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A WORLD CREATIVE AUDIT: A RESEARCH PROPOSAL[1]

Abstract: The paper examines the need of developing an international research program on creative work as a prerequisite for the new forms of social structure required for noonomy. The study has two goals – qualitative and quantitative. Qualitatively, it will make it possible to establish objective standards for defining creative labor and related forms of mental productive activity, and quantitatively, to obtain statistical data on the creative production resources of five or more key countries.
Keywords: state planning, cooperative organization of labor, creative production, creatosphere, crisis of capital, mental economy, mental objects, unproductive labor, noonomy, post-mechanical age, contradictions of public and private property, simulative benefits, creative labor, technological innovation.

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制定关于全球创造性劳动统计和研究的计划

摘要:作者认为创造性劳动是形成智慧经济所要求的新型社会组织形式的先决条件,有必要制定一项国际规模的创造性劳动研究计划。该项研究有定性研究和定量研究二项任务。定性研究的任务是为创造性劳动及智慧生产活动形式定义客观标准;定量研究的任务是对五个或更多主要国家的创造性生产资源数据进行统计分析。
关键词:国家计划、劳动合作组织、创造性生产、创新领域、资本危机、心理经济、精神客体、非生产性劳动、智慧经济、后机械时代、公共财产和私有财产间的矛盾、虚假福利、创造性劳动、技术创新。

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Creative labour, Noonomy's definitive resource

I propose nine principles. Since I expect them to be controversial, I will set out, and address, the debates that surround them. That said, my concern is to chart a practical course of action for collaborative research. Agreement with every principle is not a requirement; they can be thought of as postulates to be assessed critically in the course of the research.

The principles

• The relation between Noonomy and Creativity is dual and symmetric. Creative Labour is the primary resource of Noonomy's emerging new technologies but only Noonomic principles can develop it into a generalised productive resource, restoring creativity to its rightful place as a universal human capacity and a universal human right.

• Creative production is an industry: it is a branch of the division of labour with a common resource, common methods of production, and common products.

• Creative production is a sunrise industry: it is absorbing labour and its output is rising, in contrast to sunset industries such as agriculture and manufacturing.

• Creative labour is a cooperative human activity. The precondition for its efficient and beneficial use is the universalization of creative cooperation.

• The co-operative organisation of labour in creative production is complementary to, but also superior to, the socialization of ownership on which Marx and Engels laid stress when assessing the prospects for transition from monopoly capitalism to socialism.

• Information and Communication Technology (ICT) is central in this new phenomenon. It constitutes a means of production of the creative industries. In particular, *software production* is its 'cell form', comparable to the factory in the mechanical age.

• The proper management of creative production, unlike that of machinery, requires a different model of social organisation based on the rounded development of the human; this is why Noonomy is central to its proper utilization.

• Central to this process is creative innovation: the development and rapid deployment of new discoveries. This shares, with all previous waves of innovation, the superficially paradoxical prerequisite of standardisation, the irreducible basis of all human cooperation.

• It may seem paradoxical to treat standardisation as necessary for creativity (Hofstadter 1986), whose essence is variety. However, it takes a distinctive form in creative production; it seeks to *maximise variety in human life* by *minimising the obstacles to creation.*

The primary standards required in the age of creation are, in conclusion, those governing its primary resource: creative human labour. Devising such socially-managed standards would be a major achievement for Noonomy. The research should provide an evidence base for this goal.

The programme of research

Before embarking on a discussion of the issues, I outline a suggested programme of work. This will both focus our minds, and increase the probability of achieving something while the discussion unfolds. Thus, we should aim at a dialectic between theory and practice.

The programme does not claim to be the totality of research required; rather, it sets out objectives which are both possible on the basis of existing research, and a foundation for future research.

The focus is on the characteristics and extent of the creative labour force in the world economy as at present constituted. It has a qualitative and a quantitative aspect, corresponding to the *intensity* method developed jointly by researchers in the UK, Australia, and France, which has been

adopted by the UK's Department of Culture, Media and Sport (DCMS) as the basis for the UK's statistical reporting on the creative industries.

• The qualitative aspect requires us to define the *occupations* that should be considered creative, and the *industries* that should be considered creative.

• The quantitative aspect requires us to of measure, in each of the nations under study, *the size* of the creative and non-creative labour force within that economy's industries and so identify those that make particularly intensive use of this creative labour force.

• Estimate the wealth created by these industries, and hence the use and results of productive creative labour.

This method has been set out in a number of places: we refer the reader in particular to Bakhshi et al. [Bakhshi, Freeman, Higgs, 2013] and to Freeman [Freeman, A., 2002] for a more detailed account.

The results lead to a creative *Trident* [Higgs, Cunningham, 2008] which allows us to focus on those specific industries which make *intensive use of a creative labour force*, which are those that we designate creative, and in addition allows researchers to examine the growing role of creatively-occupied workers in the other industries and hence, in the economy as a whole.

This has not been done before except for the UK, France and Canada. Moreover, even for Canada, the method employed, though useful as a source of preliminary information, was limited in that it did not base itself on a detailed examination of Canada's occupational structure – which, as will be explained, is required for full comparability. The study of this structure (which would open the way to a comparable treatment of the US and Mexican economies) would be a subject of the research.

The intensity method admits of a number of choices, so that the definitions and hence magnitudes it yields depend on these choices. Our aim would be to create a flexible system in which different hypotheses, as to which activities are creative, can be scrutinised.

On the one hand this is rooted in existing practice and hence has a body of past work on which to draw rather than inventing *ab ovo*, but on the other, it develops this practice and thus extends the results beyond the boundaries established in the mechanical age which we are leaving behind.

The prerequisite for effective and practical governance in the post-mechanical age is, in consequence, a proper re-structuring of the categories used to describe human productive activity, which are derived from a study of how this activity is *now* conducted and *now* organised.

This is not counterposed to the necessary discussion of how it *should in the future be* so managed and organised, which is a specific field of enquiry of Noonomy. All social transformation other than mere utopianism starts from *what is and exists actually,* and enquires how we may consciously manage to change it into what we as humans desire it to be. This does not commit us to accepting what is; it is however a necessary point of departure. Dealing with this basic rationalist problematic, dating (in Western thought) to the disagreement between Kant and Hume on the relation of 'is' to 'ought' remains a necessary foundation of practical proposals for change.

What is a branch of production? The case for the study of cooperation in modern industrial development

The basis for the current practice of industrial classification dates back to Adam Smith: it is the notion of a *branch of the division of labour*: a collection of enterprises or sites of production connected by *specialization*. The centrality of this notion can be gauged from the fact that, according to Smith, this is the foundation of the Wealth of Nations.

It behoves us to consider why this is so, because it is so commonplace that it is easy to ignore. And, since the much more exciting advent of mechanical production is the focus of all subsequent research into the source of advances into productivity, the temptation to ignore it has evolved into a passion. In the machinocratic rush to identify the machine, the factory, and the property of the entrepreneur as the true source of wealth, specialization as such – which is a social, not a private, achievement – has become one of many orphaned children of modern economic thought.

The reason is that specialization is the primary basis on which labour may be rendered more productive. Any fool can put a waterwheel in a stream, but to transform it into a technological paradigm, it is necessary to create an entire system of labour around it. It is the system of labour, neither the wheel nor the machinery that it powers, that constitutes the essence of the technological advance it incarnates.

At the centre of any such system of labour lie two achievements:

• the development of a *skilled* labour force capable of dedicating itself to making some *particular* system of machinery work, and

• the *cooperative engagement* of this skilled labour force in this enterprise, in turn imposed by specialization.

Marx offers the analogy of the orchestra; there are many different instruments, but only when they coordinate their efforts, do these bear fruit in a symphonic sound. Indeed, were we to interrogate more closely the under-examined category of *skill,* which is often taken for granted and distinguished in the literature from *knowledge* – yet in many senses precedes it and constitutes its material foundation – we would almost certainly find it in an intimate relation with the category of specialization. Beside tool-using, often postulated as the *genus specificus* of humanity, a significant evolutionary characteristic of humanity is separation of function. A society in which certain people hunt and others perform other roles will inevitably perform better if its hunters concentrate on being able to hunt better. This is a skill, not reducible to the acquisition of knowledge. To the contrary knowledge, if it even exists, would best be described as means for the social generalisation of skills.

Co-operation is the orphaned twin of specialization in modern economic thought, which simply assumes the market will coordinate between a variety of specializations. This leads to the peculiar paradox that within the enterprise, the coordination between its parts is meticulously planned and entirely insulated from the disruptive effects of the market, whilst in society as a whole, planning is anathematized.

The chief productive function of the modern nation is, in consequence, twofold. It is to introduce, into the nation, those specialist skills which make for the effective use of machinery and, by virtue of this division of labour into a bewildering range of distinct activities, to arrange for them to cooperate in a common *national* framework of regulation and communication: a system of railways, a system of road usage, a system for the production of interfacing engineered components, a system for the production and consumption of electricity, for the construction of units of habitation (as in Sweden) on scales that create a mass market in reproducible units of installed furniture, laying the basis for the world domination of IKEA, for the interoperability of the means of warfare down to the dimensions of shells, for the standardisation of such humble components as the screw and the nut, all the way down to the specification of a system of weights and measures, one of the first and technologically fundamental achievements of the French Revolution. To any

economist who neglects standardisation as a minor frippery rather than a fundamental principle of industrial production, I always pose two questions:

- Have you ever tried to fit a metric bolt in an BSI nut?
- Why drive on the right?

The joint and dialectical relation between specialization and cooperation, and the mediative role of standardisation that arises from this contradiction, is, we suggest, a primary concern if not the primary concern of Noonomy. It is also, we will argue, central to any meaningful understanding of how the modern creative economy, with software at its centre, really functions.

It is a common misconception that the analysis of cooperation and specialisation constitute some kind of intellectual prehistory of Marx's analysis of the true source of value, being its origin in the exercise of human labour. This arises from the misconception that social labour consists of the mere amalgamation of the activities of individual labourers, achieved by the market. Nobody who has encountered the realities of industrial production can view this notion as other than a fable.

Marx not only accepted Smith's concept of specialization as the foundation of capitalism's superior productive capacities, but developed it, placing it at the centre of his notion of the way capitalist society both reproduces itself and accumulates. It is central to the famous Schemes of Reproduction of Volume II of *Capital* and to his discussion of the infamous Transformation problem, both of which attempt to specify the quantitative relations governing exchange of commodities produced by distinct branches of production.

The concept was strongly developed by Victorian economists of all countries when they established a kind of 'map' of industrial production into categories and subcategories such as agriculture; mineral extraction; construction; manufacture (in turn subdivided into categories such as mechanical and civil engineering); transport and communication; utilities; retail; finance and other services such as education or health. In fact, industrial classification constitutes one of the earliest international standards on which practical economics reached a general agreement and was the basis for all systematic management of production and development.

The concept reached its highest form in the work of Wassily Leontief's *Input-output* analysis, which traced the way in which supply chains transferred products, in various stages of the productive process, from one branch of industry to another. It appears in a much cruder form in the distinction that permeates the National Accounts, made by Keynes, Kalecki, and others between industries whose final collective output consists of sales to 'final demand' and the remainder – essentially Marx's departments I and II,

Crucially, thanks to Leontieff, the notion became a *planning* instrument not only in the Soviet Union but in wartime America, where his 'economic technology' was used to place the US economy on a wartime basis by calculating precisely how much each US industry would need to employ and produce in order to satisfy the goal, essentially, of becoming the workshop of the Western War machine.

Thus, the notion of a branch of industry is not some abstract or academic frippery but is arguably the most fundamental discovery of economic theory, and certainly that most in need of preservation and extension in the theory of Noonomy.

But at the same time, it cannot be accepted in the form in which it was developed in the age when mechanical production of physical objects was the dominant employer of human labour.

What is therefore required is a fundamental adaptation of the concept to satisfy the practical requirements for the governance of a society organised on the principles of Noonomy, that is to say, a society in which the production of *intangible* objects, of which *mental* objects are a subcategory, is the primary and indeed overwhelmingly dominant form in which human labour is productively employed.

The standard definition of an industry is well established and is explained in the internationally-accepted manuals governing the classification of industries[1]. At least one of three characteristics define the activities comprising an industry:

• They specialise in the use of some common resource, for example agricultural land, a specific type of mineral or other raw material, a specific source of energy (steam, oil, electricity).

• They specialise in some particular type of *process* (for example spinning and weaving in the early stages of the first industrial revolution, the modern assembly line, chemical plants, etc).

• They produce some particular *product* – for example cars, aeroplanes, cookware, buildings, transport services – or, in modern times software, broadcasts, newspapers, and so on.

Some industries are defined more by one of these characteristics than others, but the definitive rule of thumb, dating from Smith's original conception, is that a group of activities comprises a branch or sub-branch of production if productivity is increased in these industries by specialisation within enterprises and cooperation between them.

This leads us to pose what is in effect the fundamental issue facing the governance (which includes self-management) of a service-based, mentally productive economy, that is to say, Noonomy: what leads to the enhancements due to specialization? Conventional economics is focussed on, indeed one might reasonably say obsessed with, the *individual producer*. From this standpoint, technological innovation consists of developing new types of machine, new products, and new processes. Indeed, the innovation literature is rooted in this notion of technological change – so, for example, it treats the transistor or the electronic component as the foundation of the putative 'Fourth Industrial Revolution'. Nothing could be further from reality. What has transformed modern production is not electronic components, but the *social use made of them*. This is not simply a mode of changing the *individual components* of a productive system: it is the *means of cooperation* employed by society in integrating these components into a productive system.

Of course, cooperation and specialization, which are in a certain sense the dialectical opposite processes at work in capitalist productive progress, have always worked with, and against, each other: thus, the real basis of the second industrial revolution is as much the *railway system* – a prototype, along with the postal system, of modern industrial cooperation, as it is the use of steam power as such. Similarly, *electrification and the power system* are as much the foundation of what Christopher Freeman terms the 'age of steel, electricity and imperialism' as are the generation and use of electrical power. Indeed, when one studies the close relation between the classical 'originators' of capitalism such as the spinning Jenny and the Loom, from the standpoint of their relation to the world economy, we see that they owe as much to a revolution in clothing and the supply of raw materials from the colonies – that is, the shipping and military systems on which this supply depended – as to the genius of Hargreaves or Arkwright.

[1] ISIC. 2008. International Standard Industrial Classification of All Economic Activities Revision 4. United Nations Department of Economic and Social Affairs, Statistics Division. URL: unstats.un.org/unsd/ publication/seriesM/seriesm_4rev4e.pdf.

Yet for the exponents of modern innovation, or the history of invention, the drivers of this process are the Jenny, the Loom, the Steam Engine, the Dynamo, and the Electric Motor.

This focus is not only outdated in the post-mechanical age but downright misleading. The basis of *modern, mental specialization is cooperation; it is therefore on systems of cooperation, both nationally and internationally,* that a future science of innovation must rest.

We propose the software industry and ICT in general as the carrier and archetype of this revolution precisely because it is the single industry in which cooperation is the fundamental basis for specialization. We propose the creative industries as the archetypal drivers of this revolution precisely because, by migrating to this carrier and its archetypal models of production, they have become its drivers.

The Noonomic conjuncture: the current state, and trend of development, of today's national productive systems

What do we mean by 'now'? This idea has been the subject of philosophical discourse, in Western thought, at least since the time of Heraclitus. It is one of the most fundamental issues of science, greatly stressed in Desai's work on Geopolitical Economy whose insistence on the historical dimension of all categories of political economy allows us to situate them in an appropriate geographical context. Thus, to take but one example central to the analysis of this section, what does it mean to 'be industrialised'? Is this a historically absolute or a historically relative concept? Was the Japan of the Meiji restoration already an 'industrialised' society? By the standards of the day, it was not, yet it provided a rude shock to the short-lived Eastern aspirations of Count Witte by defeating a supposedly superior Russian military force in the war of 1905.

As any physicist or indeed, biologist or chemist can testify, the scientific concept of the 'state' of a system is a dialectical unity of two aspects: the current *position* of the system and its *direction of motion*. Thus, we do not understand what a particle is unless, along with its position in space, we include its momentum. We do not understand an ecology of animate entities unless we understand their evolution. Most importantly, we do not understand a society by supposing it to be frozen in time, as does all equilibrium – that is to say, mainstream neoclassical – economic theory.

Consequently, a Noonomic understanding of the future requires a study of the *trends* of industrial specialization which in turn must arise from the study of their historical past. This notion is encapsulated in the notion of *conjuncture*.

The notion of conjuncture was, and rightly remains, a principal object of attention for Russian and Soviet social science. Kondratieff consciously named his research group the 'Conjunctural Institute.' Varga, arguably the most eminent Comintern statistician (if possibly also the most controversial), regarded his role as the study of the 'economic conjuncture'. Kuznets to my knowledge did not use the term, but his entire method is conjunctural, that is to say, it is devoted to the study of economic dynamics.[1] The Oxford *Dictionary of Sociology* defines conjuncture thus: "A term used by so-called structural Marxists (see Louis Althusser) to refer to the concrete state of political-economic and especially class relations, in a specific society, at a particular point in time (as in 'specific historical conjuncture')."

Any treatment of *industrial* conjuncture necessarily embarks on abstractions, such as agriculture, industry, or services, which are both universally applied and widely questioned. For example,

[1] Consider thus 1965 *Modern Economic Growth: Rate, Structure, and Spread.* New Haven: Yale University Press, 1966 *Economic Growth of Nations: Total Output and Production Structure.* Cambridge: Belknap Press of Harvard University Press, 1965. *Economic Growth and Structure: Selected Essays.* New York: Norton.

trees are not a food product but a construction material. So, is modern forestry best placed within the agricultural, the construction or manufacturing sector? This makes it easy to pick holes, or make fun, of any system of industrial classification.

Such superficial criticism should not be undertaken lightly. The only currently available alternative to a systematic approach to classification is nihilism – anything goes. This opens the door to individualistic modes of interaction between theoreticians, in which anybody can adopt any definition that suits their purpose. This erodes and ultimately dissolves the fundamental principle which we are attempting to establish, namely, the necessary cooperative basis for human advance.

But the dialectic of specialization and cooperation inevitably confronts the basic dilemma of cognition. Every specialist encounters reality via a distinct practical engagement with it. For a theoretical physicist, the molecule is an unbelievably complex set of quantum-level interactions. For the chemist, it is the mere basis for the study of compounds. For the biologist, these compounds are the elementary basis of the biosphere. For the sociologist, the biosphere is nothing but the unexamined precondition of human social existence. For the astronomer, human social existence is but a means to examine the cosmos. For the cosmologist, nothing matters more than integrating the study of matter in all its iridescent glory with the theory of particulate existence which is the special provenance of the physicist. All 'knowledge' therefore depends ultimately on the cooperative relations that these specialised researchers establish one with the other.

Indeed, this is the basis for the parable of the elephant (Bodrunov 2006). But ultimately, the specialists in Elephant tails, the specialists in Elephant feet, and the specialist in Elephant trunks, each 'blinded' by ignorance of the special cognition that her collaborators have acquired by virtue of their own particular interaction with Elephants, all have to work together and agree on some description of the whole Elephant. In short, cognition itself, the very foundation of knowledge, is pre-conditioned by specialization, the earliest evolutionary characteristic of human productive labour.

It is for this reason that we insist on the necessity to standardise what we regard as creative labour, and how we should measure it. Whether or not we agree with the 'merely conventional' national rules of traffic that apply in any nation, such as driving on the left or the right, a nation that attempts to govern road traffic with no rules at all is not a national productive system but a national collision centre. The *critique* of industrial definitions cannot be equated to the *abandonment* of such definitions.

In fact, the contradictions in thought – such as whether tractor driving is an agricultural or industrial activity – arise from contradictions in the material system itself, and therefore, the method of critique should be materialist in character, that is to say, it must study what are the material conditions which give rise to the paradoxes of thought, not the other way round.

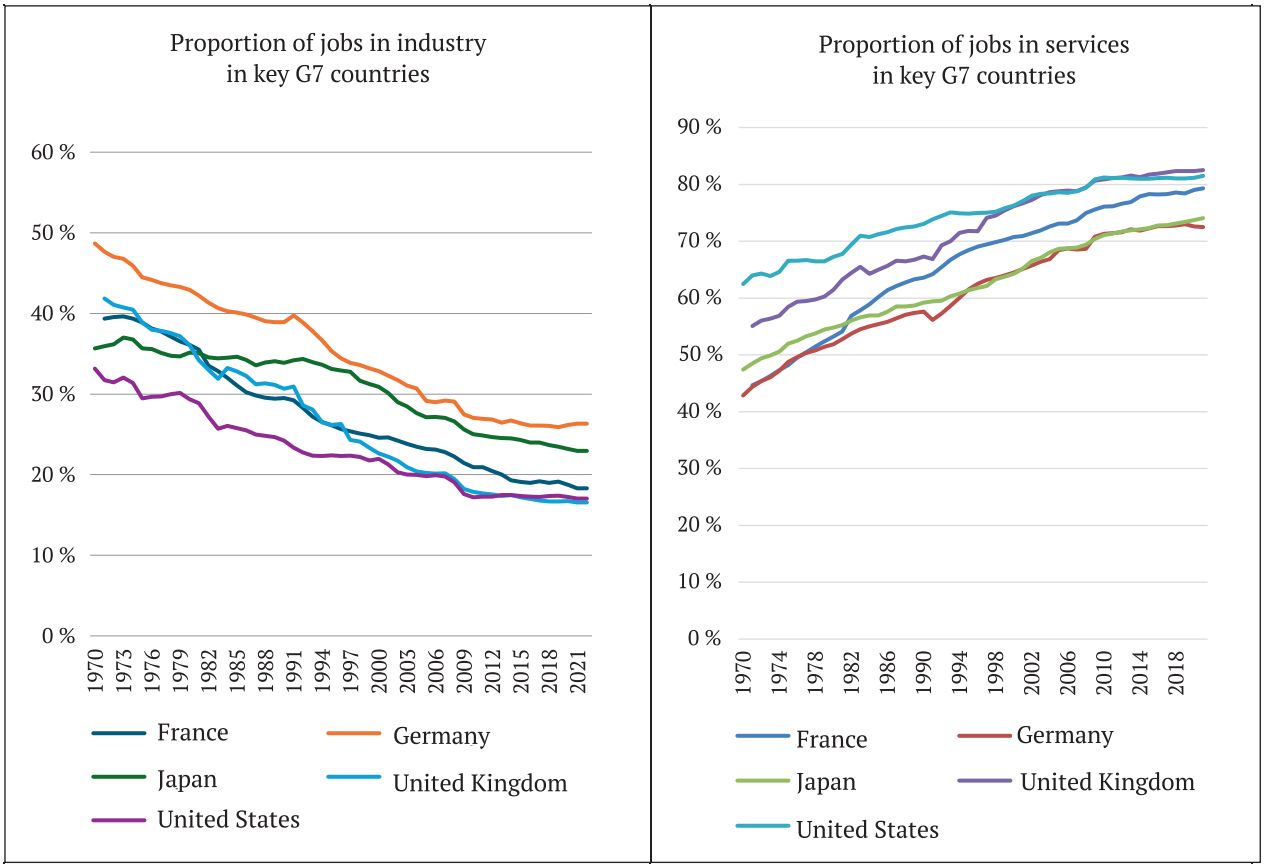
For the above reasons, we begin with the conventional broad classification of productive activity into agriculture, industry, and services.[1] Data have been collected on this basis from as early

[1] Note that 'manufacturing' *per se* is treated, within the industrial classification system, as a subsector of industry - albeit a large one – since 'industry' includes other spheres of material production such as construction. Similarly, as we hope to discuss in this paper, 'services' comprises a syncretic medley of activities ranging from transport and communication to financial speculation. One of the principal tasks of the *reconstruction* of the classification system we propose is a systematic *deconstruction* of the category of services, a term whose etymological origin in the feudal concept of personal service betrays both its antiquity and its inadequacy.

as 1870 but modern standardisation dates from the establishment of the postwar International System of Industrial Classification[1] which has gone through four revisions at the time of writing, with a number of national variations – notably the NAICS system of North America and the NACE system of the European Union. Thus, it is possible, with some manipulation, to produce comparable historical statistics over a substantial historical period. The importance of this is that it allows us to distinguish genuine trends from both accident and cyclic variation.

Following the inductive principles of all true science, we start by simply presenting some facts, in the shape of a set of charts, which we will then attempt to interpret. Of course, other interpretations are not only possible but positively invited; these counter-interpretations may extend to critiques not only of the methods by which the data are collected, but the system by which they are classified. We make only one proviso, based on the preceding discussion of the principles of classification. This proviso however imposes a strict discipline: dismissal does not constitute critique. The task of a scientific critique of current knowledge consists of the construction of alternatives. Therefore, the critic should be obliged not merely to point to the defects of the current or proposed system, which are many, but to propose a different practical way of presenting the facts along with a different theoretical analysis of the said facts.

Some basic facts of the current industrial conjuncture



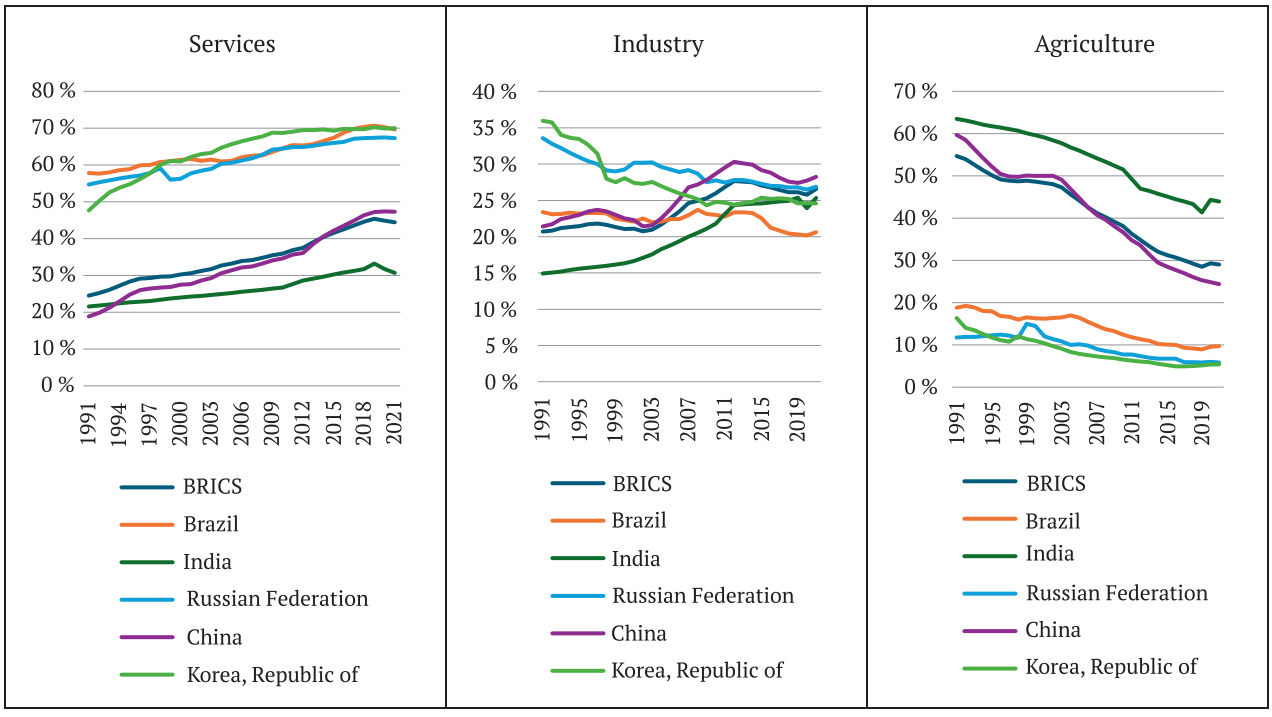
Sources: International Labour Organization, Bureau of Labour Statistics, Author Calculations

[1] ISIC. 2008. International Standard Industrial Classification of All Economic Activities Revision 4. United Nations Department of Economic and Social Affairs, Statistics Division. unstats.un.org/unsd/publication/ seriesM/ seriesm_4rev4e.pdf.

The first point is the *absolute* trend towards the displacement of all other sources of employment by the production of services. This has been more or less completed in the countries of the global North, aka the 'advanced' countries of the IMF or more accurately, the imperialist countries. In *no* such country does service employment fall below 70% today, and in no such country does industrial employment rise above 30%.

The second point is a *differential trend* for the displacement of agriculture by the combination of industry and services, which does not contradict the first trend as we shall see. It is differential both geographically and historically. 'Industrialisation' is a geographically specific point in the conjuncture which varies from country to country, even among the non-Northern countries. Thus from 1990 to the present, industrial employment rose sharply in China, India and Brazil,[1] but from 2010 (though it is early to be certain) have joined the general pattern which is thus becoming a world pattern, in which industry is being displaced absolutely, not just relatively, by services.

Proportion of jobs in services, industries and agriculture in key countries and regions outside the Global North (shorter timescale)



A general hypothesis thus arises, on which this paper and much of our previous work (Freeman 2014) is based: the conjuncture is one in which services are displacing industrial manufacture absolutely as well as relatively, throughout the world.

How not to misunderstand the facts: tangibility, services, mental objects and the concept of production

The above conclusion, to the naïve person who first encounters them, often appears counter-intuitive. Surely, we live in a world of industrial abundance, surrounded by marvellous mechanical

[1] South Korea having been singled out for a role as a buffer state as an outcome of the Chines and Korean wars of liberation, was obliged – at considerable social cost – to industrialise rapidly in the 1950s and 1960s and was allowed join the select club of 'advanced' nations. As a result, it now exhibits the pattern of displacement of industry by services characteristic of this club.

and electrical devices and factories of all kinds? Surely, the world is now creating more industrial *products* than ever before? How, then, can 'industry' be in decline? And what exactly are America's 150,000,000 'service workers' doing?

This misunderstanding leads to many frivolous conclusions [Elliott, Atkinson 2007] notably the notion that service labour is in some sense unproductive. This false notion, which originates in Smith's attempt to define production as the creation of 'tangible objects' was corrected in the Nineteenth Century by Marx. He rightly pointed out that a teacher, in a private school, is creating value for the school owner, who functions as a capitalist, selling his services to the parents of its rich pupils. This is a straightforward wage relation in which the private teacher creates surplus value and hence profit for the owner. There is thus no difference in principle, as regards its productive character, between service production and manufacturing. The true difference resides in the social relations governing the production process.

Indeed, a worker in a state manufacturing concern, insofar as it is run not on the basis of profit but of need (as for example in a non-privatised public transport system) is unproductive in capitalist terms because the owner does not retain and accumulate the surplus in a capitalist manner. This is why in the Soviet economy, where the surplus was allocated by the state, instead of the mechanism of the migration of capital in search of profit, most 'production' was, in the strict sense required for the analysis of market economies, unproductive: it did not create capital.

However, there is a second basis for the intuitive confusion arising from an unreflective absorption of the above facts. This does not require us to embark on the difficult discussion of 'what constitutes production' as applied to intangible objects, which is the topic of the next section, but requires us only to recognise a paradoxical fact to which Marx, again, was the first to draw attention and indeed, he qualified as a Law of Motion of capitalism: namely, *the more productive a branch of industry becomes, the fewer people are required to work in it.*

This social law is part and parcel of the basic Law of Value, which is that as productivity increases, fewer people are required to make the same thing. This is reflected in a steady decline in prices. The price of the product of any industry, in which innovation is taking place and therefore productivity is rising, tends despite ups and downs to follow a *historical* trend governed by the number of labourers needed to make that product. This is the reason for the very long-term decline in agricultural *prices* which is accompanied by, and causes, the equally long-term decline in *employment* in the agricultural sector. These are merely mirrors of each other.

Therefore, and hopefully trivially though we can argue about it if necessary or useful, the decline in industrial *employment,* a long-term trend of all modern society whether capitalist or socialist, is in no way to be confused with a decline in *industrial production*. The contradiction is that industrial output has risen more or less in tandem with the decline in industrial employment. This is merely the social expression of the private Law of Accumulation of a capitalist market economy, namely, in a succession of branches of industry, as productivity rises, employment falls.

Noonomy is therefore the natural conclusion of this process in which the limits of increasing industrial productivity as a mechanism for social progress express themselves in the inability of industry to furnish the means of life to the majority of the population by means of the wage relation. Put simply, it no longer employs enough people to do so.

Finally, the clarification of this illusion, required for an adequate factual analysis of the tendencies to which Noonomy is called on to respond, obliges us to return to the taboo subject of *value*. The underlying phenomenon at work, in the tendencies charted above, is a decline in the

value of the products of industry, which their prices merely track. But what is this value, and how should it be measured? Neoclassical economics falls back on the notion of so-called 'real value' which purports to be a measure of physical quantity but is, in essence, a disguised attempt to construct an aggregate measure of their use-value. But for Marx and his predecessors, value in its most general sense is a measure of Smith's 'difficulty of obtaining a thing', that is, the human effort or labour required in order to bring it into existence.

Modern economic statistics are more or less paralysed by the obvious fact that the *quantity* of a mental product is impossible to measure *per se*. It can be ingeniously quantised in the market, for example by the sale of tickets or (as in the modern software industry) by selling 'software as a service' but this does not resolve the difficulty of stating, in objective terms, 'how much' of a musical performance the ticket entitles the user to, or 'how much' software the subscription entitles the subscriber to.

This does not place mental production beyond scrutiny, as conservative art advocates like Tusa [Tusa, 2014] maintain in the case they make for 'art for art's sake'. Society is entitled to ask, of its mental producers, what benefits it is getting from them, and to thereby allocate resources rationally and indeed, democratically, to the various competing demands placed upon it by these producers. It does tell us, however, that the standard measures of output employed in the production of economic statistics, irretrievably rooted in the notion of physical quantity as the ultimate measure of usefulness, are increasingly unfit for purpose. Therefore, a legitimate goal of enquiry is the construction of measures of *social* usefulness over which humans can exercise democratic control.

Foundations of the machinocratic illusion

Now the man that invented the steam drill
Thought he was mighty fine
But John Henry made fifteen feet
The steam drill only made nine, Lord, Lord
The steam drill only made nine

John Henry hammered in the mountains
His hammer was striking fire
But he worked so hard, he broke his poor heart
He laid down his hammer and he died, Lord, Lord
He laid down his hammer and he died

US folk song

The illusion that production consists of making material products permeates modern thought. This constantly recreates the illusion, characteristic of commodity fetishism, that the only true form of a commodity is a physical object and the only true source of its value is machinery. This is an anti-human idea: in denies the contribution of human labour to production, elevating capital, which is to say property, above all property in machinery, over the labour that vitalises it.

Historical materialism explains that the origin of this illusion is the characteristic of machine-age products, namely they are the most eminently-suited of all commodities to be converted into private property. They enjoy the characteristic which neoclassical microeconomics

recognises as 'excludability', ultimately a function of the mode of use of a physical object. The archetypal form of an excludable product is food – only one person may eat the same thing. Actually, after that it gets murky so that, for example, houses are occupied by many people who share their use on the basis of non-market principles such as patriarchy. Cars, in theory, can only be 'used' by the driver, but most cars carry a variable number of people. Indeed, carpools constitute a fundamental and significant measure towards the socialisation of transport, whilst it would be lunatic to confine the use of a bus, just as physical as the car, to a single person.

Neoliberal thinkers ridicule this with frankly puerile critiques, such as the idea that only one person can use a toothbrush. This misses the point: it is in the nature of a physical object that its properties *restrict the number of possible users,* which is what allows the capitalists to enclose and alienate this use, as when they sell tickets to a football match or a train journey.

Is this true for services? In some case yes, and in some cases no, which is why the category of service production has to be deconstructed. The archetypal excludable service is essentially an extension of the feudal category of personal serfdom, which is why domestic servitude not only survives into the modern age but even proliferates and has a constant tendency to degenerate into forms of patriarchal slavery. Transport is an intermediate category in that the use of all logistical systems is restricted ultimately by physical capacity. If transport was a non-excludable service, there would be no need to build railways, roads or aircraft, let alone impose international standards for their delivery.

In contrast, at the extreme opposite end of the spectrum of excludability come those objects that Professor Buzgalin assigns to the 'creatosphere' [Buzgalin, 2017, Buzgalin, Kolganov, 2013], which also belong more generally to Vernadsky's [Vernadsky, 1945] and Chardin's *Noösphere*. These are what Freeman [Freeman, 2021] designates 'mental objects' – traditionally the products of artistic, scientific or other ratiocinatory activity, but today becoming far more widespread as the true product of the Creative Industries.

A mental object may be thought of, approximately, the 'content' of a product. It consists of any usable entity that exists independent of its material form. Thus, a poem, or a scientific theorem, may exist on paper, in spoken form, in the brain of the poet or of her audience, in the skills of the technicians, or – crucially in modern production – in a digitalized form.

Ray Bradbury's *Fahrenheit 451* was an early deep examination of this phenomenon in which all books were burned, yet communities of rebels preserved them by memorising them. A *Fahrenheit 451* for the 21^{sst} century is by no means an irrelevant possibility, when censorship becomes the norm of online availability and suppression the norm of online production. All that has happened is that silicon and fibre have taken the place of paper and ink.

Independence from material form is taken by Freeman [Freeman, 2021] to be the characteristic of a mental object. Today, the 'film' is no longer a reel of celluloid, any more than the book is a bound ream of paper or a musical piece an imprint on a CD or a tape. This has two consequences central to this paper and the entire enterprise of Noonomy. Both must be understood together.

First, the market relation is fundamentally inimical to the production and widespread access to mental objects. This is precisely because in order to sell an object, access to it must be restricted. This is experienced by social critics in the first place in the sphere of consumption: it contradicts, and is rightly criticized, as a *denial of right*: mathematical theorems are freely available, and it would be as absurd as it would be impractical to penalise the use of Pythagoras's theorem

without payment to his estate. Yet this absurdity is freely practiced when it comes to scientific methods of production or literary or musical products.

However, in the post-mechanical era is increasingly eclipsed by the yet greater and more fundamental contradiction in the sphere of *production.* It was first noted by von Mises, and remains a canonical feature of Austrian economics in its pure form, that Intellectual Property constitutes a restraint of trade, which is why the most consistent neoliberals are actually opposed to it. Undeterred by this contradiction, the USA in the 1990s, with the Uruguay Round of the GATT negotiations, the construction of the World Intellectual Property Organisation (WIPO) and the imposition of its terms on the newly-minted World Trade Organisation (WTO), not only underwent, but imposed on the world, the reconstruction of Intellectual Property as a *Monopolistic* Institution. It unified the institutions of patent and copyright. It established a life term of 70 years.[1] Most important, it legally sanctioned the key use of IP in American capitalism, which is not the *dissemination* of knowledge or ideas, but the *prevention* of dissemination in order to maintain a technological monopoly.

It might reasonably be argued that at the heart of the current conflict between China and the US there lies a key difference in the use to which knowledge is put which leads in turn to a key ideological difference in the conception of Intellectual Property. For the USA, IP is fundamentally private, and society should allow its private owners unrestricted monopoly rights. For China, IP is a form of social ownership, which private owners enjoy at the discretion of the state, on several conditions of which the most important is that they demonstratively disseminate the knowledge. From the Trumpist viewpoint therefore, China is 'stealing' US technology whenever it commits the crime of allowing its own producers to use it.

This 'stealing' takes place in a kind of intellectual Sherwood Forest. China is the Robin Hood of the creative age: it seeks only to ensure that the poor have enough of what the rich have too much of, at one and the same time relieving the rich of the burden of wealth whilst relieving the poor of its absence. But in the age of mental production, there is no contradiction, or rather, the contradiction is illusory. The rich can have their intellectual cake and eat it: nobody is proposing they should stop using their technology, only that they should cease denying others, equally deserving of this cake, their rightful place at the potlach.

But this brings us right back to the question we asked at the start of this section. In what sense is the creation of a mental product an act of production? The critics of this notion may feel and argue that an intangible and infinitely reproducible thing cannot be treated as a product, because – ultimately – they do not see such things as having a use. But if technological knowledge is useless, how can China be using it and why should the USA seek to monopolize it? Why is the world threatened with world war over a useless thing?

The above all points, I argue, in a single direction: the necessity to *deconstruct the category of service production and reconstruct it on the basis of a concept, or concepts, of social rather than private usefulness*. Central to such a reconstruction is the idea that we must evolve a useful conception of the usefulness of the products of mental activity.[2]

[1] No coincidence that 'threescore years and ten' is the Abrahamic and biblical lifetime of a human – this ensures that IP is owned by corporate entities in the place of humans.

[2] In all discussion of utility or use value from Bentham to Marx, it is supposed that the use of a thing (unlike its exchange value) is a characteristic of the thing itself; otherwise, Marx could not write "Let us consider two commodities, a coat and 10 yards of linen, perhaps. Let the first have twice the value of the second, so that if 10 yards of linen = w, the coat = 2w." Here, the coat is the unit of use-value of the genus coat whilst the yard is the unit

Mental production and the structure of services

What does 'service' labour consist of? Its main distinguishing feature, as already discussed, is that its results are *intangible* – they do not consist of material objects. But this does not mean all service labour is the same, which is why the category has to be deconstructed and reconstructed. A preliminary attempt at so doing suggests three distinct forms of activity:

• A 'Department I of services': these produce the *mental means of service production*. Sometimes called 'B2B or 'Business to Business' services, including:

– Software *per se*.

– Communication and Logistic services to industry.

– Commercialised Business Services in general. This is really quite a large sector and is often wrongly confused with Finance. It includes for example Architecture, Design services, and much of the STEM industries, including that part which sells and develops methods and technologies.

• A 'Department II of services': these produce or transform services sold to consumers. Sometimes called 'B2C' (Business to Consumer) activities:

– A significant sector, notably Transport, which is closest to manufacturing and other forms of material production, in that by moving goods and storing them, it functions as an 'extension of industrial production into commerce'.

– A large mass of 'drudge' low-paid and low-skilled labour which is, in essence, commercialised labour of servitude. Here we find office cleaning, Amazon, Starbucks, and many enterprises at the forefront of the New Unionisation.

– A growing mass of essentially high-skilled labour to provide high-value services to households, notably education and health. This is subject to continuous pressure to lower wages and worsen working conditions being organised in an industrial manner but has some bargaining power because of the essential skills involved.

– A rapidly-growing sector selling products that are purchased for their content rather than their physical form. This is one part of the Creative Industries.

• The unproductive labour of commerce, finance and real estate:

– This includes almost all banking and almost all retail, but includes productive elements detailed below. It is unproductive *not* because its results are intangible but because they are not bought and sold as commodities.

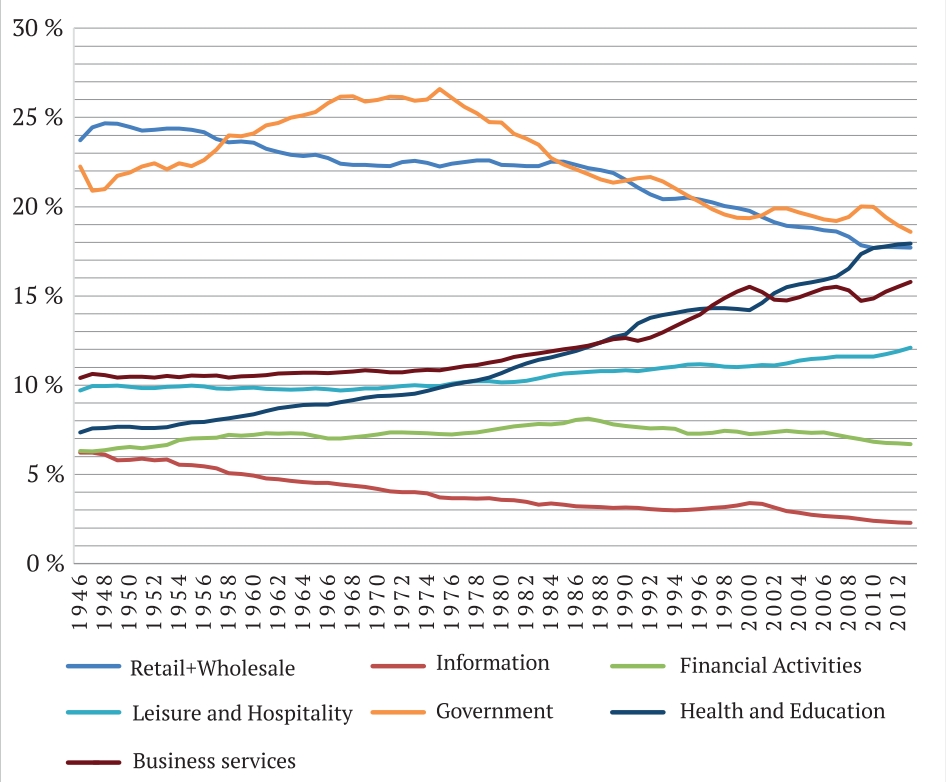
– In the case of finance this is clear, since financial profit arises from a kind of levy (interest or rent).

– In the case of retail, it is less clear in that the output is sold to consumers. However, the mere act of charging a consumer for a product purchased elsewhere does not create new value, but yields a profit arising from the general equalization process because it is cheaper for the productive capitalists to sell to a specialised intermediary than engage in selling to the public.

– The rental and real estate sector is almost entirely speculative and unproductive in character.

of the use-value of the genus linen. Any distinction between more desirable coats and the rest, or high-quality and low-quality linen such as tendency to break and so interfere with production, is abstracted from. This is a legitimate abstraction but the issue 'who determines what is useful?' hangs over it and comes to the fore in the sphere of culture. Bourgeois society generally imposes a specific concept of what constitutes 'good art' (Belfiore and Bennet 2008). But this is moot: was Impressionist Art, prior to its general acceptance, without use value because the galleries refused to exhibit them?

**Employment in each service sector,
as a percentage of total service employment, in the USA**



In the present service sector accounts these are all mixed up together in a semi-inchoate fashion, but the underlying reality may be dug out by descending deep enough into the subcategories of the accounts to see what is really going on. Some notion of the relative scope of these various activities can be gleaned from the detailed statistics provided by the USA and shown above. Actually, these are not very informative because of the confusion described above, but they do serve to dispel some illusions and inspire some thought.

First, it is clear that that growth of services can in no way be identified with the growth of the financial and retail sectors, *in employment terms*. Both reached an employment peak in the mid-1970s and have been declining ever since. Again, this may appear counter-intuitive because finance occupies a much more dominant role in the US economy today than in the 1970s – this has been, after all, a phase of history in which 'financialization' has played an enormous role.

Again, the distinction between output and employment is relevant and fundamental. The *profits and income* of the finance and retail sectors, precisely because they are divorced from the circuit of productive capital, bears little relation to the work they put in. A financier can raise, essentially, whatever interest he can squeeze out of his creditors – and when these creditors consist not only of Ninja mortgage-holders but entire debt-ridden countries such as Argentina, this is huge. The relation between value and revenue asserts itself, in these industries, only in crisis, when vast volumes of overrated fictitious assets, constructed on the assumption that the creditor can be squeezed without limit, collapse in these moments to something approximating the real surplus value they can realistically levy.

But at the very same time, precisely because of the lucrative character of this type of activity, the financial and commercial sectors are at the forefront of innovation – for example, jointly with

the military, they were the drivers of the information revolution right up to, and beyond, the arrival of the internet and the world wide web.

This leads to a further confusion: enterprises, such as the makers of computers, or the suppliers of software, which sell goods to the banks or retail sector, are productive of value. A computer sells for real money that corresponds to the real labour of making it, as does a computer application. This is not altered by the fact that this product is used unproductively by the bank it is sold to.

In this respect, the apparent decline of employment in the 'information' sector is a classification error. It arises because most of the labour of the information revolution is classified as a business service.

This leads to a second observation: the rapid rise of business services employment cannot be identified with the growth of the unproductive financial sector. Any close examination of it reveals it is just not the same thing. The temptation to dismiss this growth as a mere parasitic outgrowth should therefore be resisted.

Thirdly as regards the consumer-facing service sector, two facts stand out: the striking growth of health and education, and of 'leisure and hospitality'. The latter comprises the bulk of the consumer-facing Creative Industries. Neither should the former be neglected since it constitutes, as we will see, part of the 'infrastructure' of Creative production, namely it provides the human means for creative workers to function creatively – it lets loose what Blake termed the 'Tigers of Wrath' and which he counterposed to the 'Horses of Instruction'.

Fourth, finally, and most decisively, a division imposes itself which is not recognised in the accounts: *the mental component of service labour is systematically confused with its manual component, and is consistently underrated by the employing classes.*

The 'labour of teaching' is, for example, indissociable from the incorporation of 'knowledge' in the specialised practice of the educator, as indeed is the labour of health provision. Yet our societies systematically underestimate the attention that needs to be given to the process by which this knowledge lodges itself in the brains of the teachers, the nurses, and the doctors,[1] and attempts to depress both the wages paid to them, and the resources devoted to their education, to the minimum possible given the labour relations in their respective industries.

Indeed, the very notion of branches of 'manual' and 'mental' production, expressed in the Fabian notion of 'workers by hand or brain' ignores the basic facts of what labour consists of, namely the coordination of the hand with the brain. *All* labour is purposive, and all labour therefore contains an indissociable mental component. Indeed, in earlier times than the present mechanical age, the mental capabilities of artisanal workers were widely recognised and formed the foundation of the guild system. Shakespeare makes fun of his 'rude mechanicals' for attempting to perform theatrical plays but the mere fact of making the attempt constitutes a thespian recognition of their creative aspirations that vanished with the coming of modern industrial production.

The contemporaries of the manufacturers, at the dawn of the mechanical age, fully understood that the separation of mental from manual labour was not biologically given and indeed,

[1] As noted, what is really meant by the 'transmission of knowledge' is providing the benighted recipients of this 'knowledge' with the time and means to absorb it, which actually amounts to the very simple act of giving them the time to do it. That is to say, the real issue is the labour of the acquisition of skill. This has as much to do with the transmission of 'knowledge' as swimming has to do with the academic study of aquatics. To be sure, a champion athlete can learn much from psychologists, linguists and anatomists. But the human who can swim without getting in the water would indeed be a miracle to behold.

did not really exist prior to that age. It was imposed by the manufacturers. Thomas Carlyle [Carlyle, 1829] puts it thus:

Were we required to characterise this age of ours by any single epithet, we should be tempted to call it, not an Heroical, Devotional, Philosophical, or Moral Age, but, above all others, the Mechanical Age.

It is the Age of Machinery, in every outward and inward sense of that word; the age which, with its whole undivided might, forwards, teaches and practises the great art of adapting means to ends.

Nothing is now done directly, or by hand; all is by rule and calculated contrivance. For the simplest operation, some helps and accompaniments, some cunning abbreviating process is in readiness.

Our old modes of exertion are all discredited, and thrown aside. On every hand, the living artisan is driven from his workshop, to make room for a speedier, inanimate one. The shuttle drops from the fingers of the weaver, and falls into iron fingers that ply it faster. The sailor furls his sail, and lays down his oar; and bids a strong, unwearied servant, on vaporous wings, bear him through the waters.

Men have crossed oceans by steam; the Birmingham Fire-king has visited the fabulous East; and the genius of the Cape, were there any Cameons now to sing it, has again been alarmed, and with far stranger thunders than Gamas.

There is no end to machinery. Even the horse is stripped of his harness, and finds a fleet firehorse yoked in his stead. Nay, we have an artist that hatches chickens by steam; the very brood-hen is to be superseded! For all earthly, and for some unearthly purposes, we have machines and mechanic furtherances; for mincing our cabbages; for casting us into magnetic sleep.

The category of 'manual labour', in short, is not a biological distinction but is imposed by a specific form of production, namely mass repetitive or mechanical production. The means by which capitalist industrial production drove revolution after revolution in productivity was by using machinery in order to produce *many identical things*. In the self-created war of men against their own machines, if conducted on the battlefield of mere quantity, the machines cannot but win. John Henry will always lose his epochal and mythical battle with the steam-hammer.

The Concept of Mental Objects

Precisely for the same reasons that 'Manual Labour' is a construct of industrial mechanisation, not an innate biological function of labour, 'Mental Labour' is also a construct. Because it is a construct, it is not analytically useful, because it is not innate in the nature of labour to be thus divided. All labour combines manual and mental aspects and indeed, Engels characterises tool-using as the driver of the development of the brain. Cave painting dates to the earliest times of human existence and the notion of some 'period of history' when humans were obliged to devote themselves to the purely biological or 'Zoo' aspects of their existence, is historically false. In fact, the separation of Mental from Manual is not only artificially imposed, but recent: it dates from the mechanical age.

It follows, therefore, that a more fundamental analytical construct is required. This is achieved by asking what is the *result* of the labour. The rational kernel in the notion of 'mental and manual labour' is a distinction not in the nature of the labour, but in the results, in the product. For most of human history, these products have been tangible in character. This allows us a more accurate characterisation of the present stage of technological development, which we prefer to the notion of a 'knowledge economy' for many reasons too detailed to go into: its decisive character is the rapid growth, and indeed massification, of the production of intangible objects.

As noted, the category of 'service' does not adequately capture this distinction. The critical issue is whether the object produced by the labour exists independent of its material form – as is the case most notably with a software component but also for earlier examples of mental products or objects, such as the book, the theorem, the scientific discovery, in fact, the objects that live in the 'Creatosphere' of Buzgalin and Kolganov.

Not all mental labour is creative and indeed, creative production lives in a wider sphere of distribution and reproduction, which engages much of the significantly larger labour force that is responsible for the material aspects of its reproduction. It is all very well to say that the content of a book lives independent of the printed book, but try to read a book that is out of print, unavailable online, and not on the shelves of your local library, and you will be made rudely aware that this 'content' is a somewhat elusive magical beast. Independence from a *specific* material form cannot be identified with the illusion that a mental object has no need of incarnation in *some* material form.

It is for this reason that I personally am suspicious of the notion of a 'knowledge economy' – because, *pace* Neoclassical Growth Theory, knowledge does not exist independent of knowledgeable human beings. It is the human beings and their activity – specifically, the character of what they produce – that defines the technological state of the economy.

To put it another way, the precise definition of the present age that is most suited to our purpose is that is an age of the *mass circulation of mental objects,* where by 'circulation' we mean not only their production, which is the specific function of creative labour, but their *reproduction and application*. The term we suggest to describe this totality is 'mental economy', which (in distinction from 'Noonomy' refers the purely technical state of the economy, not to the modes of its usage. We do however suggest it is used in the place of 'knowledge economy'.

The labour of creation exists side by side with the labour of *reproduction* and *application*. It is co-dependent with them and engaged in a profound cooperative relation with them. In order to cater for this interdependence we must recognize it, and measure it.

For that reason, we propose the research project widen the sphere of existing enquiries, to define and measure the labour engaged in the reproduction and application of mental products. This would then include, for example, much scientific labour which is not in general engaged in discovery, but in the technical application of existing discoveries.[1] This would then extend the labour force thus defined to around 30% of the workforce of a so-called 'advanced' country (Bakhshi et al 2015), which demonstrates just how central this resource is in the existing society, never mind the role it could play in a society organised according to the principles of Noonomy.

The cultivation of this resource should be the primary objective of any serious modern industrial policy. For this very reason, it is essential to clarify who are the labourers engaged in producing and reproducing such objects, how their capabilities are developed and sustained, and how to apply this huge modern resource to the benefit of humanity.

Creative Labour: what it is, and how to measure it.

Creative production is, nevertheless, a specific component of mental production, concerned primarily with *origination*, meaning, bringing new mental objects into existence. As such it is clas-

[1] No 'hierarchy' is implied and of course, much if not most new discoveries arise in the course of applying old ones. The question as indicated from the outset is always 'what is the specialization of the labour?' The fact that orchestras employ people to play its pianos does not these players from composing orchestral works but to the contrary, facilitates it. Nevertheless, the 'occupation' of such a player is 'pianist', not 'composer'.

sified by the statisticians in current practice as a component of service labour. However, it is 'buried' in the accounts, which do not classify it separately. We now turn, finally, to the *deconstruction* of this specific component of what is now classified as service production.

Research projects attempting to classify mental production date back as far as the very notion of a 'knowledge' or 'post-industrial' economy [Bell, 1976]. In parallel, at various times, a vast literature attempts to analyse the 'service' economy and an even earlier tradition of attempts to measure the 'value of art' date back to Victorian-era controversies that divide the socialist John Ruskin who proposed that the value of an art product should be rooted in a social evaluation of the artistic capabilities of the labour of the artist, from the equally socialist Oscar Wilde who insisted that any true measure of an artist could not rest on social approbation.

Modern work on the Creative Industries can be distinguished from all the above in that it is driven by the goal of identifying the *wealth-producing capacity of mental production*.

A somewhat discredited, but nevertheless famous such attempt is the work of Florida, who developed the notion of the 'creative class' – a very broad category comprising managerial workers, artistic workers, scientific workers, and many more extending to almost half the working population in some cases. The difficulty with this scattergun approach would be analogous to the idea that, in the physiocratic era, all town-dwellers constituted productive labourers.

A second and much-neglected work is that of Richard Caves (2000) in a seminal study of contractual relations in the creative industries that sheds crucial light on the way they create wealth, above all on the co-operative character of collaborations in them.

The origin of what we may term, without wishing offence to Florida, the scientific study of the Creative Industries, is to be found in the Australian 'Creative Nation' project and the research it generated at Queensland University of Technology (QUT). This inspired the work of the UK Minister Chris Smith who caused his department to produce a 'mapping' of the UK's creative industries comprising a list of the *occupations* and *industries* considered creative.

Table 1

Intensities in the dcms sectors, 2011 estimates

		Creative	Other Occupations	Total Occupations	Intensity
1.	Advertising	45 900	69 400	115 300	40 %
2.	Architecture	67 300	36 200	103 500	65 %
3.	Art & Antiques	500	8 300	8 800	6 %
5.	Design	56 400	42 100	98 500	57 %
6.	Designer Fashion	3 700	2 900	6 600	56 %
7.	Film, Video & Photography	28 700	29 500	58 200	49 %
9 и 10.	Music & Visual and Performing Arts	138 400	52 800	191 300	72 %
11.	Publishing	71 300	111 500	182 700	39 %
8 и 12.	Software/Electronic Publishing	900	22 300	23 200	4 %
8 и 12.	Digital & Entertainment Media	2 000	11 200	13 200	15 %
13.	TV & Radio	61 700	34 200	96 000	64 %
Total		476 800	420 500	89 7300	53 %

Freeman, working at the Greater London Authority, then produced at the request of the Mayor of London a document entitled *Creativity: London's Core Business* which led to a long collaboration between him, Peter Higgs of QUT and Hasan Bakhshi of the UK think tank NESTA (National

Endowment for Science, Technology and the Arts) that developed the so-called *intensity* method for defining and quantifying the Creative Industries. This was subsequently adopted by DCMS and a range of European institutions.

The core notion of the Intensity method was explained in NESTA's seminal *Dynamic Mapping of the Creative Industries* [Bakhshi, Freeman, Higgs, 2013] and can be explained quite simply with the use of a table taken from that document and reproduced below.

Researchers into the field therefore isolate specific sub-sub-industries, such as 'the production of craft jewellery', calculate the employment in each of them, and then add them up.[1] Thus, for example, most writers define the 'video industry' as the sum of the following three SIC components:

SIC code 9211: Motion picture and video production
SIC code 9212: Motion picture and video distribution
SIC code 9213: Motion picture projection

In addition, however, the 'Intensity' definition *also* and indeed, *first,* calculates employment in a set of creative *occupations*. The 'intensity' of employment in any given industrial subsector is then simply the proportion of its workforce that is creative, when defined in this way. The Creative industries are then defined to be those in which this intensity is especially high – typically greater than 30%, which is 12 times higher than in the non-creative industries.

When we define both the creative occupations, and the creative industries, in this way, we can produce a summary 'map' of the productive potential of the creative labour force which, as mentioned, researchers in this field [Higgs, Cunningham, 2008] designate a 'Trident'. The first row exhibits the size of the entire labour force engaged in creative production, and the distribution of creatively *occupied* labourers within that sphere. The second row exhibits the size of the non-creative industries, which are also employers of some creative occupations, and again reports the distribution of the creatively-occupied and non-creatively-occupied workers in those industries.

Table 2

Employment in the creative industries

	Occupation			
Industry	**Creative Occupations**	**Other Occupations**	**Total in this industry**	**Intensity (Creatively Occupied/Total Employment in the Industry)**
Creative Industries	476 800	420 500	897 300	53 %
Other Industries	600 900	27 622 800	28 223 700	2 %
Total in this occupation	1 077 700	28 043 300	29 121 000	4 %

Source: Creative Industries Economic Estimates Full Statistical Release, 8 Dec. 2011, P. 28.

[1] See for example DCMS. *Creative Industries Mapping Document 1998*. URL: webarchive.nationalarchives.gov.uk/+/; http://www.culture.gov.uk/reference_library/publications/4740. aspx; DCMS. *Creative Industries Mapping Document 2001*. URL: gov.uk/government/publications/ creative-industries-mapping-documents-2001; Bakhshi H., Davies J., Freeman A. The Geography of the UK's Creative and High-tech Economies. London: Nesta.Belfiore, 2015; Bakhshi H., Freeman A., Higgs P. A Dynamic Mapping of the Creative Industries in the UK. London: NESTA, 2013. URL: https://www.academia.edu/5538116/A_Dynamic_Mapping_of_the_UKs_Creative_Industries

What is specifically creative labour?

Creative labour, in this framework, is a resource, not a branch of the division of labour but an aggregate of a group of specialised occupations. It is to be distinguished from a creative *Industry,* which is a branch of the division of labour that makes intensive use of Creative labour. How do we define a creative occupation? The above analysis shows that it must be distinguished by its *non-mechanical* character, which is to say its non-repetitive character.

The modern discussion on mechanical and repetitive activity is actually quite old – it starts with Turing and his famous 'test' – but has been revived lately with the irruption of Artificial Intelligence (AI) into popular consciousness. But in fact, by 1970s it was well under way (See, for example, Amarel, 1966; Hofstadter, 1986) and indeed, in 1968 I was already working with Donald Michie's Artificial Intelligence unit at Edinburgh University.

The reason is that computation itself is a mechanical process. It simply translates the achievements of the mechanical age from world of the physical to the world of the electronic. It achieves a simulacrum of intelligence essentially by speeding up the repetition to such an extent that it becomes possible, essentially, to *imitate* the thought processes of human reasoning, which are of a different and non-repetitive character, and which I term 'predicative' as opposed to the algorithmic methods of the computer.

This distinction is the basis for our definition of a creative occupation, which is specified in Peter Higg's 'grid' of the characteristics of a creative occupation. This 'grid' is not immutable, and part of our research should consist of revisiting it in the light of modern resources now becoming available, which include detailed statistical and qualitative accounts of the nature of modern work. However, our aim is to provide a *comparative* account of the mental productive capacity of a representative set of countries: it is therefore essential that whatever definition is adopted, it is applied universally.

The creative grid

Novel process	Does the role most commonly solve a problem or achieve a goal, even one that has been established by others, in novel ways? Even if a well-defined process exists which can realise a solution, is creativity exhibited at many stages of that process?
Mechanisation resistant	The very fact that the defining feature of the creative industries is their use of a specialised labour force shows that the creative labour force clearly contributes something for which there is no mechanical substitute
Non-repetitiveness or non-uniform function	Does the transformation which the occupation effects likely vary each time it is created because of the interplay of factors, skills, creative impulse and learning?
Creative contribution to the value chain	Is the outcome of the occupation novel or creative irrespective of the context in which it is produced; one such context being the industry (and its standard classification) of the organisational unit that hosts or employs the role? For example, a musician working on a cruise ship (a transport industry) is still creative while a printer working within a bank is probably operating. printing technology and hence would be considered mechanistic and not creative.
Interpretation, not mere transformation	Does the role do more than merely 'shift' the service or artefacts form or place or time? For instance, a draughtsperson/CAD technician takes an architect's series of 2D drawings and renders them into a 3D model of the building. While great skill and a degree of creative judgement are involved, arguably the bulk of the novel output is generated by the architect and not by the draughtsperson.

The outputs of creation: who buys creative products and why?

> "You are a clever, generous man, Dymov," she would say, "but you have one very serious defect. You take absolutely no interest in art… That's awful!"
> "Why? Your friends don't know anything about science or medicine, but you don't hold it against them. I don't understand landscapes and operas, but the way I look at it is that if one lot of sensible people devote their lives to them, and another lot of sensible people pay immense sums for them, they must have a use. I don't understand them, but that's no reason to disbelieve them."
>
> *Anton Chekhov, The Grasshopper, 1891*

Simulated benefits

We cannot leave this subject without some reflection on the important question: what is the output of creative production? We have addressed this at greater length elsewhere (see for example Freeman 2014), but some short explanatory remarks are in order here also.

We can approach the issue by interrogating what is commonly known as 'Baumol's law' which is said to show that productivity in services cannot be expanded because the *quantity* of a service cannot be altered by the very nature of a service activity. Baumol, who advances this thesis to advocate for public support for the arts, gives the example of an orchestra. It can only play a designated musical piece at a certain pace that is set by the composer and the conductor. It therefore appears nonsensical to raise the orchestra's productivity by having it play more pieces, or play them faster.

This, I term the 'Baumol fallacy' rather than the 'Baumol theorem' since a theorem is generally supposed to be a true proposition, but this thesis is in fact false, on two grounds: first, the measure of delivery of any service is the number of people that receive it, not the output of the producers. But secondly, the measure of a service is not independent of who produces it, or how well they do it. Its *quality,* in some sense to be defined by a mixture of empirical study, theoretical refinement, and indeed, social regulation of standards, also must be taken into account.

Both these points shed important light on the question 'what is the nature of a mental product?' because they highlight the point that the 'quantity' of any immaterial product cannot be supposed to reside in its physical properties alone. A fundamental revision of modes of thinking derived from the mechanical age is thus called for.

To take the first and simplest point first, even if we suppose that the service delivered by an orchestra is uniform (that is, independent of the orchestra and how well it performs), its productivity is obviously higher if it reaches more people. Indeed, this is the reason for the transition from chamber music, performed as its name suggests to the small company of listeners in a private room, to Symphony Orchestras performing in large specialised venues.

But once we accept this point, we can see that any measure that raises the number of listeners, increases the orchestra's productivity. The earliest such development was the gramophone record, followed by broadcasting. These in turn raised the productivity of orchestras merely by growing the size of the audience, as electronic reproduction developed into a mass industry, and radios followed by televisions became ever cheaper and more widely available. As the digital age dawned, all these were one by one subsumed into the modern world-wide web which can deliver live performances across the globe into either households or Cinemas and other venues in which the visual effect of the performance is at least as good as the original and in some respects better,

Now this brings us to the second point. The critical reader will have noticed, or even energetically remarked, that one cannot compare the experience of a high-quality orchestral performance with that of listening to a scratchy vinyl record, or indeed, that a live performance is an altogether different, and higher 'quality' experience than a recorded or broadcast one. But as soon as this point is made and gladly accepted, it must be recognised that all orchestral experiences are not equal – indeed, this is exactly why some orchestras are more sought-after than others – by and large, because they perform *better*.

In other words, the use-value of an orchestral performance is *not* identical for all orchestras and all types of performance. An orchestra can therefore indeed 'increase its productivity' without playing *more* or *faster* music. It can get a better performance venue with superior audio quality It can hire better musicians. It can *practice* more, which is an under-rated means of raising productivity that is nevertheless fundamental to the life of any musician or body of musicians. It can, finally, gain recording contracts with recognised labels, secure richly-paid broadcast contracts, or simply release musical pieces on the Web.

In short, the Baumol 'theorem' is a fallacy, pure and simple. It is an assertion that does not accord with the evidence, based on a fallacious analogy between material and service production. It is for this reason that a *specific* theory of the *use-value of a service s*is required, which, crucially, takes into account differences in the quality of what is consumed.

It may be though that this provides a license for any seller to establish an arbitrary value to a service determined simply by finding a small gaggle of rich consumers who will pay whatever the market will bear, and this is a real problem. It is raised, in particular, in the notion of 'simulated benefit' to which Professor Bodrunov and Professor Buzgalin rightly refer in their works, and place centrally in the critique of conventional economics, to which Noonomy is a response.

However, the purely negative criticism that something is wrong is an insufficient basis to establish what is right. If something is not correct in a theory, the job of the scientist is to propose something better, based first and foremost on the observation of the facts and secondly on a theory that accounts for the facts. Thus, Professor Buzgalin has provided the example of a Gucci bag costing $5,000. He does not actually state, however, what that bag *should* in fact be sold for – whether in the society of today, or in the Noonomic society of the future, or (if this is different) in the socialist society of the future.

The current, machinocratic answer is, in essence, that all bags are the same. There is no objective difference between them – they are all simply implementations of the social *genus* 'container of things'. If therefore the price of a Gucci bag differs from that of a sack, this is merely a reflection of some kind of Orwellian principle that 'all bags are equal, but some are more equal than others'.

The answer that could be given by an extended Noonomic audit is that the value of the bag, like the value of any other produced commodity, is given by the socially necessary labour time required to produce it. We would then have to investigate not merely the occupation and industrial location of creative workers, but the value chain that leads from their work to the final product. This is not at all impractical, and indeed, a proper labour accounting system is actually a further, necessary requirement of a Noonomic system of management. It is, however, well beyond the scope of the present proposal.

It moreover goes some way to dealing with the problem but does not solve it, because it contains the awkward phrase 'socially necessary'. In reality, the production of a Gucci bag does use

up actual labour – that of the bag's makers, its artists, of Gucci's adroit team of designers, of the considerable labour of branding and marketing, and so on. This is real labour, not fake labour. It is performed by real people who spend real hours doing these things. And they are really paid for so doing. It is not some kind of con-trick in which the company keeps Gogol-like dead souls on the payroll who are already dead and buried, pretends to employ them and pretends pay them, before presenting to society a bill of accounts padded out with fictitious costs.

One could of course argue that these real costs are not necessary, and Gucci should be forbidden to employ these workers, while the purchasers should be forbidden to obtain them, put things in them, or flaunt them in public.

But this is moral definition, not a definition derived from the reality of production relations in actually existing capitalist society. By Marx's definition the labour of Gucci's designers is indeed socially necessary, because society uses it. Marx's definition, like that of Chekhov's Dymov in the opening quotation of this section, is strictly confined to ascertaining whether society actually uses the labour concerned and contains no element whatsoever of moral approbation.

It is sometimes highly paid, but generally speaking labour in the fashion industry [Freeman, 2011] – to which Gucci belongs – is no better paid than any other, and sometimes, except for a small number of high-flyers – a lot worse. Nor does Gucci charge an especially monopolistic price or a resource rent, as for example the oil industry, and many food industries do, when goods are in short supply. But we do not call these high prices simulated benefits. We call them monopoly rents.

Perhaps, then, Gucci maintains the high price by restricting the supply of its product? To some extent, this is true, in that the brand serves to create a scarcity value. But this does not resolve the problem either since it leads to the conclusion that every seller of artistic prints, who restricts the number of prints on offer by creating a sought-after 'special edition' is a monopolist creating a simulated benefit, and that the only true producers of artistic value are those who create unlimited quantities of every article that they put on the market.

The real substance of the argument is hence that the labour of Gucci's army of designers and marketers is not, in some sense 'socially necessary'? Very well, but who should determine what is necessary, and how? One answer is 'the state'. This is, to say the least, problematic. A more sophisticated answer is 'delegated associated bodies of producers' such as the Soviet Writers' Guild, or in the UK, the Society of Foot and Mouth Artists, and excellent organisation to which insufficient attention is paid. A solution proposed, interestingly, by Lenin in response to the cost of advertising, was to provide state funding in place of market allocation, so that a newspaper or journal with a certain number of readers, say 500, would be allocated $10,000 per year, whilst one with a higher circulation, say 50,000, would get more, but not on proportion – say $50,000 per year.

A third solution proposed by the art critic John Ruskin was to evaluate the labour of artists in proportion to their artistic merit, that is to treat it, in the terms defined by Ricardo and Marx, as 'more complex' labour and therefore productive of more value. Note that this is *not* a proposal for determining the wage of the artist, but for determining the value of her product. It leads to the conclusion, for example, that if the artist is employed by a capitalist entrepreneur, this entrepreneur is socially entitled to a higher profit than her or his rivals. Of course, a socially-minded such entrepreneur would then pay the artist more, and indeed a capitalistically-minded one might also, though empirical investigations into the fashion and art industry suggest this is not so – es-

sentially because the supply of creative labour currently greatly exceeds the demand for it, which is cramped and restricted by the constant tendency of capitalism to restrict the right of the public to enjoy and consume creative and cultural products.

But we have now come full circle. The problem for Noonomy is to systematically raise the entitlement of the consumers to diversify *access to the fruits of creative labour* - the range of artistic and designed immaterial products which they enjoy. Is this to be done, then, by *restricting* the range of what 'we' (whoever 'we' are – the state, some mind of clerisy, or associations of producers and consumers) determine to be social necessary? The problem here is that all regulation consists, to a greater or lesser degree, not just of enabling what is deemed good, but disabling what is deemed bad. Any proposal to abolish 'simulated benefits' carries with it the implication that we will deny the buyers of expensive Gucci bags the right to consume them, and deny the right of Gucci's army of designers the right to create them. Who will do this? How? On what lofty principles will this new and in all likelihood self-appointed clerisy dictate to the population what they are entitled to enjoy, and to its artists what they are entitled to produce?

The answer which I propose is the standard answer of science: we must first determine the facts, and then construct a theory that explains them. *Why* do consumers pay $5,000 for a bag, or for that matter, $500 for a ticket to attend a live performance by an acclaimed orchestra – not to mention $5000,000 for a Damien Hirsch sculpture that consists of little more than an assembly of baubles with the artist's certificate of authenticity attached?

My answer is that it is *because society is a class society*. It is the existence of classes, above all classes with great differences in wealth and purchasing power, that gives rise to the seemingly extortionate prices of fripperies and baubles. Indeed, any attempt to solve the problem by regulating what is artistically acceptable, without addressing the root problem of social inequity, is doomed to failure because actually, it will *elevate* the price of elite products, creating black markets in the shape of the mania for Western-made blue jeans that prevailed in the late stages of Soviet society. It will migrate into other spheres such as the demand for luxury tourist resorts, expensive dwellings, yachts, and everything we today associate with mafia culture. But it will not go away until the class inequities that sustain it are either abolished by measures regulating income and wealth, or wither away by measures bring the great mass of the population up to the standards hitherto available only to a restricted portion of society.

Gucci bags sell for $5,000 because society contains privileged elites who pay for them. The question is then 'why do they pay for them'? The very brief explanation that I have given in other writings is that it is because they convey *distinction* – a concept fully developed by Bourdieu [Bourdieu, 1979] and others.

The value of creative products consists in the fact that they are *different from each other;* Henry Ford once enunciated the machinocratic principle that 'you can have any colour you want as long as it is black'. The more technology evolves to include the creative labour of design in its products, the less acceptable is this answer and the more it enables its consumers to choose from a variety of products. What is the basis on which these choices are made? It is the dissolution of uniformity. Consumers of bags are no longer reduced to the users of gunny sacks, of mere objects used to carry other objects. Bags are distinguished, moreover, not merely by functionality (large, small, lots of pockets, different straps and handles, etc.) but by *appearance* – colour, pattern, contours, and so on. They thereby extend the capability of humans for varieties of experience, which is the obverse of the creative differentiation of varieties of creative production.

In particular, therefore, the demand for *the variety of experiences arising from the expansion of creativity,* which I term 'horizontal distinction' is entirely healthy and merely consists in the self-realisation of the humans who enjoy them. It should be, I would argue, a major goal of Noonomy.

But in class societies, above all those containing a substantial but restricted layer of social-climbing middle classes, a different kind of distinction emerges which I term 'vertical distinction'. This arises from the need for the aspiring wealthy to *demonstrate their superiority in order to obtain access to the means of actually becoming wealthy.* Hierarchic social differentiation leaks out of every pore of middle-class consumption patterns: they live in 'nice places', send their children to 'nice schools', enjoy 'superior art', read 'quality newspapers' (for which read 'socially-recognised nonsense' in place of 'socially disreputable nonsense') wear clothes that demonstrate 'superior taste', and so on and so on. The Gucci bag is just the tip of this vast iceberg composed of a multitude of crystallised 'little objects of desire', to cite Bunuel, each of which is, to give it the correct name, a *signifier of social status.*

In conclusion, the object of research, much of which is already being conducted and is too vast to summarise, should be to identify the adverse effects not just of the *use of* 'simulated benefits' but the absence of genuinely superior alternatives. The solution to the excessive price assigned to high-priced products which manifest design or creative inputs not widely available, is to make such products widely available: to make creative, design labour an intrinsic and recognised part of all production. This, finally, brings us back to the fundamental requirement of a Noonomic system of workforce management – the massive expansion of creativity and its transformation of the creative potential that is currently only latent in most human production, into a universal human right, by transforming the nature of production.

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