerful concept of a *resolution box* to our operad, as a development on the idea of  $\Delta$ -resolution of use sets, previously introduced in 2.5. Recall that a  $\Delta$ -resolution is an endofunctor (2.5.1) that renders different  $C_u$  homogeneous from the standpoint of some property - as if finding the appropriate aspect of a given object such that, from the perspective of that aspect, several objects can be said to be the same. We used this same operation to establish "money-compatible" resolutions of objects, allowing them to be divided in such a way that the quality of their parts remained invariant, as their quantities vary (7.2). A resolution box allows us to make explicit the specificity of labour-use in a given process. We add it to every process that consumes  $LP_u$ , through the following structure:  $In(\Delta) = LP_u$  and  $Out(\Delta) = LP_{\Delta u}$  where  $LP_{\Delta u} \subset LP_u$ . Furthermore, given a box which takes  $LP$  as an input, we include a feedback structure  $Out(x) = (\Delta)$ , which ties together the refinement of labour use to its effect on the compositional process:



Workers doing various tasks at an Amazon fulfillment center

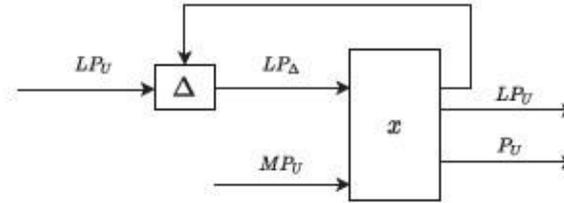


Figure 8: Use-resolution boxes

Given two labour-resolutions  $LP_{\Delta_1}$  and  $LP_{\Delta_2}$  we say these are two *specialized labours*. The same labour-commodity can be employed under several different use-resolutions in the same production process, but if the indexing of a working day on  $T_B$  already considers a specific  $\Delta$  or  $\Delta$ -range, we say  $(LP_{\Delta})_B$  is a *professional contract*.

14.3.3 The simplest example of resolution changes affecting  $e_R$  is the increase in *labour intensity*, which we can define as a transformation from  $W$  to  $W'$  where  $LP_{\Delta_1}$  is substituted for a refinement  $LP_{\Delta_2}$  such that it now takes less time to output  $P = LP_E$ .

**What is the compositional approach to labour use and its resolution space? And what does it mean to construct a measure for labour?**

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# DEFINITION OF LABOUR-POWER

Intrinsic definition of **private means of production**:

**MP** is:

- (1) a commodity
- (2) that is the output of a previous productive process
- (3) which implies it is made of other commodities
- (4) which is used in production
- (5) and reproduces itself inside of it

Intrinsic definition of **labour-power**:

**LP** is

- (1) a commodity
- (2) that is not the output of a previous productive process
- (3) being rather a fictive commodity
- (4) which is used in production
- (5) but reproduces itself outside of it

**Compositional distinction between MP and LP:**

**The parts\* of MP are all priced:** those which went into its making are part of MP's value, those which go into its use are part of the set of commodities bought by capitalists.

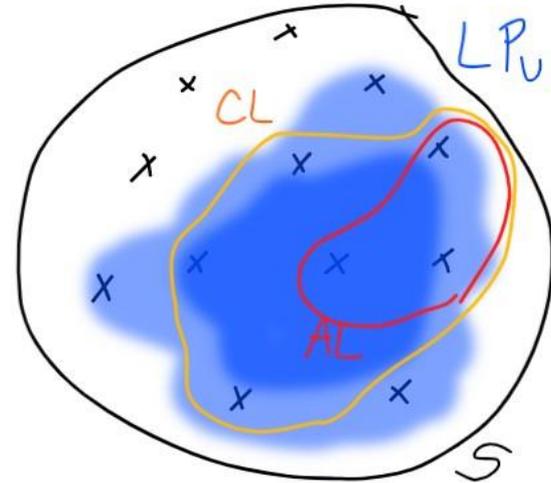
**The parts of LP are not all priced:** it is not made of commodities and the commodities it does need are not purchased by the capitalist, and thus do not oscillate with labor use.

*\*Under currently productive resolutions*

# DEFINITION OF LABOUR-POWER

Compositionally, we must distinguish at least four layers to LP:

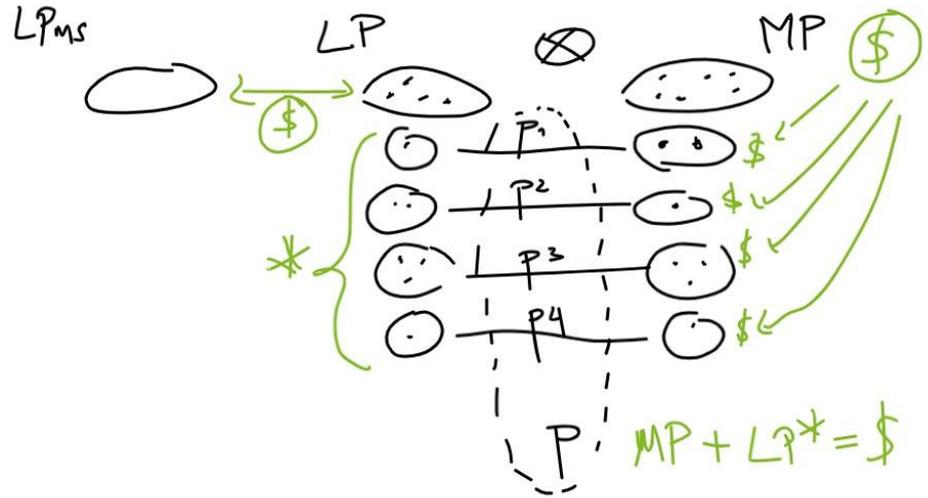
- 1) the set **S** that serves as the support set of LP
- 2)  $LP_U$  as the fuzzy set of maps that go from commodities to S and/or from S to commodities
- 3) Concrete labour **CL** as the subset of  $LP_U$ , made of parts that compose in transformative ways with MP in a productive process
- 4) Abstract labour **AL** as a subset of CL whose compositions with MP at least preserve the value of LP and MP in the product P



# THE PRODUCTION PROCESS AS A SITE

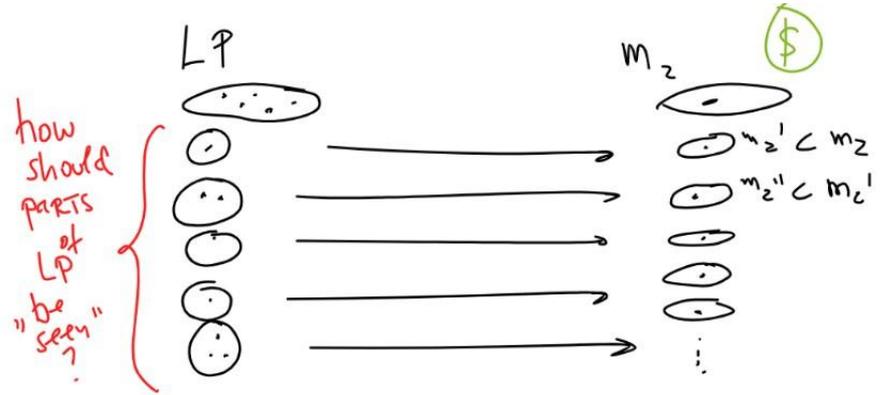
If the value of LP is determined by  $LP_{MS}$ , then the value of parts of  $LP_U$  combined with parts of MP can exceed the value of LP itself.

On the other hand, the value of parts of MP is already known, as these parts are the product of previous commodity production.



# THE PRODUCTION PROCESS AS A SITE

This implies the possibility that **non-priced parts of  $LP_U$  be priced** - and, more fundamentally, that we first establish a way for pricing parts of labour in general.



# THE FORMING-INTO-VALUE OF LABOUR USE

## DIALECTICAL DERIVATION OF MONEY-FORM

1)  $xA = yB$

(particular)

2)  $xA = yB, zC, wD...$

(formal universal)

3)  $yB, zC, wD... = xA$

(concrete universal)

4) “social habit”

+ formal use value

## COMPOSITIONAL DERIVATION OF MONEY-FORM

1)  $e(A,B)=p$

(local equivalence)

2)  $A(x) = p$

(A as predicate for commodities)

3)  $a(x) = p$

(a as atom that makes up parts of A as well as of every commodity)

4) **values of a are totally ordered**

(support set of a needs to allow for total order of values)

## COMPOSITIONAL DERIVATION OF SOCIALLY NECESSARY LABOUR TIME

1) accidental comparison between labours:

“A works like B to the p-degree”

2) expanded comparison:

“B works more like A, C works less like A, etc”

3) Socially necessary labour use:

“with regards to the way of working L, B is very L-like, C is less L-like, A is totally L-like”

4) Socially necessary labour time: chronological time allows us to totally order the parts of labour

# WORK SONGS AND THE REAL ABSTRACTION OF LABOUR

Twenty men and boys scythed the corn and sang as they went.

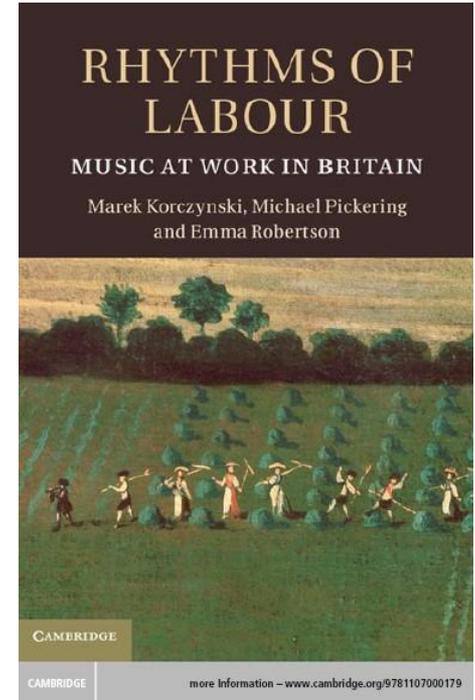
'What was the song, Davie?'

'Never mind the song – it was the singing that counted.'

(‘Davie’, interviewed by Ronald Blythe in *Akenfield*)<sup>1</sup>

## Coarse history of work songs:

- 1) Work songs as sense of community:  
*rhythms and form of work inform possible musical structures*
- 2) Work songs as means to make work more functional  
*musical structure allows for coordination and measurement of labour*
- 3) Work songs as means to resist subjection to labour  
*exploration of alternative aspects of work songs and lyrics serving to praise freedom from the discipline of labour*
- 4) Work songs lose their function as machines organize productive rhythms - workers are silenced
- 5) Music during work-time as passive diversion from alienating condition



# WORK SONGS AND THE REAL ABSTRACTION OF LABOUR

## Waulking

In the western islands of Scotland, singing was a vital component in the final stage of making tweed known as waulking, the process of hand-fuling (shrinking, thickening and softening) new-woven cloth for household use. Waulking made the home-made tweed more weather-resistant, an essential quality in workaday clothes, whether at sea or on the hills. Because of the ammonia it contains, urine was used to loosen the waxy lanolin in the newly woven cloth; it also acted as a mordant in setting the colour. The waulking process was carried out well into the twentieth century as a communal endeavour of gift exchange among women. Whoever needed the cloth to be treated in this way, invited eight to ten other women to her house. The women sat facing each other around a long bare table or board, and they then pounded, rubbed, folded and squeezed the urine-soaked cloth in measure with the rhythm supplied by the vocal accompaniment. Figure 4.1 is a woodcut from the eighteenth century which shows women singing at the (foot) waulking (and also singing while hand-milling). The unison thud of the women's feet or hands upon the board served as rhythmic percussion for the waulking songs. The women would pass their portion of cloth on to their right-hand neighbour on every third beat, so that the cloth always moved around in an anti-clockwise circle as they sang the songs of waulking. The typical pattern was for one woman to sing a verse line, with the rest responding with the chorus line. The woman of the house measured the progress of their work

according to how many songs it needed. The waulking session would often begin with songs that had a relatively slow tempo, the pace increasing as the work advanced.<sup>18</sup>

As they sang, the women's bodies swung in unison as the infectious call-and-response lines provided the coordinated physical movement characteristic of 'work song' strictly defined. Even a couple of lines in translation illustrate how suited they were to their purpose:

Hœ ree snah he horran-o / ro-ho he oh he o hoo oh  
The boat has sailed across, away / oh, he he oh he oh hoo oh

As these lines show, waulking songs often contained words and syllables with no specific meaning. These were called vocables and worked in close accord with the rhythm of the tune, just as the musical rhythm worked in close accord with the functional tasks of the waulking.<sup>19</sup> Known locally as *orain luaidh*, the usual amatory content of the songs is illustrated by the lines of a song recorded by Alan Lomax in 1951, which pledge the singer's devotion:

A fhleasgaich ùir, leanainn thu Young man, I'd follow you  
Fhir a' chùil bhòidhich Lad with the beautiful hair  
A fhleasgaich ùir, leanainn thu. Young man, I'd follow you.

## WORK SONGS AND THE REAL ABSTRACTION OF LABOUR



Figure 4.1 Women singing at the quern and at foot waulking at the Isle of Skye from observation in 1772 (reproduction of original woodcut by Moses Griffith)



# WORK SONGS AND THE REAL ABSTRACTION OF LABOUR

Works songs that measure labour time:



# WORK SONGS AND THE REAL ABSTRACTION OF LABOUR

Works songs as resistance to labour discipline

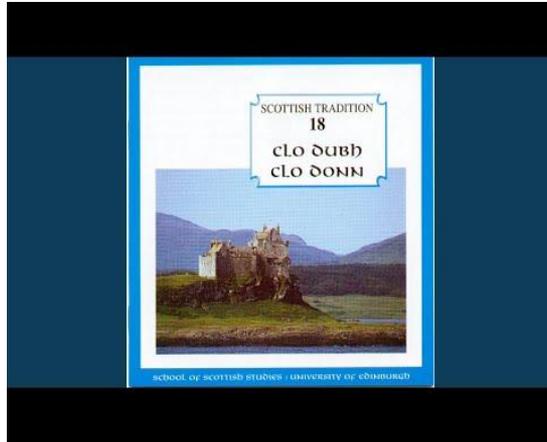


Brazilian work song in Cacao plantation



Railworkers singing while working

# WORK SONGS AND THE REAL ABSTRACTION OF LABOUR



## Atom of labour use:

steady pulse of song that corresponds to physical activity

## Universal equivalent:

call and response structure connects all workers

## Weak homerism:

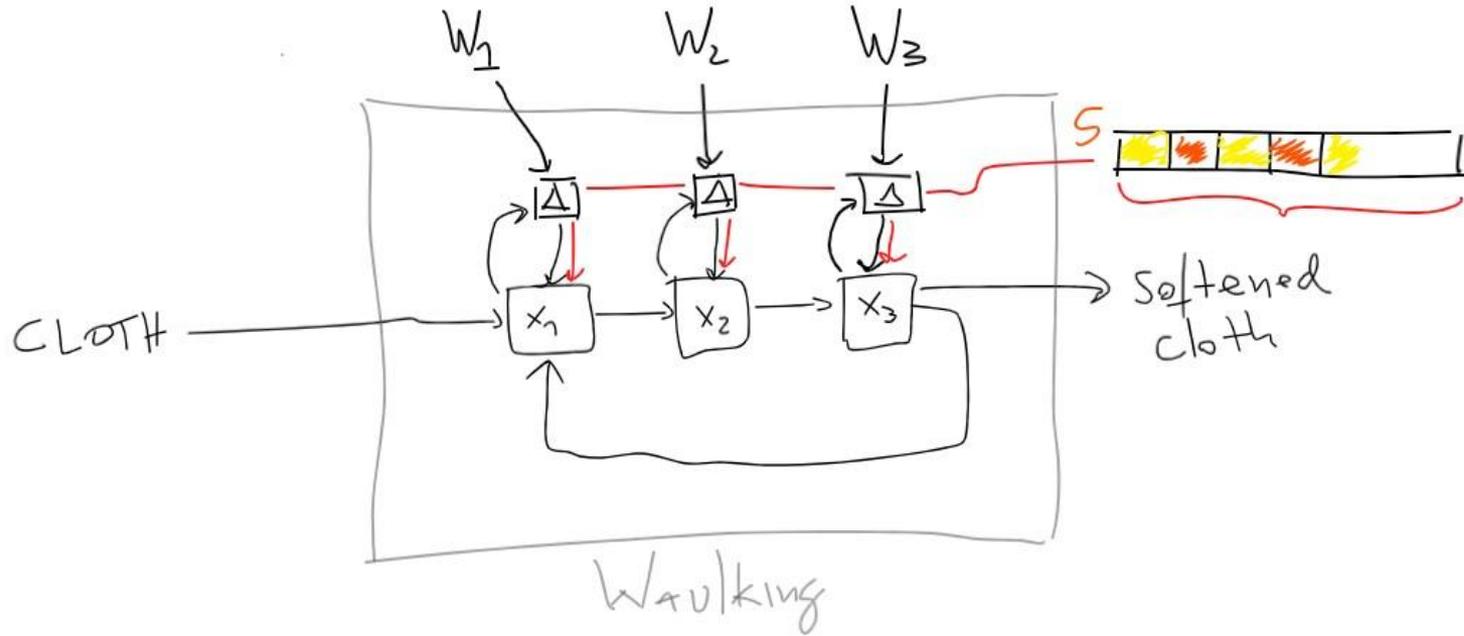
vocables adapt to mostly homogeneous subdivisions

## Linear over circular time;

Songs do not repeat

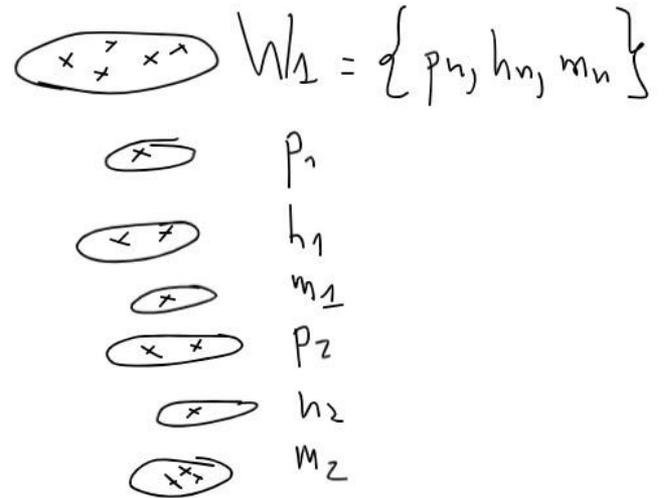
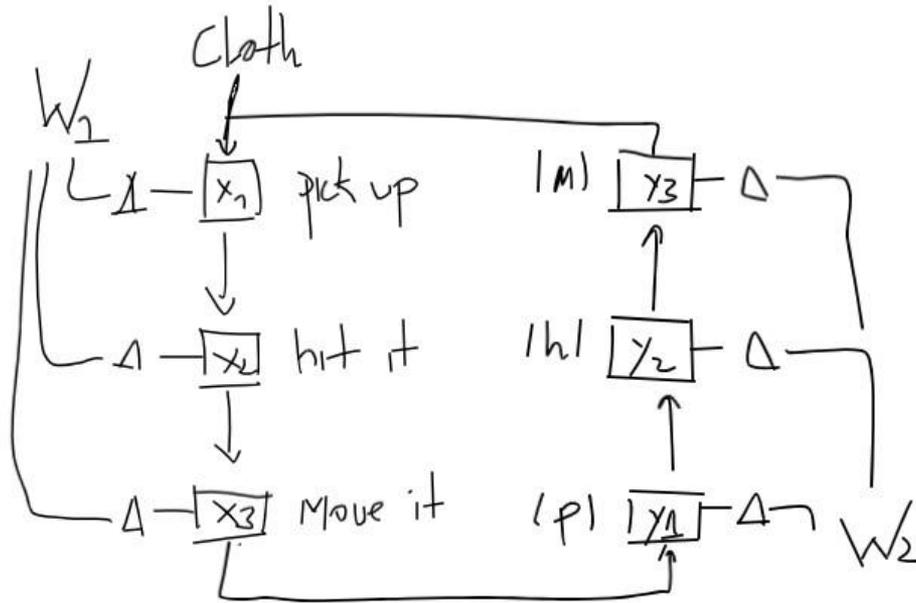
A fhleasgaich ùir, leanainn thu Fhir a' chùil bhòidhich A fhleasgaich ùir, leanainn thu.	Young man, I'd follow you Lad with the beautiful hair Young man, I'd follow you.
'S mi rachadh 'ad choinneamh Air mo bhonnan gun bhrògan.	It is I who have come to meet you On my bare feet, without shoes.
Air bonnan mo chasan Ged bhiodh clacan 'gan stròiceadh.	On my bare feet Though stones would cut them.
Ged bhiodh reothadh glé chruaidh ann Sneachda fuar air a'mhòintich.	Though there would be a hard frost And cold snow on the moorland.
Fhir nan camagan donna Rinn mi coinneamh glé òg riut. <sup>20</sup>	Lad with the brown curls I made your acquaintance when very young.

# WORK SONGS AND THE REAL ABSTRACTION OF LABOUR



The waulking song indexes parts of each worker's activity to a common metric that allows them to (1) sync their activities in a more effective way, (2) measure length of the work journey, (3) assess quality of workers.

# WORK SONGS AND THE REAL ABSTRACTION OF LABOUR



# WORK SONGS AND THE REAL ABSTRACTION OF LABOUR

$$\left( \begin{array}{ccc} x & \nearrow & x \nearrow \\ & x & \end{array} \right) W_A = \{ p_n, h_n, m_n \} / W^S = \{ p'_n, h'_n, m'_n \}$$

$$\left( \begin{array}{c} x \\ \overline{s} \end{array} \right)$$

$$p_1 + s_1$$

$$\left( \begin{array}{cc} \leftarrow s & \nearrow \end{array} \right)$$

$$h_1 + s_2$$

$$\left( \begin{array}{c} x \\ s \end{array} \right)$$

$$m_1 + s_3$$

$$\left( \begin{array}{cc} x & x \\ s & \end{array} \right)$$

$$p_2 + s_4$$

$$\left( \begin{array}{c} x \\ s \end{array} \right)$$

$$h_2 + s_5$$

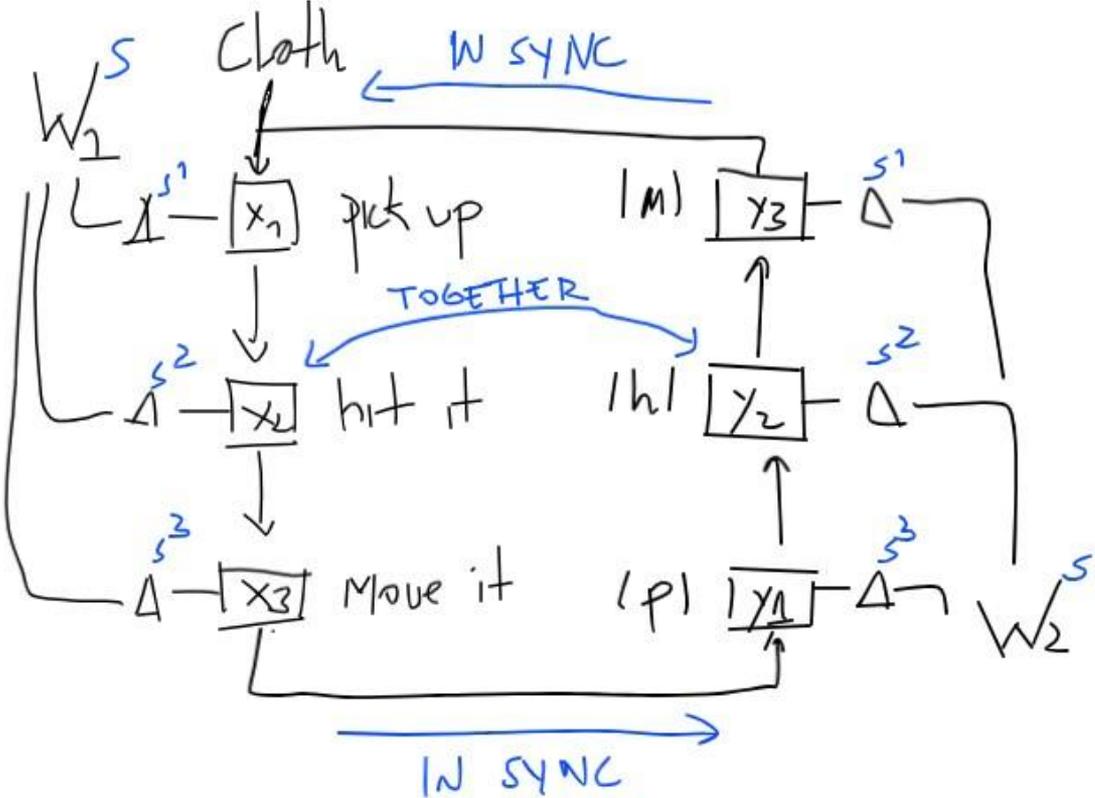
$$\left( \begin{array}{ccc} x & \nearrow & \nearrow \\ & x & \end{array} \right)$$

$$m_2 + s_6$$

$$s_1 \rightarrow s_2 \rightarrow s_3 \rightarrow s_4 \rightarrow s_5 \rightarrow s_6 \quad (\text{Singing})$$

$$R \rightarrow C \xrightarrow{\Downarrow} R \rightarrow C \rightarrow R \rightarrow C \quad (\text{Song structure})$$

# WORK SONGS AND THE REAL ABSTRACTION OF LABOUR



# THE INVENTION OF THE CLOCK AND THE MEASURE OF LABOUR TIME

## TIME, LABOR, AND SOCIAL DOMINATION

A reinterpretation of  
Marx's critical theory

MOISHE POSTONE

As noted, in medieval Europe until the fourteenth century, as in antiquity, time was not conceptualized as continuous. The year was divided qualitatively according to the seasons and the zodiac—whereby each time period was considered to exert its own particular influence<sup>44</sup>—and the day was divided into the variable hours of antiquity, which served as the basis for the *horae canonicae*, the canonical hours of the Church.<sup>45</sup> To the extent that time was kept in medieval Europe, then, it was the Church's time that was kept.<sup>46</sup> This mode of time reckoning was transformed dramatically in the course of the fourteenth century: according to Gustav Bilfinger, modern, or constant, hours began to appear in European literature in the first half of that century and, by the beginning of the fifteenth century, generally had displaced the variable hours of classical antiquity and the canonical hours.<sup>47</sup> This historical transition from a mode of time reckoning based on variable hours to one based on constant hours implicitly marks the emergence of abstract time, of time as an independent variable.

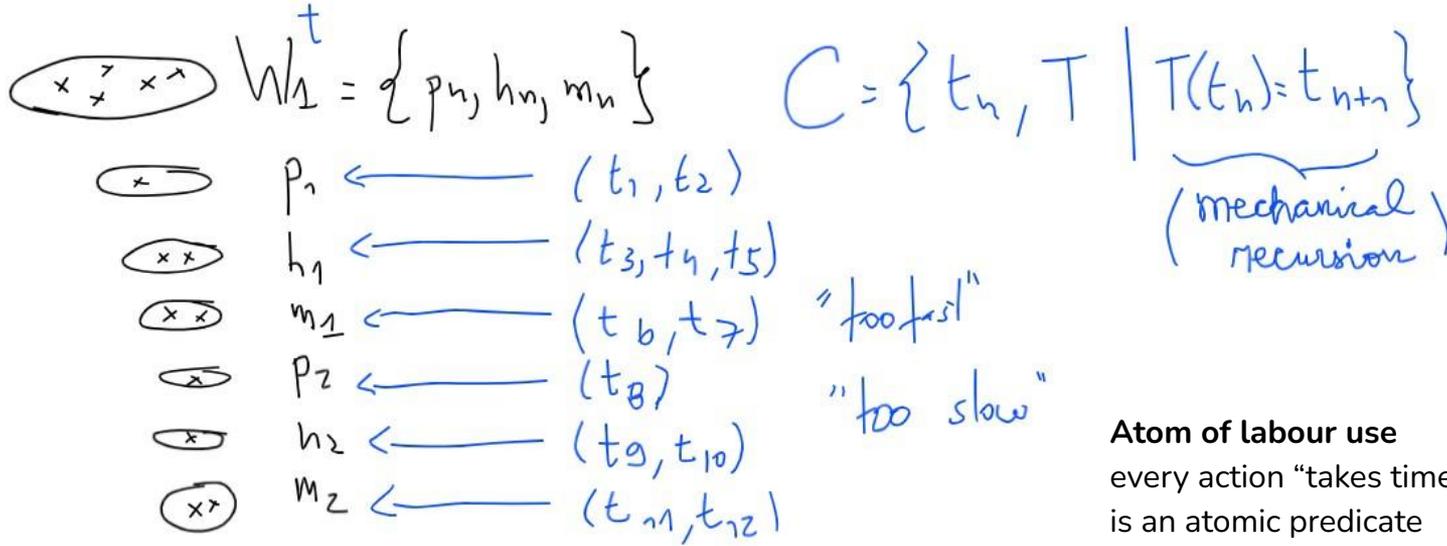
The transition from variable to constant time units in the European urban centers in the fourteenth century cannot, then, be understood adequately in terms of the nature of town life *per se*. Rather, a more specific reason, one that can ground this transition socially, is needed. The different relationship to time implied by the two systems is not only a matter of whether or not time discipline plays an important role in structuring the daily course of life and work; such discipline, as we have seen, was very much a feature of monastic life. Rather, the difference between a system of variable hours and one of constant hours also is expressed in two different sorts of time discipline. Although the form of life developed in the medieval monasteries was regulated strictly by time, this regulation was effected in terms of a series of time points, which marked when various activities were to be done. This form of time discipline does not demand, imply, or depend upon constant time units; it is quite distinct from a form of time discipline in which time units serve as the *measure* of activity. As I shall show, the transition to constant time units should be further specified in terms of a new form of social relations, a new social form that cannot be grasped fully in terms of sociological categories such as "peasant life" and "urban life," and that is bound to abstract time.

# THE INVENTION OF THE CLOCK AND THE MEASURE OF LABOUR TIME

Temporality as a measure of activity is different from a temporality measured by events. It implicitly is a uniform sort of time. The system of work bells, as we have seen, developed within the context of large-scale production for exchange, based upon wage labor. It expressed the historical emergence of a definite social relationship between the level of wages and labor output as measured temporally—which, in turn, implied the notion of productivity, of labor output per unit time. In other words, with the rise of early capitalist forms of social relations in the cloth-producing urban communes of Western Europe, a form of time emerged that was a measure of, and eventually a compelling norm for, activity. Such a time is divisible into constant units; and within a social framework constituted by the emerging commodity form, such units also are socially meaningful.

The tyranny of time in capitalist society is a central dimension of the Marxian categorical analysis. In my consideration of the category of socially necessary labor time thus far, I have shown that it does not simply describe the time expended in the production of a particular commodity; rather, it is a category that, by virtue of a process of general social mediation, determines the amount of time that producers *must* expend if they are to receive the full value of their labor time. In other words, as a result of general social mediation, labor time expenditure is transformed into a temporal norm that not only is abstracted from, but also stands above and determines, individual action. Just as labor is transformed from an action of individuals to the alienated general principle of the totality under which the individuals are subsumed, time expenditure is transformed from a result of activity into a normative measure for activity. Although, as we shall see, the magnitude of socially necessary labor time is a dependent variable of society as a whole, it is an independent variable with regard to individual activity. This process, whereby a concrete, dependent variable of human activity becomes an abstract, independent variable governing this activity, is real and not illusory. It is intrinsic to the process of alienated social constitution effected by labor.

# THE INVENTION OF THE CLOCK AND THE MEASURE OF LABOUR TIME



## Atom of labour use

every action "takes time", hence it is an atomic predicate

## Universal equivalent:

It is shared by all workers

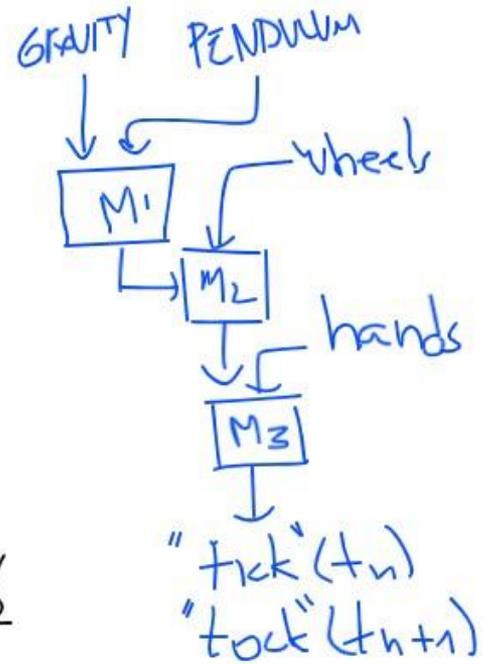
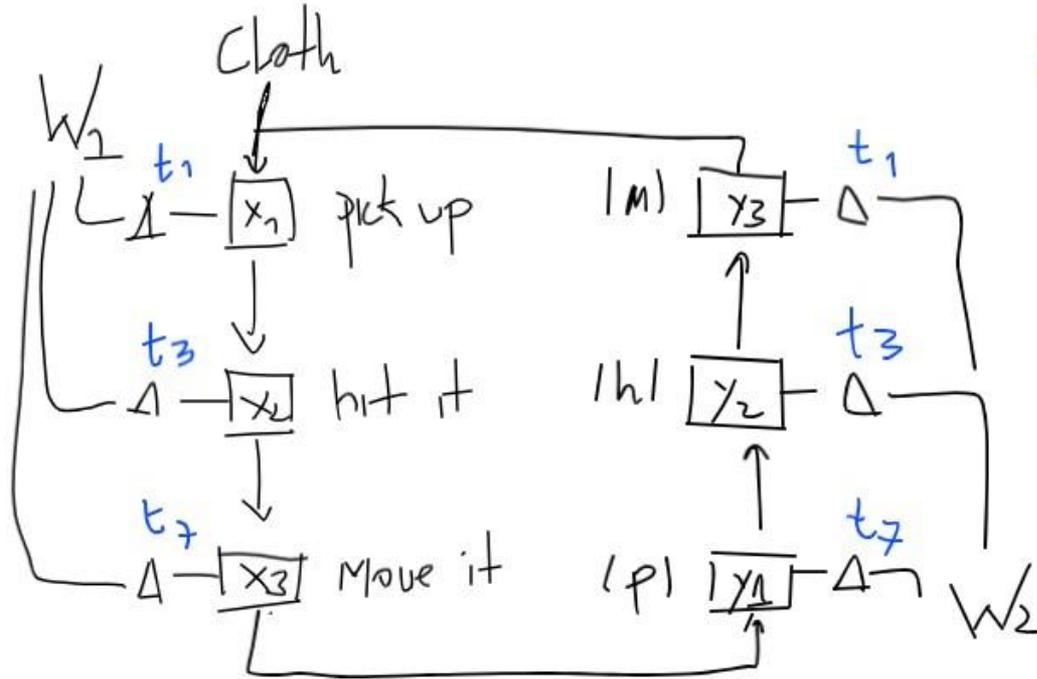
## Strong homomerism:

temporal moments in chronological time are absolutely homomeric

## Linear over circular time;

Totally independent variable from life cycles

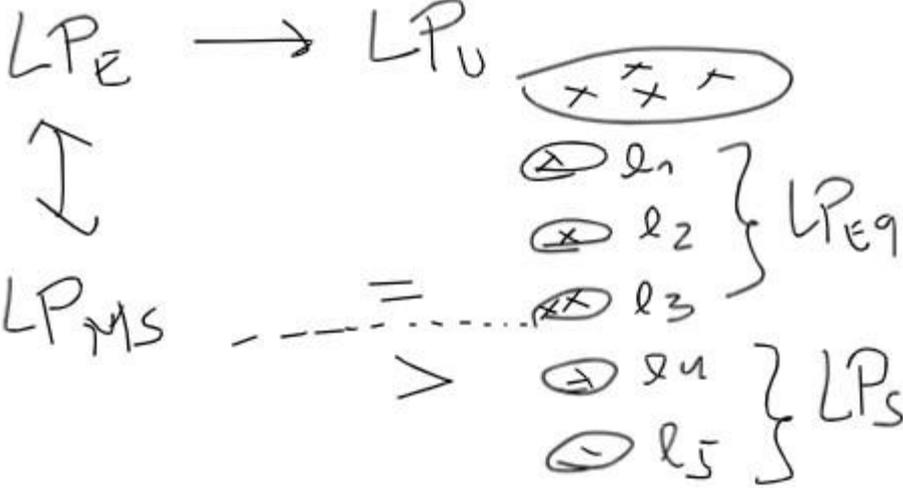
# THE INVENTION OF THE CLOCK AND THE MEASURE OF LABOUR TIME



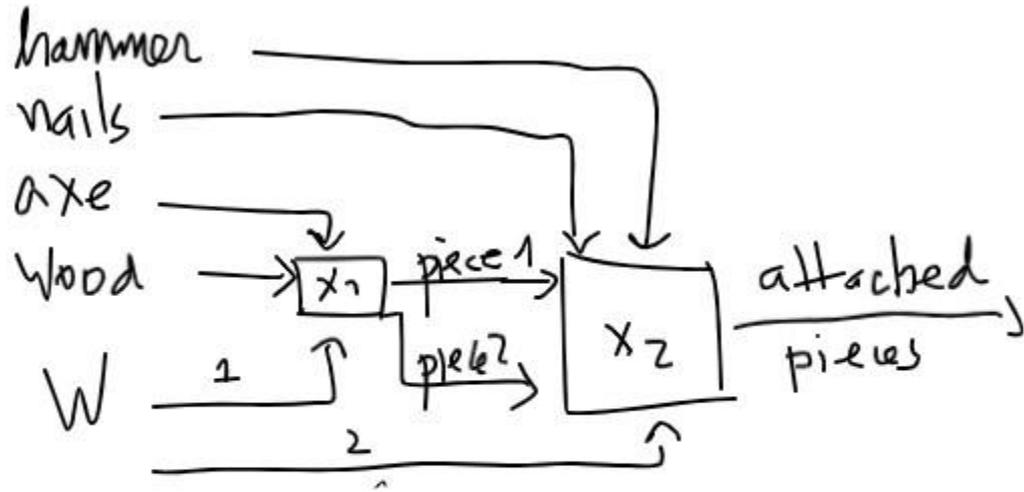
**How do the valorizing constraints of the production process induce a compositional logic on its labour parts?**

1. Contextualization
2. The compositional point of view
3. The idea of resolution and resolution boxes
4. From labour use to labour time
5. **Cooperation, manufacture and modern industry**
6. From labour sites to cooperative novelty

# INDIVIDUAL AND COLLECTIVE SURPLUS LABOUR

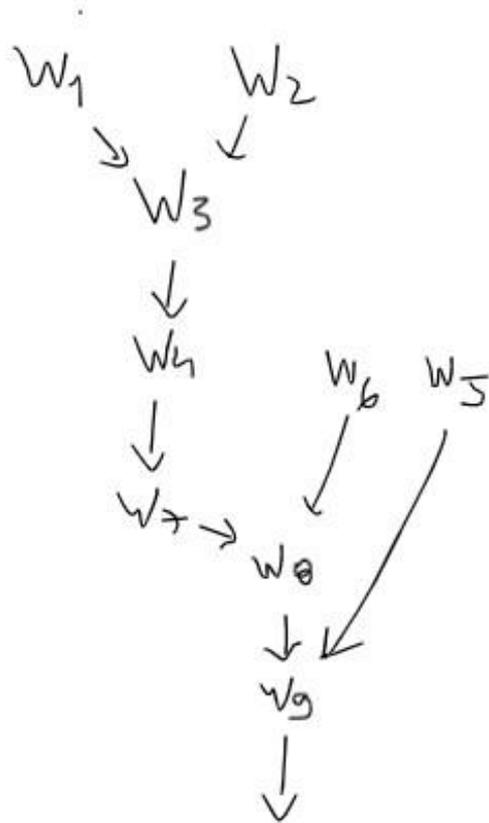


# INDIVIDUAL AND COLLECTIVE SURPLUS LABOUR



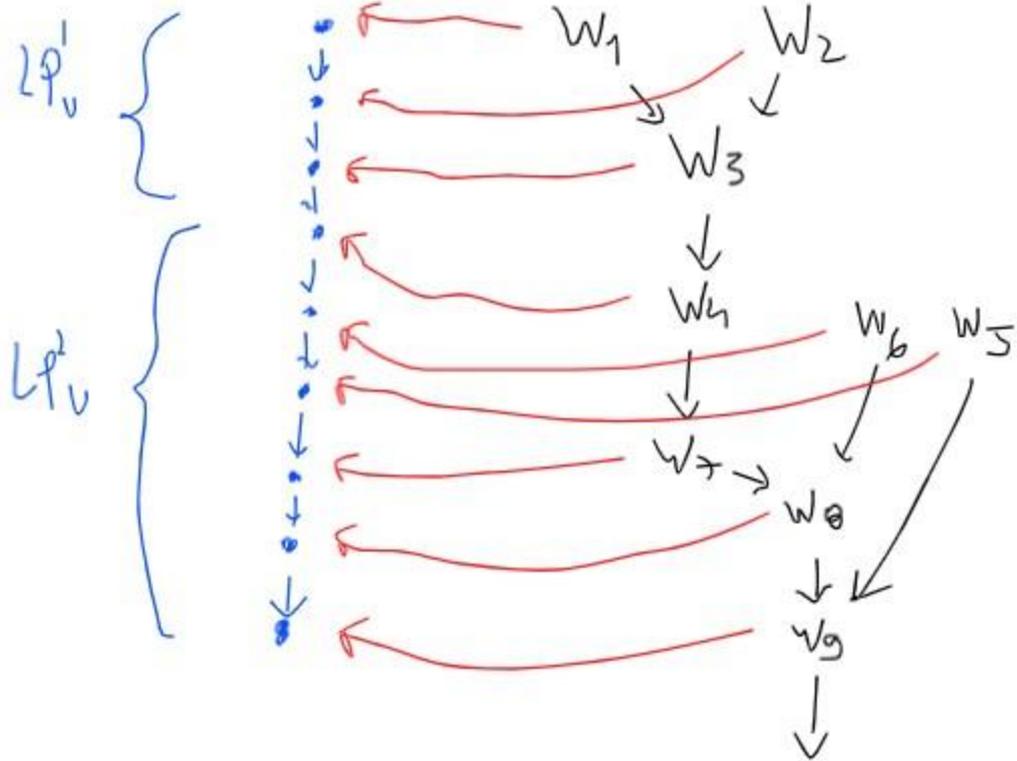
- $W^1 =$
- $w_1$ ) get axe
  - $w_2$ ) hold wood
  - $w_3$ ) hit wood
- $W^2 =$
- $w_4$ ) pick up pieces
  - $w_5$ ) get hammer
  - $w_6$ ) get nails
  - $w_7$ ) hold pieces
  - $w_8$ ) position nails
  - $w_9$ ) hit nails

# INDIVIDUAL AND COLLECTIVE SURPLUS LABOUR



- W<sup>1</sup> =
- w1) get axe
  - w2) hold wood
  - w3) hit wood
- W<sup>2</sup> =
- w4) pick up pieces
  - w5) get hammer
  - w6) get nails
  - w7) hold pieces
  - w8) position nails
  - w9) hit nails

I.)  $LP^1 = \{1-3\}$ ,  $LP^2 = \{4-9\}$



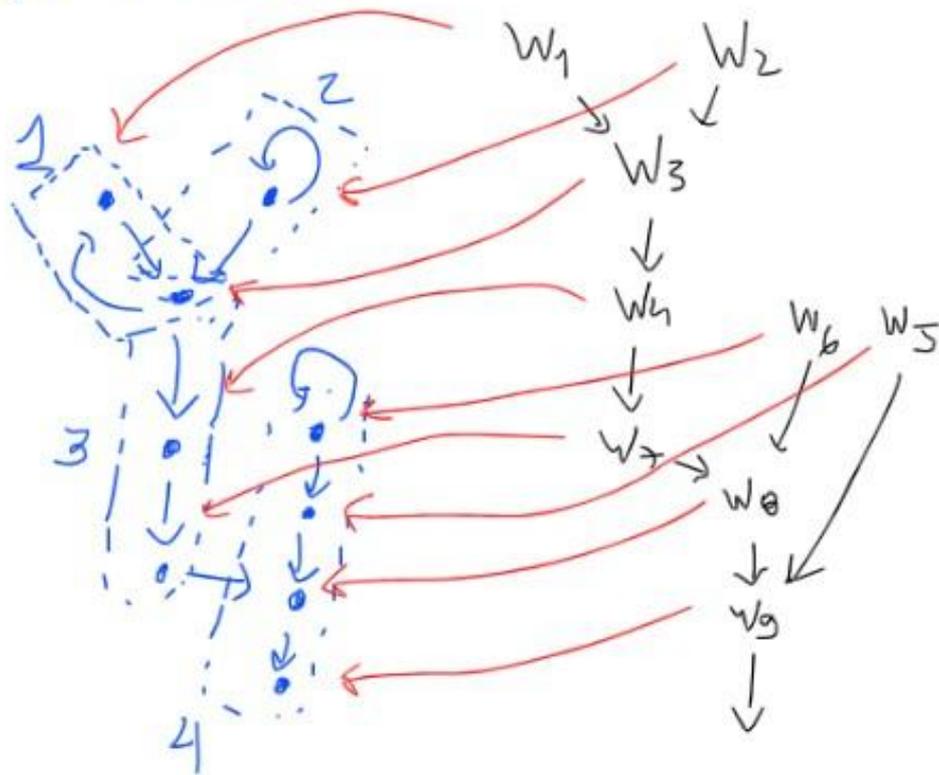
$w^1 =$

- $w_1$ ) get axe
- $w_2$ ) hold wood
- $w_3$ ) hit wood

$w^2 =$

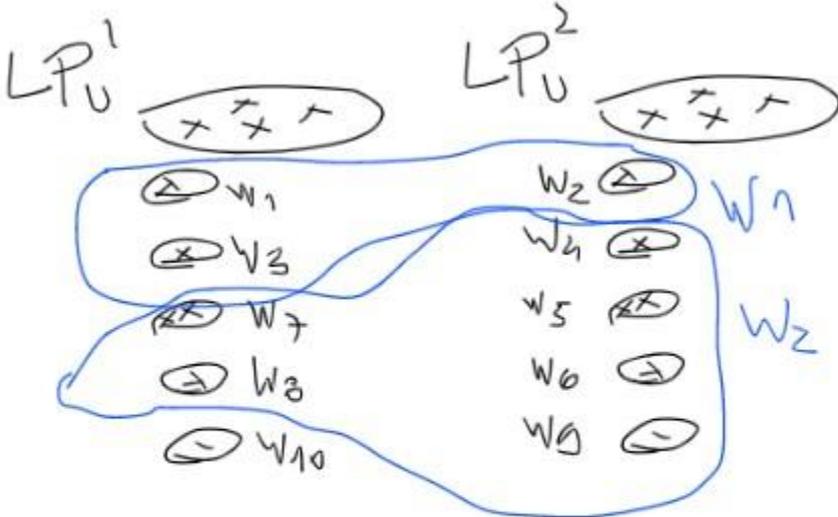
- $w_4$ ) pick up pieces
- $w_5$ ) get hammer
- $w_6$ ) get nails
- $w_7$ ) hold pieces
- $w_8$ ) position nails
- $w_9$ ) hit nails

II)  $LP_0^1 = \{1, 3\}$   $LP_0^3 = \{4, 7\}$   
 $LP_0^2 = \{2\}$   $LP_0^4 = \{5, 6, 8, 9\}$



$w^1 =$   
 $w_1)$  get axe  
 $w_2)$  hold wood  
 $w_3)$  hit wood  
  
 $w^2 =$   
 $w_4)$  pick up pieces  
 $w_5)$  get hammer  
 $w_6)$  get nails  
 $w_7)$  hold pieces  
 $w_8)$  position nails  
 $w_9)$  hit nails

# INDIVIDUAL AND COLLECTIVE SURPLUS LABOUR



# INDIVIDUAL AND COLLECTIVE SURPLUS LABOUR

BWV 848

The first system of the musical score for BWV 848 consists of two staves. The upper staff (treble clef) features a complex, rhythmic melody with numerous slurs and fingerings (4, 2, 5, 1, 4, 4). The lower staff (bass clef) provides a steady accompaniment with fingerings (5, 1, 2, 1, 2). The key signature is three flats (B-flat, E-flat, A-flat) and the time signature is 3/8.

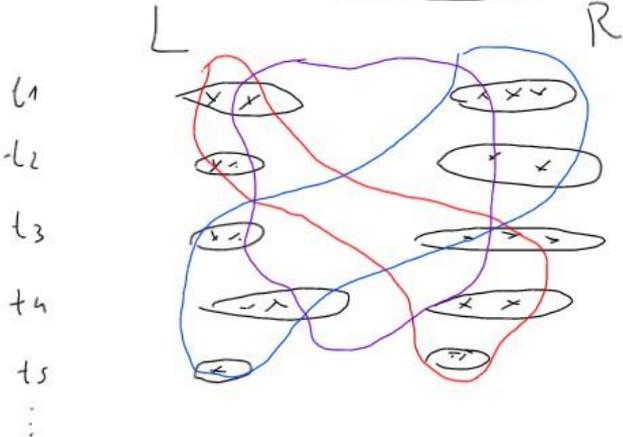
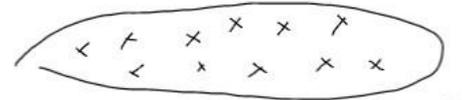
The second system of the musical score for BWV 848 consists of two staves. The upper staff (treble clef) continues the complex melody with slurs and fingerings (3, 5, 3, 1, 1, 1, 1, 1, 1). The lower staff (bass clef) continues the accompaniment with fingerings (1, 4, 2, 4, 1, 5, 1, 1). The notation includes various slurs and articulation marks. The key signature and time signature remain consistent with the first system.

# INDIVIDUAL AND COLLECTIVE SURPLUS LABOUR

Pianist playing

BWV 848

The image shows two systems of musical notation for BWV 848. The first system consists of a treble and bass staff with purple vertical bars highlighting specific notes. The second system also has a treble and bass staff, with blue and red shaded regions and arrows indicating movement between notes. Fingering numbers (1, 2, 3, 4, 5) are visible below the notes.



“The combined working-day produces, relatively to an equal sum of isolated working-days, a greater quantity of use-values, and, consequently, diminishes the labour-time necessary for the production of a given useful effect. Whether the combined working-day, in a given case, acquires this increased productive power, because it **(1) heightens the mechanical force of labour**, or **(2) extends its sphere of action over a greater space**, or **(3) contracts the field of production relatively to the scale of production**, or at the critical moment **(4) sets large masses of labour to work**, or **(4) excites emulation** between individuals and **(5) raises their animal spirits**, or **(6) impresses on the similar operations carried on by a number of men the stamp of continuity and many-sidedness**, or **(7) performs simultaneously different operations**, or **(8) economises the means of production by use in common**, or **(9) lends to individual labour the character of average social labour** whichever of these be the cause of the increase, the special productive power of the combined working-day is, under all circumstances, the social productive power of labour, or the productive power of social labour. This power is due to co-operation itself. When the labourer co-operates systematically with others, **he strips off the fetters of his individuality, and develops the capabilities of his species”**

Chapter 13, Capital Vol 1

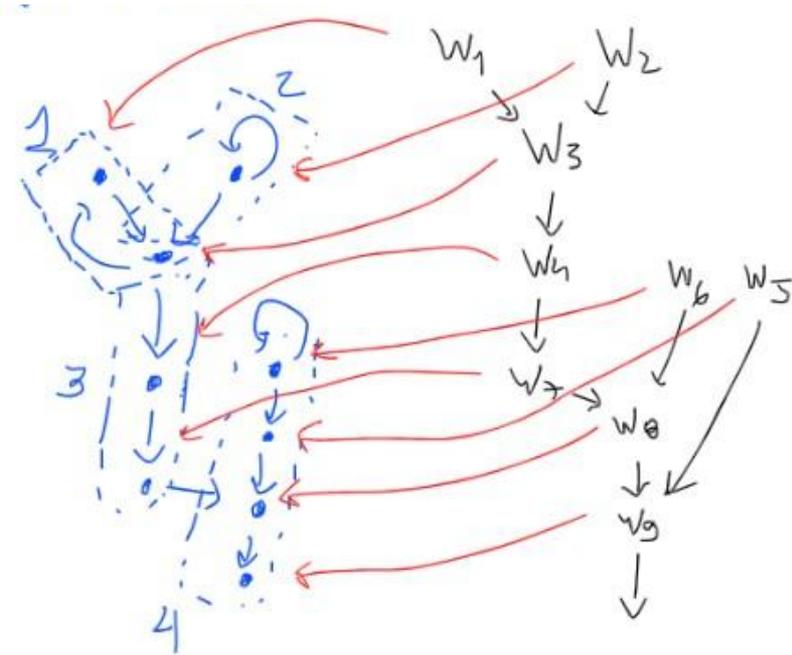
“The labourer is the owner of his labour-power until he has done bargaining for its sale with the capitalist; and he can sell no more than what he has i.e., his individual, isolated labour-power. This state of things is in no way altered by the fact that the capitalist, instead of buying the labour-power of one man, buys that of 100, and enters into separate contracts with 100 unconnected men instead of with one. He is at liberty to set the 100 men to work, without letting them co-operate. **He pays them the value of 100 independent labour-powers, but he does not pay for the combined labour-power of the hundred.** Being independent of each other, the labourers are isolated persons, who enter into relations with the capitalist, but not with one another. **This co-operation begins only with the labour-process, but they have then ceased to belong to themselves.** On entering that process, they become incorporated with capital. As co-operators, as members of a working organism, they are but special modes of existence of capital. **Hence, the productive power developed by the labourer when working in co-operation, is the productive power of capital. This power is developed gratuitously, whenever the workmen are placed under given conditions, and it is capital that places them under such conditions.** Because this power costs capital nothing, and because, on the other hand, the labourer himself does not develop it before his labour belongs to capital, it appears as a power with which capital is endowed by Nature – a productive power that is immanent in capital.”

Chapter 13, Capital Vol 1

# THE STRUCTURE OF THE COLLECTIVE LABOURER

**Labour time** is a measure of value induced on parts individual labour-power (parts that can be divided between “equivalent” and “surplus” labour time). But **surplus labour use** can rely on the composition of parts of individual labours forming a **set W of subsets of  $LP_U$  that is not equivalent to the sum of individual labour use sets**. In these cases, total “surplus labour time” - the amount of hours that were worked for free, which can be treated as an average per worker - should be treated as an indirect measure of an exploration of the total labour use set by the productive process.

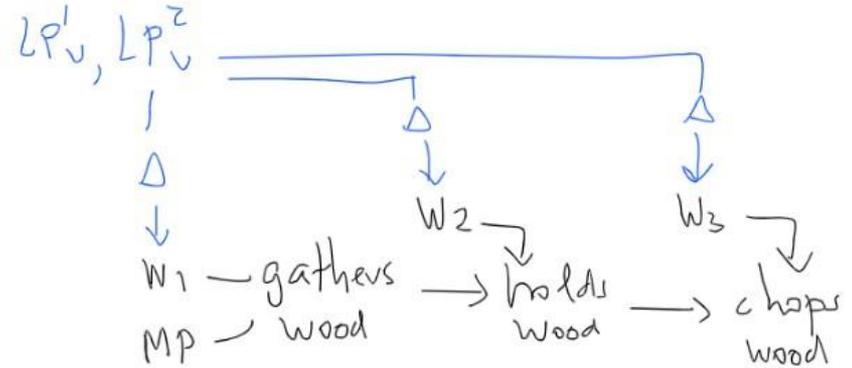
In our parlance, the exploration and combination of **resolutions of labour** and their indexing on value should be taken as **two separate processes**: the **exploration of use-resolutions that allow for surplus labour-use** and the **mapping of this surplus onto priceable parts that can be measured by value in a totally ordered way**.



# THE STRUCTURE OF THE COLLECTIVE LABOURER

The movement from cooperation to manufacture and then to modern industry can be understood in these terms as a way to induce a value-measure on  $W$  itself - that is on total labour use, rather than on individual labourers. **We can think of this passage as the establishment of a measure that objectivates the partially ordered structure of labour use:**

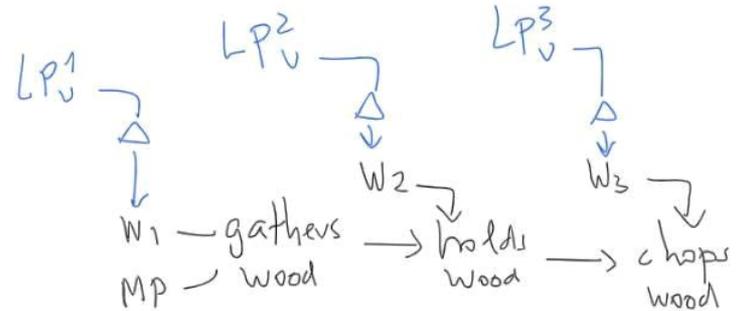
**1) Subjective cooperation (labourers as units):**  
At the level of immediate or accidental cooperation, only labourers are concrete objects, their relations are not. The structure of collective work only appears as the local evaluation of what is common to two or more concrete and particular workers.



# THE STRUCTURE OF THE COLLECTIVE LABOURER

## 2) Objective cooperation (skilled actions as units):

Though the collective worker still has no concrete existence, it serves as the standpoint from which the parts of the labour process are defined - the structure of manufacture is that of a total work process and each labourer becomes a "detail worker" predicated by the specific task one accomplishes. It is the collective worker that is decomposed into these parts, which are therefore connected regardless of the individual laborers that accomplish it. It is a formal decomposition into collaborating parts.



First, **the decomposition of a process of production into its various successive steps coincides, here, strictly with the resolution of a handicraft into its successive manual operations.** Whether complex or simple, each operation has to be done by hand, retains the character of a handicraft, and is therefore dependent on the strength, skill, quickness, and sureness, of the individual workman in handling his tools. **The handicraft continues to be the basis.** This narrow technical basis excludes a really scientific analysis of any definite process of industrial production, since it is still a condition that each detail process gone through by the product must be capable of being done by hand and of forming, in its way, a separate handicraft. It is just because handicraft skill continues, in this way, to be the foundation of the process of production, that each workman becomes exclusively assigned to a partial function, and that for the rest of his life, his labour-power is turned into the organ of this detail function.

Chapter 14, Capital Vol 1

**The collective labourer, formed by the combination of a number of detail labourers, is the machinery specially characteristic of the manufacturing period.** The various operations that are performed in turns by the producer of a commodity, and coalesce one with another during the progress of production, lay claim to him in various ways. In one operation he must exert more strength, in another more skill, in another more attention; and the same individual does not possess all these qualities in an equal degree. **After Manufacture has once separated, made independent, and isolated the various operations, the labourers are divided, classified, and grouped according to their predominating qualities. If their natural endowments are, on the one hand, the foundation on which the division of labour is built up, on the other hand, Manufacture, once introduced, develops in them new powers that are by nature fitted only for limited and special functions.** The collective labourer now possesses, in an equal degree of excellence, all the qualities requisite for production, and expends them in the most economical manner, by exclusively employing all his organs, consisting of particular labourers, or groups of labourers, in performing their special functions. **The one-sidedness and the deficiencies of the detail labourer become perfections when he is a part of the collective labourer.** The habit of doing only one thing converts him into a never failing instrument, while his connexion with the whole mechanism compels him to work with the regularity of the parts of a machine.

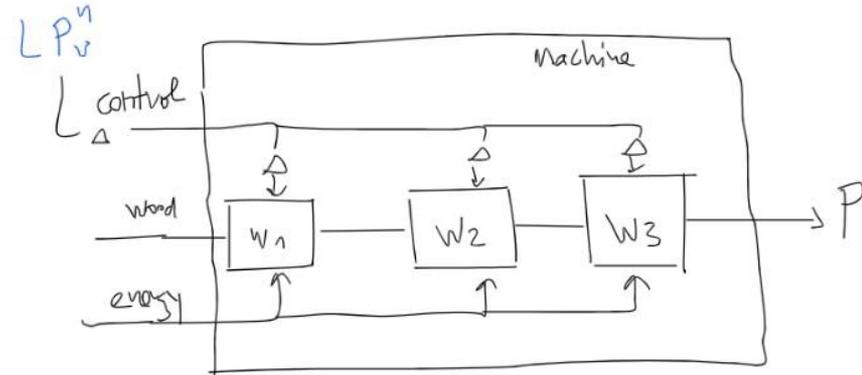
Chapter 14, Capital Vol 1

Since the collective labourer has functions, both simple and complex, both high and low, his members, the individual labour-powers, require different degrees of training, and must therefore have different values. Manufacture, therefore, develops a hierarchy of labour-powers, to which there corresponds a scale of wages. If, on the one hand, the individual labourers are appropriated and annexed for life by a limited function; on the other hand, the various operations of the hierarchy are parcelled out among the labourers according to both their natural and their acquired capabilities. Every process of production, however, requires certain simple manipulations, which every man is capable of doing. They too are now severed from their connexion with the more pregnant moments of activity, and ossified into exclusive functions of specially appointed labourers. Hence, **Manufacture begets, in every handicraft that it seizes upon, a class of so-called unskilled labourers, a class which handicraft industry strictly excluded.** If it develops a one-sided speciality into a perfection, at the expense of the whole of a man's working capacity, it also begins to make a speciality of the absence of all development. Alongside of the hierarchic gradation there steps the simple separation of the labourers into skilled and unskilled

# THE STRUCTURE OF THE COLLECTIVE LABOURER

## 3) Machinic cooperation (processes as units):

The relation between parts of the collective worker is itself made concrete in the forms of connection internal to a system of machines in a factory, objectively connecting parts of the production process in terms of priceable parts of means of production. Workers are no longer part of the collective dimension of the total labor process and become “appendages”. Their activity further embodies abstract time as a possible common predicate, while machines acquire functions that would not be humanly possible in the same measure as these become connected in productive processes.



A real machinery system, however, does not take the place of these independent machines, until the subject of labour goes through a connected series of detail processes, that are carried out by a chain of machines of various kinds, the one supplementing the other. Here we have again the co-operation by division of labour that characterises Manufacture; only now, it is a combination of detail machines. The special tools of the various detail workmen, such as those of the beaters, cambers, spinners, &c., in the woollen manufacture, are now transformed into the tools of specialised machines, each machine constituting a special organ, with a special function, in the system. In those branches of industry in which the machinery system is first introduced, Manufacture itself furnishes, in a general way, the natural basis for the division, and consequent organisation, of the process of production. Nevertheless an essential difference at once manifests itself. **In Manufacture it is the workmen who, with their manual implements, must, either singly or in groups, carry on each particular detail process. If, on the one hand, the workman becomes adapted to the process, on the other, the process was previously made suitable to the workman. This subjective principle of the division of labour no longer exists in production by machinery. Here, the process as a whole is examined objectively, in itself, that is to say, without regard to the question of its execution by human hands, it is analysed into its constituent phases; and the problem, how to execute each detail process, and bind them all into a whole, is solved by the aid of machines, chemistry, &c.**

# THE STRUCTURE OF THE COLLECTIVE LABOURER

1)  $x_A = y_B$

(particular)

*Cooperation*

*Cooperation as excess to price-parts*

→ *hard time finding predicates for both total and partial collaboration*

2)  $x_A = y_B, z_C, w_D...$

(formal universal)

*Manufacture*

Splitting of specialised labours from the standpoint of cooperation

→ you find “human”-resolutions or predicates for partial collaboration

(technical predicates)

3)  $y_B, z_C, w_D... = x_A$

(concrete universal)

*Machine system*

Objectified cooperation in machine structure

→ you can name parts and the whole of collaboration,

but these are no longer predicates for humans, but for objective machinery

(technological predicates)

## NOT: THE SCIENTIFIC ORGANIZATION OF LABOUR

### Central Labour Institute (Tsentral'nyi Institut Truda-TsIT)



The modern machine...possesses its own laws of pulsation, functioning, and relaxation — laws that do not stand in conformity with the rhythm of the human organism. The world of the machine, the world of mechanical equipment [oborudovaniia] and urbanized labor [trudnogo urbanizma], **produces specially connected collectives, begets certain types of people.** These are people who we must accept, just as we accept the machine, though we must not smash their heads on its gears. **We must bring some kind of equalizing coefficient into the machine's iron disciplinary pressure,** though history insistently demands we pose these not as petty problems of the social protection of the individual personality [lichnosti], but rather **the bold engineering [proektirovaniia] of human psychology according to such an historical factor as machinism**

Aleksei Gastev

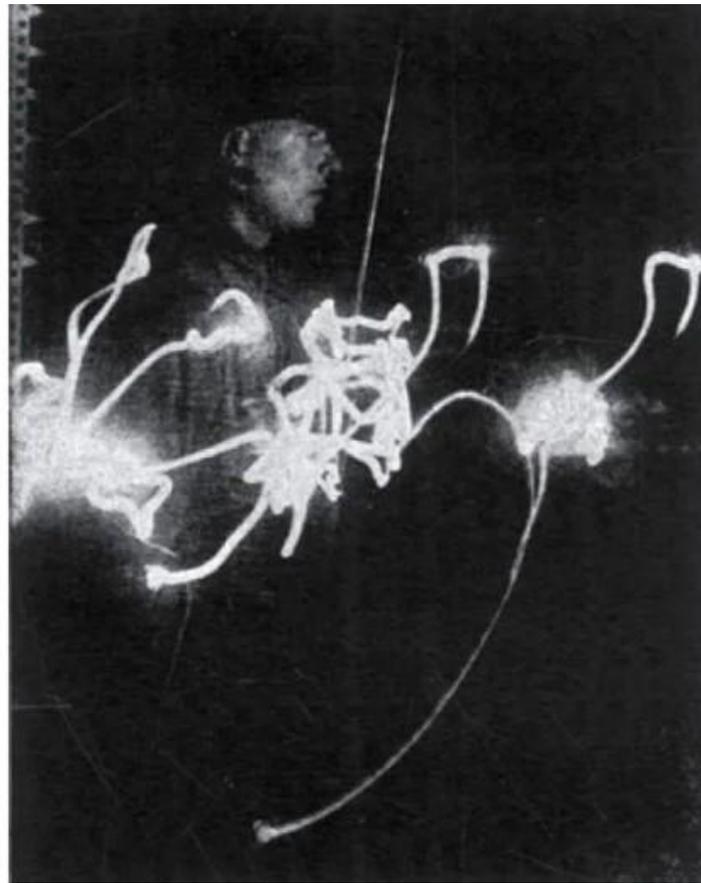
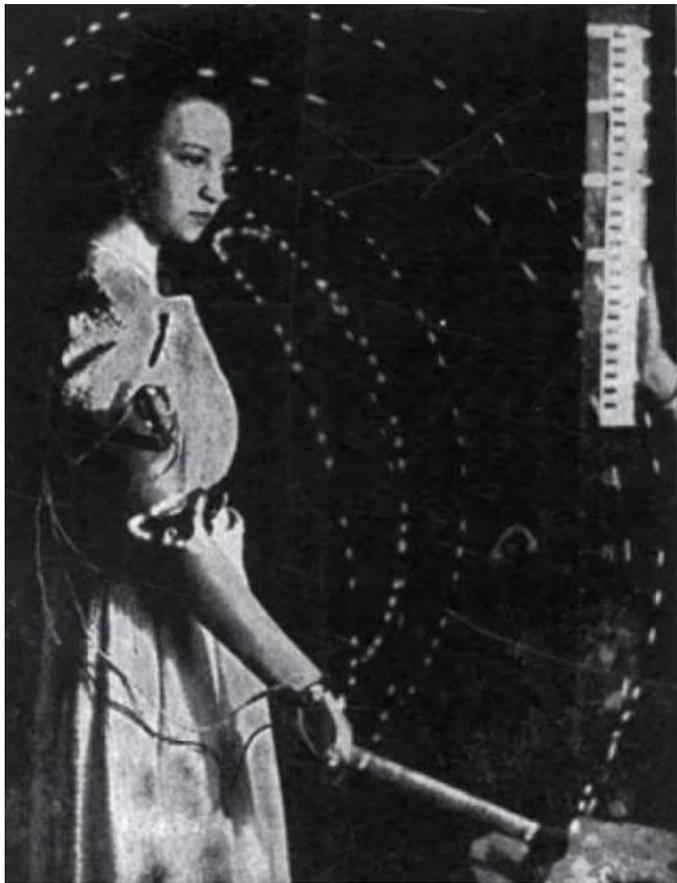
## NOT: THE SCIENTIFIC ORGANIZATION OF LABOUR



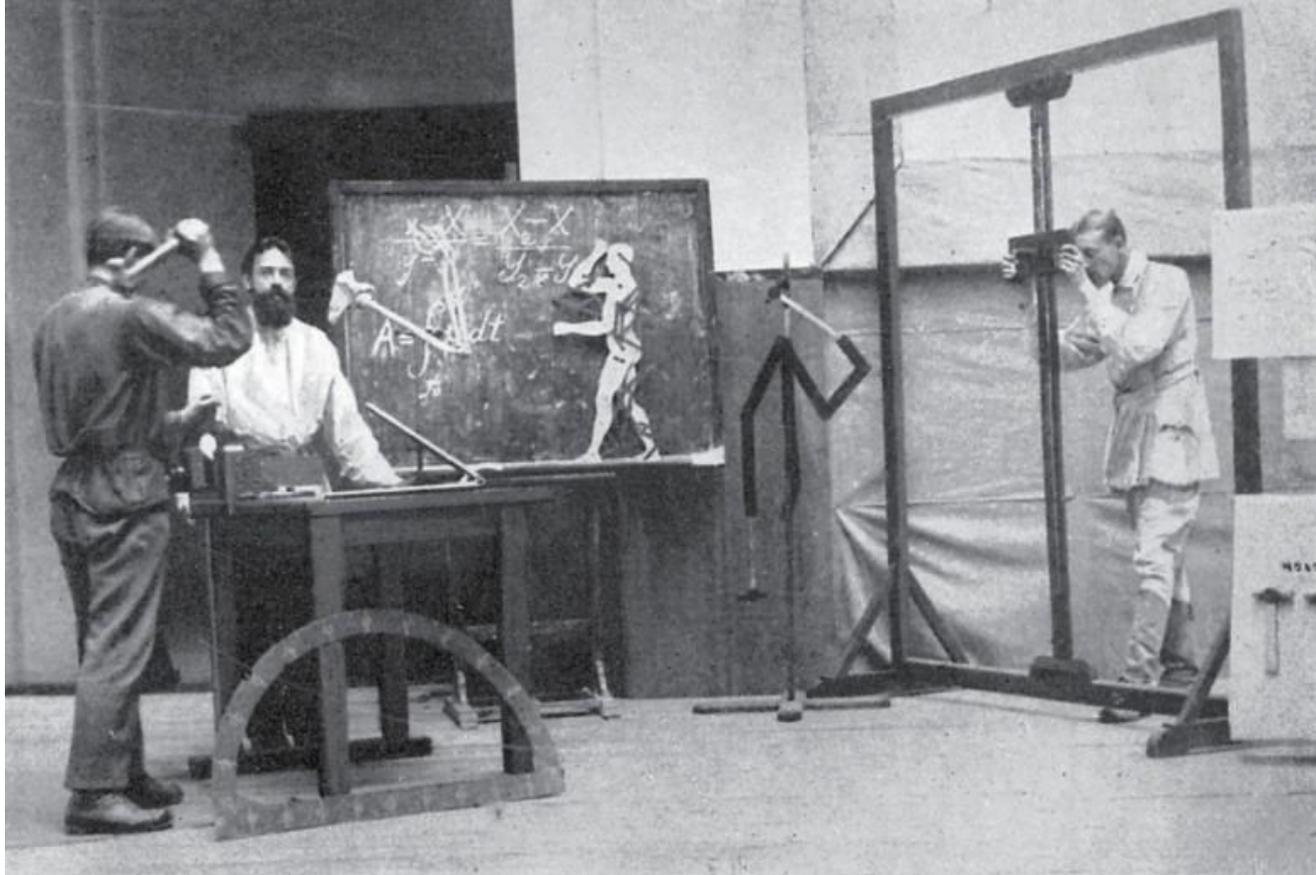
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Aleksei Gastev

## NOT: THE SCIENTIFIC ORGANIZATION OF LABOUR



## NOT: THE SCIENTIFIC ORGANIZATION OF LABOUR





# NOT: THE SCIENTIFIC ORGANIZATION OF LABOUR

## 7. Учетная карточка

Мы подошли к

учетной карточке (хроно-карта).

Если бы ее представить лишь обозначением занятости данного человека (ибо, ведь, в нашей жизни есть не так мало людей с «ни чем не занятыми» часами), то мы бы имели следующую ленту:

Часы	0-1	1-2	2-3	3-4	...	в т. д.	...	13(1)	14(2)	...	23	24(12)
Дата												

Заполнение этой ленты с точностью до часа даю бы примерно такую картину занятости (черный квадрат — занятый, белый — незанятый час).

Часы	0-1	1-2	...	9-10	11-12	13(1)	14(2)	...	17-18	19	...	24
Дата				■	■	■	■		■	■	■	

Уже из одного взгляда на эту ленту можно заключить, что ее носитель в зарегистрированный день был вне знакомых нам объективных установок — служебной (с 11 до 16 включительно) и рабочей (с 9 по 16 или по 17 включительно).

Следовательно, если бы мы имели только такой элементарный тип отметок времени, мы и тогда получили бы чрезвычайно интересные выводы о том, к какому типу объективных установок тяготеет данная субъективная установка.

Сравним, например, приведенную выше установку с объективной установкой соавработника.

Часы	0-1	1-2	2-3	...	11	12	13	14	15	16	...	24
Дата												
16.VII						■	■	■	■	■		

Но теперь же мы должны установить, что как только мы попытаемся ориентироваться на различные социально-временные условия, на различное содержание временных участков, так сейчас же выступают и различные типы карточек.

Различные типы карточек будут различаться именно установками, видами установок. Выступает на сцену

**номенклатура установок.**

Мы уже различали выше два главных вида установок: объективную и субъективную. Субъективная установка соответствует тому, что мы называем

**бытом.**

Отсюда понятно, что домашний труд нам надо отнести к области субъективных установок: труд и чистый быт там не имеют резкой грани. Отсюда не значит, конечно, что объективная установка совершенно не влияет или не может влиять на субъективную.

## 8. Социальная ценность установок

Природа объективных установок и субъективных установок различна. Объективная установка, прежде всего, —

**социальная установка,**

т. е. она регулируется определенным признанным общественным укладом, не важно каким: феодальным, буржуазным.

А на почве обобществления орудий и средств производства эта объективная установка становится

**социалистической установкой.**

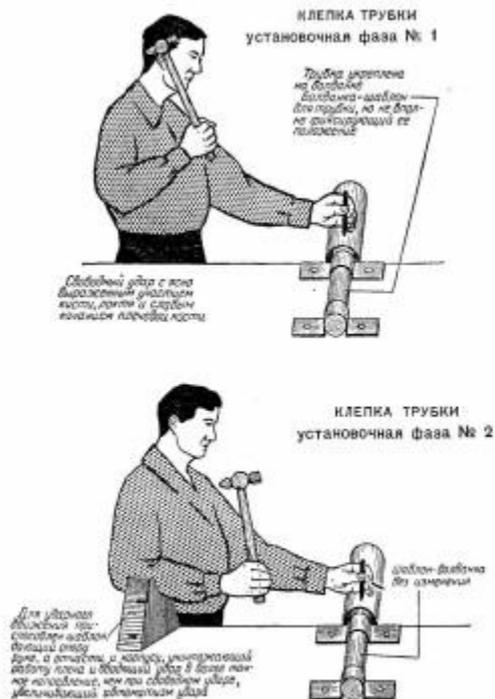
На почве обобществления производства и потребления —

**коммунистической установкой.**

Если бы нам в будущем удалось произвести статистическую обработку хроно-карточек только по принципу вышеотмеченных установок, то мы бы могли точно ответить:

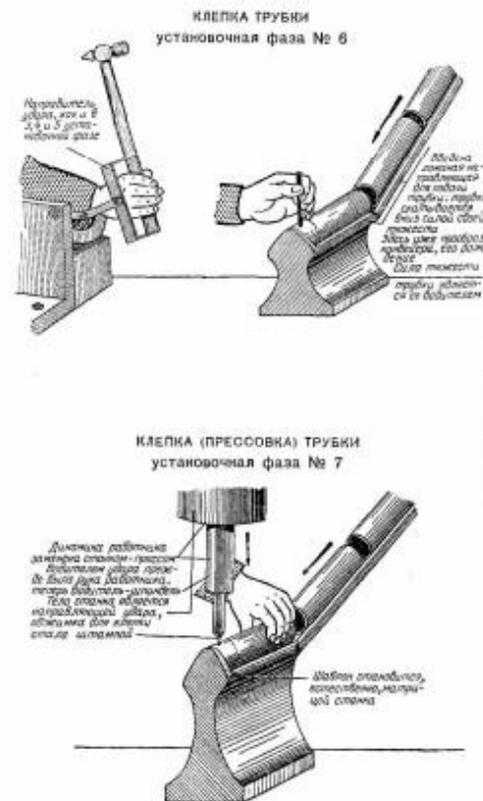
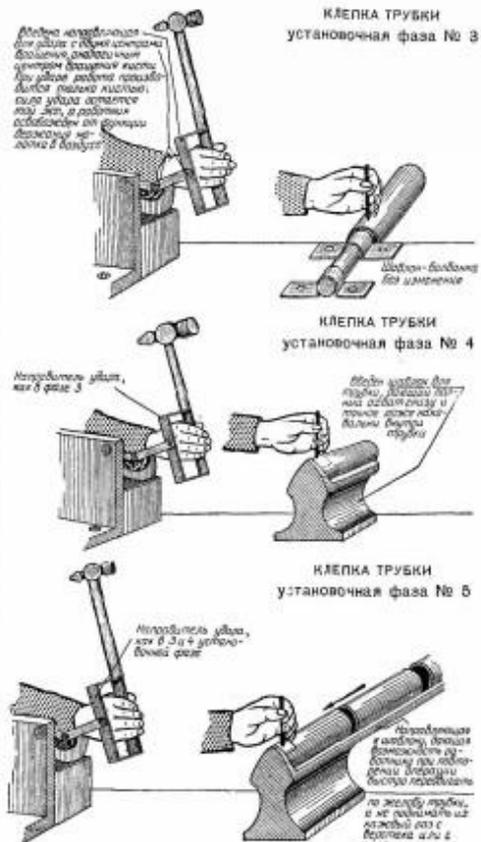
Как **социализировано** население,  
как **коммунизировано** население.

# NOT: THE SCIENTIFIC ORGANIZATION OF LABOUR



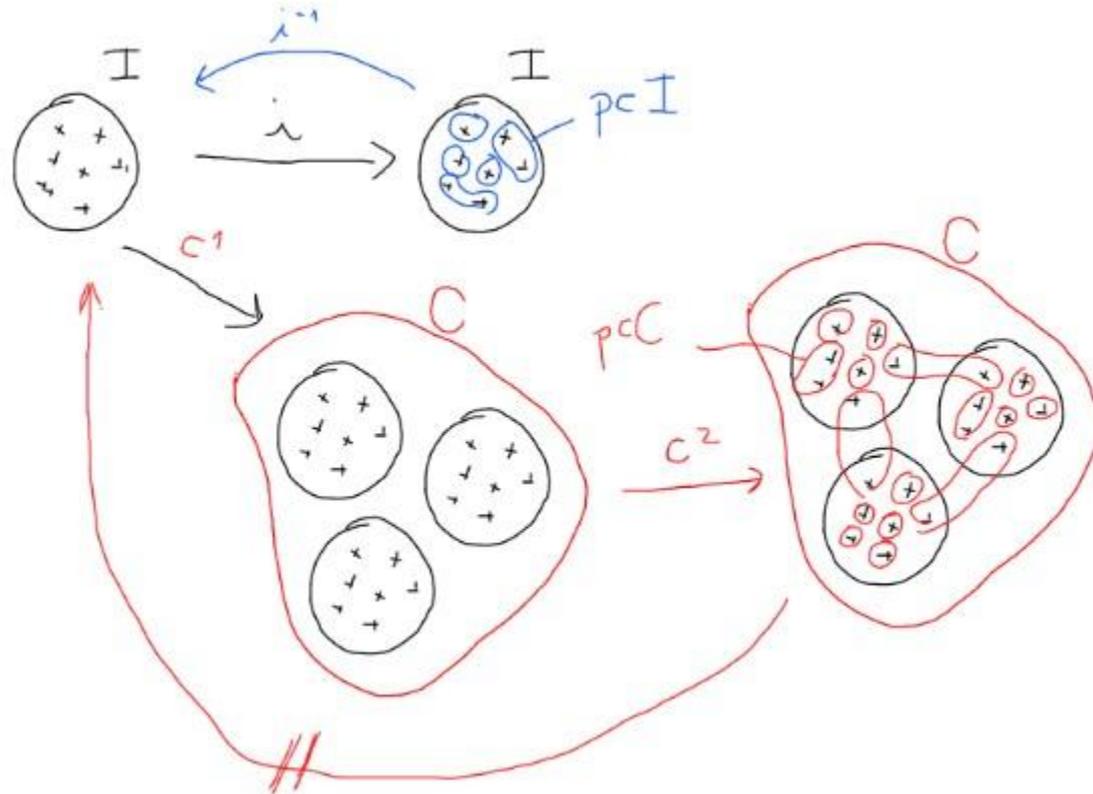
**ШАБЛОНЫ И НАПРАВИТЕЛИ ДЛЯ РУКИ РАБОЧЕГО**

**ШАБЛОНЫ, НАПРАВИТЕЛИ И ВОДИТЕЛИ ДЛЯ МАТЕРИАЛА**



**ШАБЛОНЫ, НАПРАВИТЕЛИ И ВОДИТЕЛИ ДЛЯ МАТЕРИАЛА**

# NOT: THE SCIENTIFIC ORGANIZATION OF LABOUR



## NOT: THE SCIENTIFIC ORGANIZATION OF LABOUR

The time has come for us to submit all methods of work to  
*preliminary study,*  
after which, every way and every method we  
*divide into separate parts,*  
these parts we compare to one another and out of them we choose  
*the best.*

After that, from these parts we form a special  
*series*  
and, finally, we arrange these series in such a way, so that work might be the  
most  
*economic,*  
so that the least time might be spent, the least fatigue might be felt, and  
ultimately, so that work itself might be the most  
*precise.*

That is the essence of the scientific organization of labour.<sup>19</sup>

## NOT: THE SCIENTIFIC ORGANIZATION OF LABOUR

### Time League (Liga Vremya)



Before founding the League of Time in 1923, **Platon Kerzhentsev** began his political career working in the grassroots studios of the Proletkul't, where he and colleagues like Stepan Krivtsov and Valerian Pletnev investigated the properties of different group configurations. For the Proletkul'tists researching in these social laboratories, collectivism was not an abstract ideal but a concrete science that had its own laws and analytic instruments. The group engineered communal studios for making graphic art, literature, and theater, and even assembled information collectives to form a kind of distributive organic computer based on a principle they called *vzaimoinformatsiia* (reciprocal information). One important discovery made during these experiments was that the products of collective labor qualitatively changed depending on the size of the ensemble.

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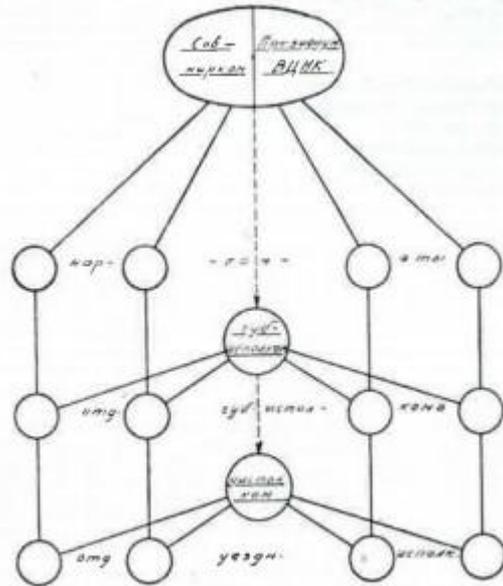
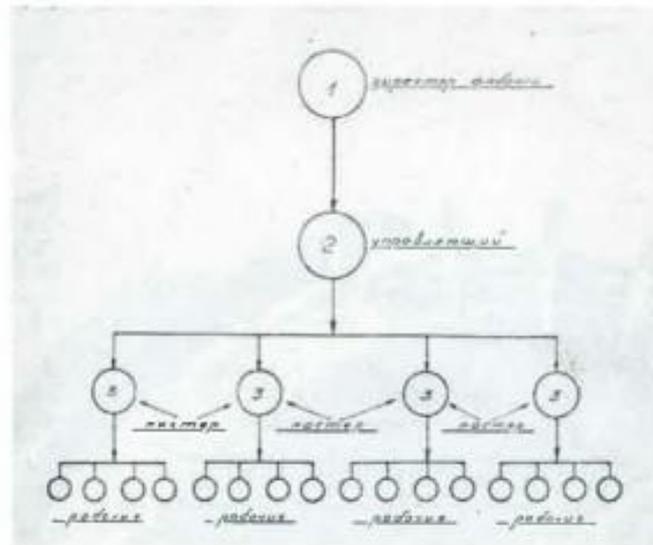
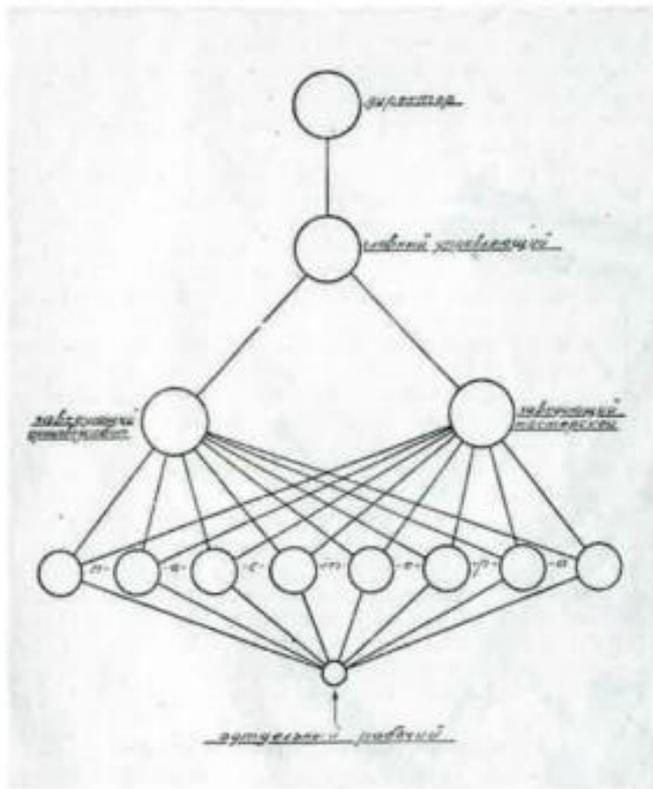


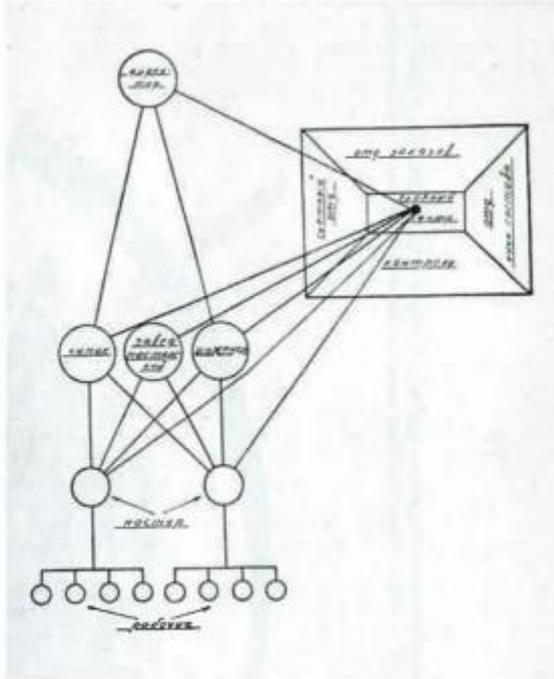
Рис. 12. Система двойного подчинения (отделы исполкома одновременно подчинены и местной власти — исполкому, и центральной власти — народному комисариату).

The Proletkul't organizational scientists experimented not just with the size of these collectives, but also with different structural topologies. Kerzhentsev designed flexible organizational schemes for a variety of operations, including education, political deliberation, and, of course, production. To each of these tasks corresponded a distinct social morphology, and each of these configurations, in turn, placed different demands on the abilities and resources of its constituent members. A favorite topic in Kerzhentsev's essays on organization was the principle of reorganization, which he illustrated with reference to Trotsky's Red Army: Established during the Russian Civil War, this military body was at various times also deployed as a labor unit (both in factories and in the countryside) and as an educational institution (to combat rural illiteracy). For Kerzhentsev, each of these emergent properties—war machine, force of production, instrument of enlightenment—could be extracted from the same collective depending on that group's configuration.

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## NOT: THE SCIENTIFIC ORGANIZATION OF LABOUR



In this way, the organizational scientists of Proletkul't proposed a unique solution to political philosophy's seemingly insoluble conflict between necessity and freedom, between social constraint and individual liberty. For them, revolutionary society was to be realized not by subordinating the individual to a monolithic collective, nor by espousing a version of radical autonomy that, to Marx at least, was tantamount to sociopathy (the pseudoliberty of "man as an isolated monad who is withdrawn into himself"8). Rather, they advocated multiplying and diversifying what Viktor Shklovsky later called "unfreedoms" (nesvobody)

## WHEN WORKERS WENT SILENT

The final point concerns the process of industrialisation itself, in terms of both the impact of the mechanisation of work processes and the imposition of tight forms of discipline. While there is a general neglect of the issue of singing at work in the wider literature on the decline in self-made music, a small number of writers have noted that industrialisation directly militated against singing at work. Bert Lloyd, for instance, argued that the process of mechanisation meant that the pacing and coordination functions of singing at work became redundant and, therefore, singing at work itself became redundant and faded away: 'as machines ... replace hands, as the single worker replaces the group, the reason flows from the old work songs, their logic drains away'.<sup>15</sup> Little has been seriously researched in this area, however, with writers rarely offering much beyond references to one or two bans on singing in mills. Worse still, some writers, such as Ian Watson, feel free to give unreferenced polemical statements:

If the workers would consent to it, it would be a good plan to induce temporary deafness by plugging the ears and so shut out the noise of the machinery ... It would be of value to shut out the sight of surrounding objects by separating the lathes or other machines from one another by partitions. The worker left to himself without sounds or sights to distract his attention could then concentrate himself entirely on the work in hand ... these conditions are mentioned only as an ideal which should be aimed at whenever possible.<sup>93</sup>

Industrialisation from the late eighteenth century depended on technological innovation and the harnessing of concentrated sources of power on an unprecedented scale. Tools once operated by human hands and feet, and paced by human effort, were replaced by technology powered by centralised steam engines. The soundscape of the workplace became profoundly altered.

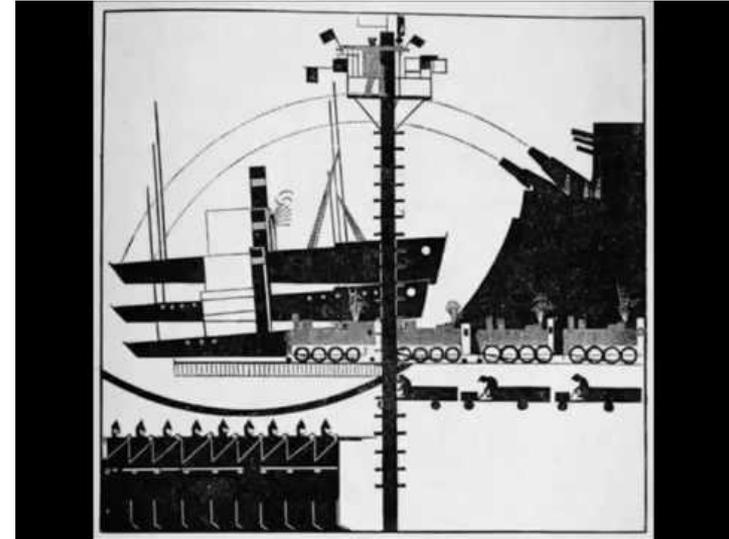
In trying to recapture the changing soundscape of the early factories, it is important to consider variation in understandings of what constituted 'noise', 'music' and 'silence'. These terms appear repeatedly in government reports, autobiographies and fictional accounts of the period, yet how we interpret sound is culturally, socially and historically specific. The hierarchy of 'noise' and 'music' can depend not only on aesthetic taste but also on our own physical, biological capacity to hear or not hear certain sounds.

## WHEN WORKERS WENT SILENT

that was how they looked after engines, by ear'.<sup>123</sup> Machine tenders learned to rely on their hearing in alerting them to when something was not working correctly, conceptualising this technique through the language of music. In the light of ever more sophisticated machinery, these workers emphasised the human skill and human senses necessary to keep production flowing, but also endowed this with an element of artistic creativity. Here again we find that singing at work would have been an unwanted distraction, as Stanley Graham stated:

I never saw spinners singing or whistling, they would be careful not to do so because it could sound like a hot bearing to one of the other workers. Remember these men (and me as engineer) were always listening for changes in the note of the machinery. Difference with me was I always worked on my own so no danger of mistaking my own whistle for a bearing.<sup>124</sup>

In these cases workers were interpreting industrial sound in an appreciative way related to maintaining the efficiency of the machinery, but along with this workers were able to accommodate industrial noise by reinterpreting it *as a form of music*.



## MUSIC WHILE YOU WORK



1943: BBC "Music While You Work" Radio Broadcast No.3



lofi hip hop radio - beats to relax/study to

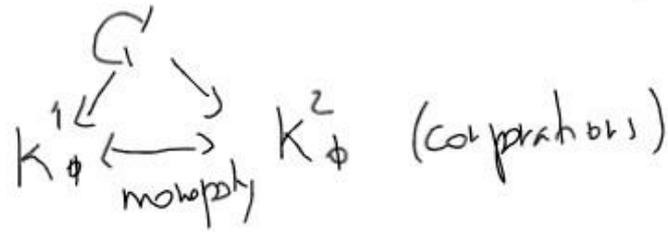
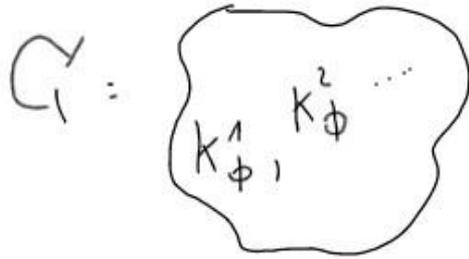


Paul Robeson and the Sydney  
Opera House workers

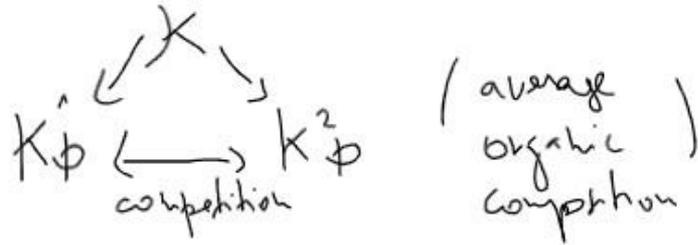
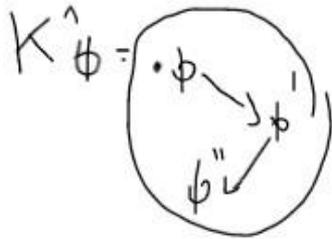
## What are the intelligible limits of capitalist resolutions for the productive sphere?

1. Contextualization
2. The compositional point of view
3. The idea of resolution and resolution boxes
4. From labour use to labour time
5. From labourer to partial worker
6. Means of production as stand-ins for social cooperation
7. From labour sites to cooperative novelty

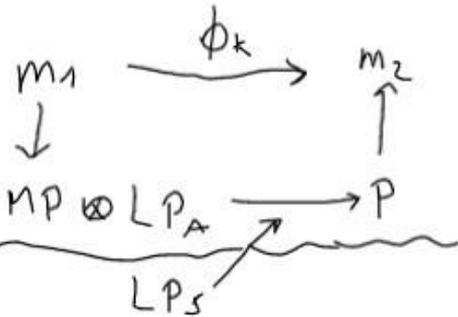
Bodies



organs



weak point



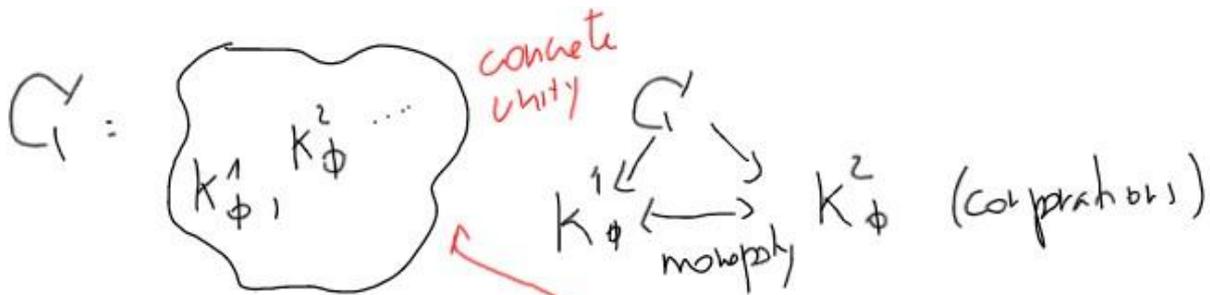
(production)

change site

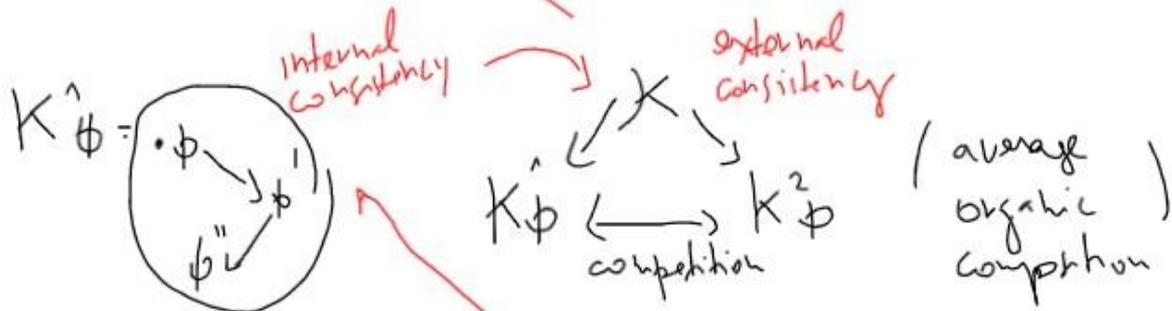
site

(labour)

Bodies



organs



induction of new points

weak point

change

site

