

(MIS)UNDERSTANDING LABOUR MARKETS

J. Murray (ed) *Labor Markets: Analysis, Regulation and Outcomes*, Nova Science
Publishers: New York.

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ABSTRACT

Critics of orthodox economics, and in particular orthodox *labour* economics, often argue that orthodox models of labour markets are *unrealistic* and *false*. Most orthodox economists accept this criticism and proceed immediately to three defences: (1) all models simplify, abstract, omit, isolate and idealise, meaning all models are inevitably, and necessarily, unrealistic and false; (2) models should be evaluated on the basis of their predictive efficacy not their realisticness or falsity; (3) as unrealistic and false assumptions are successively relaxed, models will come to approximate reality. These defences fail. As it happens, there are two, more sophisticated, defences ready and waiting for any orthodox economist willing to do some methodological spade work, namely: (4) all models are unrealistic, but they may *be* true if they *contain* truth; and (5) the critique of unrealisticness and falsity misunderstands the purpose of models, which is not to resemble reality, but to act as inferential devices. Understanding these defences, however, requires disambiguation of the terms ‘realisticness’, ‘unrealisticness’, ‘truth’ and ‘falsity’. Doing this leads to more sophisticated definitions and, therefore, more clarity *apropos* what it means to say that a model is unrealistic and/or false. Unfortunately, when we apply these more sophisticated definitions to the sophisticated defences (4) and (5), they too fail. Orthodox models of labour markets are not only *unrealistic* and *false*, they have no defences. And this brings us to the second section of the chapter.

Section two shows how a realistic and true, non-mathematical model of labour markets can be built without it being an ‘everything-but-the-kitchen-sink’ model. It is based on two foundations: (a) the ‘*socio-economics of labour markets*’ (SELM); and (b) the meta-theoretical perspective of critical realism (CR). I combine these to create the *SELM^{CR}* perspective, and the *SELM^{CR}* model of labour markets. The first part replaces the terms ‘institutions’ and ‘structures’ with ‘socio-economic phenomena’. This is followed by an elaboration of the Morphogenetic–Morphostatic (M-M) approach to explaining how agents and socio-economic phenomena interact. This culminates in a radical, alternative definition

of labour markets. The final part presents the *SELM^{CR}* model in a series of stages, over three levels of abstraction, all with accompanying diagrams. It ends by re-visiting and applying the sophisticated defences of unrealistic and false models, to show that the *SELM^{CR}* model is realistic and true.

Introduction

Critics of orthodox economics, and in particular orthodox *labour* economics, often argue that orthodox models of labour markets are *unrealistic* and *false* and, because of this, they fail to explain what labour markets are, how they work when they do, how they fail when they do, where they come from, where they may be heading, and so on. This criticism is not new. According to one philosopher of economics ‘the main methodological issue for the last two centuries has been whether the resemblance between theoretical models and reality has been sufficiently close’ (Mäki 2005: 305).

Orthodox labour economists are not unduly worried by this critique. Most accept that their models are unrealistic and false and proceed immediately to three defences:¹

1. All models simplify, abstract, omit, isolate and idealise, meaning all models are inevitably, and necessarily, unrealistic and false. Models would be realistic (and true) if they did not simplify, abstract, omit, isolate and idealise, but then they would be descriptively complete, everything-but-the-kitchen-sink models.
2. Models should be evaluated on the basis of their predictive efficacy not their realisticness or falsity – i.e., a doctrine deriving from Friedman, referred to as ‘Instrumentalism’.
3. As unrealistic and false assumptions are successively relaxed, models will come to approximate reality – i.e., a methodological technique known as successive approximation.²

I consider this response to be nothing more than a *nostrum* that *evades and justifies*. It *justifies* the continued use of unrealistic and false models, whilst *evading* criticism by foreclosing discussion before it has had a chance to get started in earnest (Mäki 2009: 73). If all models of labour markets are inevitably and necessarily unrealistic and false, why bother taking any criticisms about their unrealisticness and falsehood seriously!

Now, this *nostrum* might satisfy orthodox lecturers who occasionally have to deal with ‘some recalcitrant student, interjecting that the assumptions of the model being discussed are unrealistic’ and false, as Keen (2011: 159) neatly puts it.³ It might satisfy those (many) economics students who do not take courses in other social science disciplines, or in philosophy of science,⁴ who are presented with it in lectures and textbooks as a *fait accompli*, and who lack the intellectual resources to critically evaluate it. It might satisfy orthodox labour economists who use it to convince themselves that they have better things to do than waste time bothering

¹ This is not always appreciated by critics. Keen (2011: 159), for example, writes that ‘economists...genuinely believe that their theories describe reality’.

² Successive approximation becomes redundant if Instrumentalism is taken seriously and realisticness is abandoned as a goal.

³ Incidentally, it did not work against me when I was a ‘recalcitrant’ undergraduate many years ago. I thought then that these defences were preposterous, and nothing I have read in the intervening decades has led me to think otherwise.

⁴ Nowadays this is often because they find themselves needing extra courses in mathematics and statistics instead.

with meta-theoretical issues. It might satisfy those who genuinely believe that all models must be mathematical and/or statistical, and are prepared to embrace virtually any degree of unrealisticness and falsity in order to make their model mathematically tractable. It might satisfy those who genuinely believe that these meta-theoretical issues were resolved half a century ago. But it *should* not, satisfy anyone who engages seriously with methodology – or meta-theory as I prefer.⁵ In other words, *these three defences fail*.

One of the reasons that this nostrum succeeds in evading and justifying is due to the lack of meta-theoretical reflection by orthodox labour economists. Where meta-theoretical issues are raised, usually in text-books, the level of discussion is extremely superficial. They are not raised in peer reviewed journal articles, arguably, because the nostrum is accepted by authors and editors keen to ‘do’ economics, as opposed to reflecting upon how we actually ‘do’ it. Whilst empirically-oriented journal articles usually have a ‘methodology’ section, this is really a section on ‘research techniques’, consisting, typically, of comments on how the variables are measured, the data generated, which econometric techniques are used, and the ‘technical’ problems encountered. None of this exhausts what could, and should, be included in a serious discussion of meta-theory.⁶

Whilst few orthodox labour economists are interested in meta-theory, the fact is, there are two more sophisticated defences ready and waiting:

4. All models are unrealistic, but they may *be* true if they *contain* truth – i.e., if what the truth maker says about the truth maker is the case.
5. The critique of unrealisticness and falsity misunderstands the purpose of models, which is not to resemble reality, but to act as inferential devices.

The reason I mention these two defenses is because there is nothing stopping an orthodox economist, today, from developing these more sophisticated defences - whereupon, my critique of the three weaker defences could be dismissed as hitting the wrong targets. I will, therefore, develop these more sophisticated defences on behalf of orthodox economists – and then proceed to a critique of them.⁷

And this brings us to the two objectives of this chapter. The chapter is divided into two sections (I and II). The first section shows why orthodox models of labour markets are unrealistic and false, the second shows that it is possible to build a non-mathematical model of labour markets that is *realistic* and *true*.

Part one of the opening section (I) starts with a closer look at the methods and use of mathematics in orthodox labour economics to see why unrealistic and false components are, necessarily, built into orthodox models. Part two explains why the three orthodox defences of

⁵ I prefer the term ‘*meta-theory*’ because it encapsulates methodology as well as ontology, epistemology, aetiology and related topics.

⁶ The following selection of orthodox labour economics books fail to mention meta-theory. St Paul’s (2000), Pissarides (2000), Manning (2003), Mortensen (2003), Boeri et al. (2005), Garibaldi (2006), Boeri & van Ours, J. (2008), Coleman (2010), Flinn (2010), Sloane et al. (2013), Cahuc et al. (2014). Hyclack et al. (2013) have a short section on methodology without saying anything about it – although they have a six-page appendix on regression. In Bazen’s (2011) *Econometric Methods for Labour Economics*, the term ‘methods’ is a euphemism for (econometric) ‘techniques’. Several volumes of the *Handbook of Labour Economics* have nothing on meta-theory, nor has Borjas’s (2014) four-volume collection. Whilst Dasgupta (2002) offers a chapter about realisticness, unfortunately, he misses the opportunity to say anything of significance.

⁷ This reflects my belief that critique should always take, as its target, the strongest, not the weakest position – even if this means developing a defence on behalf of the opponent.

unrealistic and false models fail. Part three develops a more sophisticated conception of (u)nrealisticness as well as a definition based upon aboutness, essentialism, exaggeration, idealisation, and isolation. It then has a closer look at idealisation, isolation, and abstraction. Part four looks at what it means to say that models should represent and resemble their target, a necessary step in order to understand part six. Before that, part five develops a more sophisticated conception of truth as well as a definition. At this point, armed with more sophisticated understandings of resemblance and truth, part six develops a more sophisticated defence of unrealistic and false models – (4) above. Whilst orthodox labour economists do not themselves deploy this defence, it is available to them, and it is compatible with their methods and commitment to mathematical modelling. Part seven explains why even this more sophisticated defence, based upon the idea that models are inferential devices, does not work. The final part of section (I) deals, very briefly, with the fifth sophisticated defence – (5) above.

The objective of section (II) is entirely meta-theoretical, namely, to show how a realistic and true, non-mathematical model of labour markets can be built without it being a descriptively complete, everything-but-the-kitchen-sink model. It is based on ideas I have been developing over the last few years and draws upon two foundations. First, what I call the ‘*socio-economics of labour markets*’ (SELM), and second the meta-theoretical perspective of critical realism (CR). For obvious reasons, I refer to the *SELM^{CR}* perspective, and the model as the *SELM^{CR}* model. Part nine deepens our understanding of the terms ‘institutions’, and ‘structures’, replacing them with, or encapsulating them within, the term ‘socio-economic phenomena’. Part ten then elaborates the Morphogentic – Morphostatic approach to explain how agents and socio-economic phenomena interact. This culminates in a radical, alternative definition of labour markets. The final part presents the *SELM^{CR}* model in a series of stages, over three levels of abstraction, all with accompanying diagrams. It ends by re-visiting the sophisticated defences of unrealistic and false models, to show that the *SELM^{CR}* model is realistic and true.

Before getting underway, however, I want to make a point of clarification *apropos* the terms ‘theories’ and ‘models’. Much ink has been spilled *apropos* the meaning of, and relation between, theories and models, with little agreement emerging. Mäki’s (only) half-joking reference to the ‘model muddle’ (2001: 9932) extends easily to theories. Recent contributions by philosophers of economics such as Nurmi (2006), Morgan (2012) and Boumans (2005) have not clarified the issue. Boumans’s (ibid: 3) reference to the ‘clear-cut distinction between theories and models’ is puzzling when compared to the following:

[It] is probably a mistake to think that the term ‘scientific theory’ labels any one, definitive sort of entity...When scientists themselves talk about theories, they often refer to different things in different contexts: very general, mathematical laws; very specific problem solving techniques; and so on. Precisely the same promiscuity, I think, applies to the now fashionable term ‘model’. (Chakravartty 2010)

As the following comment, from one of the UK’s leading textbooks makes clear, orthodox economists use the terms interchangeably, as will I.

Sometimes the term ‘model’ is used as a synonym for a theory, as when economists speak of a model of the determination of national income. Sometimes it may refer to a particular subset of theories, such as the Keynesian model or the neoclassical model of income determination....More often, a model means a specific quantitative formulation of

a theory. In this case, specific numbers are attached to the mathematical relationships defined by the theory. (Lipsey & Chrystal 1999: 17)

SECTION I.

1. What do Orthodox Labour Economists Want from their ‘Scientific’ Method?

What do orthodox labour economists want from their ‘scientific’ method? The question is rarely asked, but the answer is not particularly contentious - as the following comment makes clear:

Professional economists typically approach their work through the use of the scientific method... Scientists follow a logical sequence in analyzing problems, whether in economics or physics. Typically, advances in knowledge occur in a three-step process:

1. A phenomenon of some kind grabs a researcher’s attention as being interesting and not well understood.
2. Theoretical models are developed in an attempt to explain the observed reality. These models are used to derive predictions about the behaviour of the phenomenon we should expect to see in the real world.
3. These predictions are tested by careful experimentation and observation to see if the theory can, indeed, explain reality beyond the facts used to develop it. (Filer et al. 1997: xxi)

What orthodox labour economists want from their ‘scientific’ method, then, is the ability to derive predictions and ~~explanations~~,⁸ by logical deduction, from premises. They also want it to enable them to empirically test the predictions, typically in the form of hypotheses. In what follows I concentrate on the first objective. To enable this objective to be met, they turn to mathematical models.

Analytical models consist of a set of clearly articulated *assumptions* (or *axioms*) and the *conclusions* deduced from them using mathematical or other logically sound methods...Hence, if I make assumptions A, B and C, and if I use analytical arguments to show that they lead to conclusions X, Y and Z, then that’s that!... [T]he straightjacket of deductive reasoning compels you to concede that conclusions X, Y and Z directly follow from them. (Laing 2011: 5)

Economic models are built using two kinds of variables: *exogenous* (or independent) and *endogenous* (or dependent). A particular model seeks to explain only the endogenous variables. The values of the exogenous variables are treated as givens, and their determination is understood to lie outside the scope of the analysis....The essence of economics...is to understand how the endogenous variables respond to an impulse in one or more of the exogenous variables. (Laing 2011: 7)

⁸ In orthodox economics, predictions and explanations are often (mis)understood to refer to the same, or similar, things - a state of affairs referred to as the ‘symmetry thesis’. When I refer to explanation as used in orthodox economics, I will borrow a trick from post-structuralism and place it *under erasure* - i.e., ~~explanation~~. Incidentally, as part II of this chapter will show, I seek explanations, but not ~~explanations~~.

Economic models are also constructed with the goal of serving as vehicles for conducting economic research. The reason is that they often deliver sharp theoretical predictions of the kind ‘if x increases, then y must decrease’. This type of relationship can be fashioned into a statistical hypothesis that is amenable to economic analysis using real-world data. (Laing 2011: 4)

Economic science lends itself to formalisation, since it deals with quantified magnitudes....A mathematical model allows us to clearly establish a linkage between hypothesis and results. It proves particularly effective, indeed indispensable, when the mechanisms studied are complex and involve the relations among a number of variables. Formal models of economic activity are entirely unavoidable. (Cahuc & Zylberberg 2004: xxviii)

Mathematical models allow orthodox labour economists to derive a prediction like, ‘ y must increase’, by logical deduction from premises that include a statement like ‘ x increases’. One mathematical device, the *function*, comes in very handy here because it allows a natural language expression like ‘if x increases, then y must increase’ to be re-conceptualised as a mathematical function $y = f(x)$.

The deduction of predictions and ~~explanations~~ does not necessarily require mathematics – and/or statistics.⁹ As Laing (2011: 5) observes, predictions or conclusions can be deduced using ‘mathematical or other logically sound methods’. But as a matter of fact, orthodox labour economists mainly use mathematics to do this. ‘A mathematical model allows us to clearly establish a linkage between hypothesis and results’ as Cahuc & Zylberberg (2004: xxviii) put it.

Mathematical models are not merely sets of equations. Models consist of many parts or components such as ‘theoretical ideas’, ‘policy views, mathematical concepts and techniques, metaphors and analogies, stylised facts and empirical data’ (Boumans *ibid*: 4), plus, I would add, axioms, assumptions, presumptions, idealisations or re-conceptualisations and a commentary – much of this in natural language. Sets of equations constitute the model’s ‘inferential machinery’ that drives the deduction of predictions and ~~explanations~~. But non-mathematical components are required to make the inferential machinery work.

Boumans (2005) uses a neat metaphor to explain the role of mathematics in model building.

The mathematical forms that are entered in a model are the result of painstaking negotiations. One could see it as a meeting at which various parties need to come to an agreement. They have little in common and are characterised more by their differences than similarities...An impartial mediator is needed to bring the parties involved closer together, step by step, carefully formalising each result in the negotiations. (Boumans 2005: 4)

Mathematics, then, is not only *an* integrating device, it is *The* integrating device, facilitating the integration of the model’s disparate components. It is, however, possible to extend the understanding of the model’s disparate components, to include those of an *ontological and aetiological* nature.

⁹ All references to mathematics include statistics – unless otherwise specified.

1.1. Ontological and Aetiological Integration

Ontological and aetiological integration is carried out via several (not necessarily sequential) ‘moves’. First, integration via mathematics requires that every part of a real labour market that will eventually be represented as a component in a model must be *re-conceptualised*¹⁰ in a mathematical form; in a form consistent with this mathematical form; or (silently) omitted from the model.

Second, integration via mathematics requires the re-conceptualisation of all qualitative aspects of a labour market that will eventually be represented as a component in a model as *variables* - i.e., the quantified expression of events or states of affairs. What cannot be so idealised must be (silently) omitted from the model. These variables are then inserted into the functions that constitute the inferential machinery of models – e.g., $y = f(x)$. This often requires the addition of non-mathematical components in order to ensure mathematical tractability.

The third ‘move’ is the trickiest, and will need some careful elaboration. Integration via mathematics requires the relations between the model’s variables to be expressed in causal terms. If a function like $y = f(x)$ is not conceived of as expressing a causal relation between x and y , then these two variables just ‘sit there’ in the model, totally unconnected and, therefore, unintegrated. The variables x and y are integrated by re-conceptualising x as *causing* y . Getting causality into the model requires the model’s variables to be *isolated* (i.e., ‘*shielded*’, or ‘*closed off*’) from every factor that could, conceivably, exert a causal influence on the model’s variables.

For the author of one leading text-book, one of the basic notions behind all science is ‘the idea that one thing depends on another’.

The idea that *one thing depends on another* is one of the basic notions behind all science...When mathematicians wish to say that one thing depends on another, they say that one is a *function* of the other. Thus the gravitational attraction is a function of the mass of the two bodies concerned and the distance between them...and the quantity of a product demanded is a function of the price of the product. (Lipsey 1983: 18, first emphasis added)

Lipsey should really have added the term ‘regularly’ here and made reference to the idea that if one thing *regularly* i.e., not just occasionally, depends on another, then one thing is caused by another. Being charitable, he probably presumes this. Orthodox labour economists occasionally repeat the sentiment.

The mainstream positivist approach to economic investigation is based on the idea of ‘if...., then....’ relationships. Economic theory is based on the idea that if a certain set of assumptions holds, then a certain set of consequences will arise. Likewise, empirical economics is typically based on the estimation of statistical relationships that tell us that if there is a change in the value of an explanatory variable, then there will be a change in the value of the dependent variable. This means that economists are very concerned about the direction of causality between variables. (Hyclak et al. 2013: 15)

A qualitative hypothesis speaks of the existence of a causal relationship between two or more variables....and a quantitative one goes one step further by measuring its numerical strength. (Laing 2011: Appendix A-3)

¹⁰ In part three, I will explain why re-conceptualisation is synonymous with idealisation. Until then, I will stick with the former term wherever possible.

If I have succeeded in convincing the reader that orthodox economists try to get causality into their models, the next question to ask is: What conception of causation is in operation here?

1.2. Causality as Event Regularity, Laws and closed systems

The conception of causation in operation is *causation as event regularity*.

As the 18th century Scottish philosopher David Hume put it, causality is about ‘an object followed by another... where, if the first had not existed, the second had never existed’. This is precisely the kind of knowledge required to predict the effect of action, how behaviour changes the world. What do we really understand when we think we understand a mechanism? Presumably, at minimum, we have some idea about which inputs produce which outputs. We understand how the choice of inputs determines the outputs and that the reverse does not hold. The choice of outputs does not determine the value of inputs. This special and structured kind of knowledge requires that we understand that (1) changing X is likely to end up with a change in Y; (2) causes and effects are asymmetric: changing Y won’t budge X; (3) causes and effects go together over time; and (4) Y does not occur before X. (Sloman 2005: 5)

Leading econometrician Leamer concurs:

I am a Humean in that I believe we cannot perceive necessary connections in reality. All we can do is set up a theoretical model in which we define the word ‘causality’ precisely as economists do with the $y = f(x)$. What they mean by that in their theory is that if we change x [then] y will change. And the way y will change is mapped by f , so we have a causal theory. (cited in Hendry et al. 1990: 187)

Consider a model of labour supply in the guise of a labour supply function:

$$h = f(w) \tag{3}$$

This function presumes that there is a relationship between w and h ; the relation is a regular one – i.e., a Δw (an event) regularly occurs with a Δh (an event); and the presence of regularity indicates the presence of causation – i.e., if a Δw regularly precedes a Δh , then Δw causes Δh .¹¹

It is a small (and consistent) step from the *event regularity view of causation*, to the *event regularity view of law*, where the ‘laws of nature are regularities’ (Psillos 2002: 137). In orthodox economics, the term ‘law’ means ‘regularity law’ – although the terms ‘law-likeness’, ‘law-like statements’, and ‘law-like associations’ appear. The basis of all these expressions, however, is event regularity. When I use the term ‘law’ I mean ‘regularity law’ – unless otherwise stated.

Functions are doing a lot of work here, so let us take a closer look at them. A function is a conceptual device that links events, their regularities, the regularity view of causality and laws to the use of mathematics.¹² When Laing writes ‘the supply of labour depends upon the wage, the population size, and the alternative wage’, the term ‘depends upon’ is a euphemism for ‘is

¹¹ I will not refer to this as ‘Humean Causation’ to avoid arguments about whether it is genuinely Humean. All I need for my purposes is to establish that causality as regularity is in operation in orthodox models.

¹² For elaboration of functions see Fleetwood (2001).

caused by'.¹³ Whilst it is possible to argue that a function, in and of itself, implies nothing about causation, arguing this in the context of economics, invites the charge of irrelevance. If the supply of labour is not believed to be *caused* by the wage, the population size, and the alternative wage, then there really is no point in writing down a supply function – nor in subsequently trying to estimate it. If causality is not presumed, then mathematical modelling immediately becomes an exercise in irrelevance.

Now, because causality as event regularity can appear in several different guises, and in varying degrees of complexity, it is sensible to consider them to avoid being confused when confronted by different versions.

$$y = f(x) \quad (4)$$

$$y = f(x_1, x_2, x_3 \dots x_n) \quad (5)$$

$$y = f(x_1, x_2, x_3 \dots x_n + \varepsilon) \quad (6)$$

$$y = \beta X + \varepsilon \quad (7)$$

$$S = f(W, N, W^A) \quad (8)$$

$$h = \beta_0 + \beta_1 w + \varepsilon \quad (9)$$

$$M = f(u, v) \quad (10)$$

$$\ln L = -\ln A_0 + (1 - \alpha) \ln [\alpha / 1 - \alpha] + \ln V - (1 - \alpha) \ln w + (1 - \alpha) \ln r - \lambda t \quad (11)$$

These functions usually come in sets, and as such they constitute a models' inferential machinery.

Now, whilst there may be quibbles, I doubt that anything I have just argued would be denied by orthodox labour economists – indeed, I based my arguments on their comments. There are, however, two conclusions *apropos* unrealisticness and falsity that they do not make, although they may not deny them.

First, each one of the functions (4-11) can be generalised and styled 'whenever event or state of affairs x then event or state of affairs y ', or 'whenever event or state of affairs $x_1, x_2, x_3 \dots x_n$, then event or state of affairs y '. Each one of these functions expresses event regularity. Models constituted by sets of functions like these also express causality as event regularity. Assuming these models represent real systems, the systems they represent are said to be '*closed systems*' - according to the critical realist definition of open and closed systems:

Parts of the socio-economic world characterised by regularities between events or states of affairs, of the form 'whenever event or state of affairs x then event or state of

¹³ Hayduck & Pazderka-Robinson (2007: 148) write: 'correlation is not causation but causal actions produce correlations'. It is quite possible for causal actions not to cause correlations, meaning that causality has nothing to do with event patterns such as correlations. I will elaborate in the section on tendencies below.

¹⁴ Functions (8) and (9) are labour supply functions, (10) is a matching function, and (11) a labour demand function.

affairs y', are closed systems, and parts of this world not so characterised are open systems.

Critical realists, like myself, argue that the socio-economic world in general and labour markets in particular, are *not* characterised by regularities between events or states of affairs – i.e., are not closed but open systems, and characterised by demi-regs – see below.¹⁵ Orthodox labour economists end up modelling labour markets as if they were closed systems, when they are actually open systems. If critical realists are right, then orthodox labour economists have a serious problem. Their models fail to represent real labour markets *aetiologically*. Orthodox models of labour markets are, in an aetiological sense, unrealistic and false.¹⁶

Second, assuming that the fundamental objective of 'scientific' economics is the logical deduction of predictions and ~~explanations~~, and assuming, further, that this objective is met by the use of mathematics, this requires the addition of non-mathematical components to mathematical models such as axioms, assumptions, presumptions, re-conceptualisations, and a commentary. All these components are added to the model to facilitate various re-conceptualisations, including the re-conceptualisation of qualities as quantities; to ensure mathematical tractability; and to isolate – and now we might add, to close the system.¹⁷ Many of these components are unrealistic and false.¹⁸

1.3. Event Regularities, Laws and Law-Like Associations and Tendencies

Much of the debate around causality, event regularities, laws, tendencies and so on is not helped by a lack of clarity. To improve the situation, let me differentiate between four forms of (ir)regularities as these distinctions will be important for part II of the chapter.

A Totally Chaotic Flux of Events

Some parts of the socio-economic world are characterised by a pattern-less flux of chaotic, unconnected, inchoate, irregular, spasmodic, arbitrary, haphazard, unpredictable and unexpected events. We, as social scientists, are rarely concerned with them. A system characterised by a totally chaotic flux of events is an *open* system.

Deterministic Event Regularities

Some parts of the *natural* world are characterised by deterministic event regularities – e.g., those constituting Ohm's Law. Above, I styled these 'whenever event x, then event y' or $y = f(x)$. A system characterised by deterministic event regularities is a *closed* system.

¹⁵ See Fleetwood (2014c) for evidence that the event regularities referred to as labour supply and demand curves do not exist. See Kaufman (2008) for a theoretical argument.

¹⁶ Hindriks (2013) has an interesting take on regularity, but I cannot elaborate upon it here.

¹⁷ In the debate over whether mathematics, or mathematics *and* economic theory drives the current preoccupation with modelling (e.g., Morgan 2010: 97 *passim*), I take the position that modelling is driven by the objective of deriving predictions and ~~explanations~~ via the use of mathematics (Fleetwood 2016).

¹⁸ Much applied and empirical research, using econometric techniques, appears to be immune from the criticisms of unrealisticness levelled at pure mathematical modelling. But look closer and we see that this research consists of little more than attempts to find statistical associations between variables. With little or no theory on offer explaining these associations, there is little or nothing on which to 'hang' the criticism that this or that theoretical concept is unrealistic. The criticism of unrealisticness is avoided, but only by downgrading the role of theorising almost entirely and retreating to various forms of ultra-empiricism (Lawson 2013: 954).

Demi-regs

Some parts of the world are characterised by partial, approximate, rough-and-ready regularities or patterns in the flux of events. Following Lawson (1997, 2003), I refer to these as ‘demi-regs’ and style as ‘whenever event x , then *sometimes, but not always* event y ’. For example, ‘wage rates rise and *sometimes, but not always*, the quantity of labour supplied increases’. A system characterised by demi-regs is an *open* system.

Stochastic Event Regularities

Some kinds of event regularities are referred to as ‘stochastic’, ‘probabilistic’, or ‘statistical’ laws,¹⁹ and even ‘tendencies’. Generally speaking, these are the kind of event regularities that, if they existed, would be amenable to the standard techniques of econometrics, based, as they are, in concepts of probability.²⁰ The laws of labour supply and demand are probably understood by most orthodox labour economists as having a probabilistic or stochastic inflection. The terms ‘stochastic’ and ‘probabilistic’ have a complicated relation, and most of the time are conflated. Stochastic processes are random processes, occurring in the *ontic* domain. Probability is a *measure* of the likelihood of an event occurring. When we apply the concepts of probability to a stochastic process, we re-conceptualise it. Speaking loosely, we might say randomness, and stochastic processes are ‘real’, whereas probabilistic processes are ‘not real’. Stochastic event regularities, using the concepts of probability, might be styled ‘whenever event x , then on *average* event y ’, or $y = f(x + \varepsilon)$ or, more accurately ‘whenever the realised value of the (independent) variable measuring event x , then the conditional mean of the (dependent) variable measuring event y ’.

Tendency²¹

Elsewhere (Fleetwood 2009, 2011b, 2012) I have identified six ways of using the term ‘tendency’²² – as a trend; as a cyclical variation; as a law, probabilistically or stochastically specified;²³ as a counterfactual event; as a deliberately imprecise and under-elaborated conception; and as a power or disposition. The first five all conceive of tendencies as some kind of event regularity and are, in any case, fairly well known. The sixth is *ontologically, and aetiologically*, different so allow me to elaborate a little.²⁴

¹⁹ Probabilistic or statistical laws are, of course, well known and appear in I-S and D-S models – e.g., the Law of Radioactive Decay.

²⁰ In CR circles this is sometimes put in terms of ‘regularity stochasticism’, as opposed to ‘regularity determinism’. See Lawson (2003: 5) and Lewis & Runde (1999: 38).

²¹ Hausman (1992) mentions laws and tendencies, but in his case, only in discussing the work of J.S. Mill. Cartwright (2007) deals explicitly with conceptions of law, but also mentions tendencies. It is not entirely clear if Cartwright’s concept of tendency, which appears to derive from J.S. Mill, is similar to the one used by CRs. Sutton’s (2000) book entitled *Marshall’s Tendencies*, unfortunately, does not define the term.

²² Hausman (1992: 128-131) notes four possible uses of the term and there is some overlap with mine. See also Hausman (2009).

²³ See Cartwright (2007, chapter 12) for a detailed discussion of causality and probability.

²⁴ Mäki, who will feature greatly below, hardly mentions laws. One exception is where he notes that he and Cartwright: ‘both believe that the conception of laws as regularities is not a recommendable idea, regularities tend to break down as circumstances change’ (Mäki 2009a: 81). This is a clear rejection of laws as event regularities, and this is also Cartwright’s well-known position. Mäki could, of course, conceive of the key causal mechanism not as acting in a law-like manner, but as acting as a tendency or power. This would allow him to sidestep the criticism that idealisations and isolations are for closure. But then it is not clear what isolation is for.

Tendency as Power

I consider tendencies and powers to be synonymous, and define them as: ‘the (transfactual) way of acting of a thing (or things) with properties’. A tendency/power is:

something that powers, forces, drives, propels, pushes, presses, shoves, thrusts, exerts pressure and so on. Notice that...the tendency does *not* refer to an empirically observed (or observable) pattern in the flux of events...There are two key points to note here, and they turn on...*events* and *event regularities*. First, association of the tendency with events and their regularities that underpins [them] is broken. A tendency can be in play and yet not manifest itself at the level of empirical events due to the influence of counteracting tendencies. Second, the association of the tendency with causation as event regularity...is broken. A tendency can be (causally) in play and yet not manifest itself in an event *regularity*. Here we see a complete break with Humean notions of causation as event regularity. (Fleetwood 2012: 13)

I will refer to this conception as one of ‘tendencies/powers’. Tendencies/powers causally govern all forms of event regularities, and are in operation in open systems.

1.4. Are Laws No Longer Part of Orthodox Economics?

Morgan has recently argued that, whilst in the 19th century economists depicted their knowledge in terms of laws, models displaced laws in the 20th century. The notion of ‘laws’, she writes, ‘has almost disappeared from economics’ (Morgan 2012: 394). I have to disagree. Even if the term ‘law’ only infrequently appears in contemporary economics, the *concept* of laws, and the underlying concept of event regularities certainly has not disappeared. Indeed, Morgan herself uses the supply and demand model to exemplify one of the ‘most common and well used models in economics’ (ibid: 257) apparently not noticing that the supply and demand model is virtually synonymous with the *laws* of supply and demand.

Equation (9) above is a labour supply function. It is often referred to as a law (i.e., the ‘law of labour supply’) because it expresses a ‘law-like’ relationship between the variables h and w . Equation (10) is a job-matching function. This is not, of course, referred to as the ‘law of labour matching’, but there is no significant reason why we should not refer to it in this way because it also expresses a ‘law-like’ relationship between the variables M , u and v . The fact that we refer to the first but not the second equation as a law is entirely arbitrary.

Sub-conclusion

The fundamental objective of the ‘science’ of orthodox labour economics is to logically deduce predictions and ~~explanations~~, an objective met exclusively by the use of mathematics. Every aspect of real labour markets to be included in a mathematical model must be re-conceptualised in a mathematical form; a form consistent with this mathematical form; or (silently) omitted. Qualitative phenomena must be re-conceptualised as *variables* or (silently) omitted. The relations between these variables must be expressed in causal terms, with causality conceived of as event regularity, especially stochastic event regs – which should not be confused with tendencies as powers. This requires the *isolation* of the model’s key variables and, thereby, systemic closure. Non-mathematical components are added to the model to facilitate re-conceptualisation or idealisation; to ensure mathematical tractability; and to isolate.

As an unintended consequence, the concern with realisticness and truth have been substituted with the concern for mathematical modelling.

2. Three Orthodox Defences of Unrealistic and False Models, and their Critiques

2.1. *The Instrumentalist Defence and Its Critique*

In 1953 Milton Friedman initiated the argument that realisticness does not matter when formulating models because prediction, not realisticness, is the *sole* criterion for evaluating them. He argued that a theory that predicts well, irrespective of its realisticness, is preferred to one that predicts poorly. This doctrine is referred to as '*Instrumentalism*'. For this defence to work, its advocates must avoid claiming (i) that all models are unrealistic and false, whilst simultaneously claiming (ii) that models should be realistic, that models would be better if they were more realistic, or that realistic assumptions are preferred to unrealistic ones and variations on this theme. Unfortunately, orthodox labour economists do not avoid this tension. In part 2.3 below, I will cite examples of orthodox labour economists making claim (i). Elsewhere (Fleetwood 2016: 290-93) I have cited numerous examples of those making claim (ii) and I do not want to repeat them here, I will therefore cite a few additional examples.

Researchers have incorporated labour and credit market imperfections ...thereby opening up a role for institutions and to inject a healthy dose of realism into their models. (Bhattacharya and Chakraborty 2005: 652)

[W]e enrich this theoretical approach to make it more realistic. Rather than taking the standard theoretical approach which assumes that all workers are observationally equivalent when they enter the labour market, we...assume that workers vary in terms of publically observed schooling levels when they enter the labour market. Workers with more education have higher expected ability. (De Varo & Waldman 2012: 92)

One should choose an assumption that is a reasonable approximation to reality...If one judges theories by the realism of their assumptions, then I believe that the wage-posting monopsony model is to be preferred. This is not because it is the best description of the labour market in all circumstances (wage bargaining between employers and workers is observed), just that it is the better description most of the time. (Maning 2003: 5 and 15)²⁵

The discipline of orthodox labour economics, then, is characterised by a kind of Orwellian 'double-speak' - i.e., simultaneously rejecting and accepting the claim that models should be realistic. This is hardly surprising. Instrumentalism is such an extreme doctrine, that few (if any) are willing or able to 'hold the line'. A thoroughgoing commitment to Instrumentalism would be impossible to sustain. Despite the many other problems with Instrumentalism, it does not work as a defence of unrealistic models because orthodox labour economists do not really believe it.

²⁵ Other examples are Juselius (2008: 746); Cahuc & Postel-Vinay (2002: 70); Hart & Ma (2009: 4); Hatsor (2012: 618); Méon & Szafarz (2011: 49); Stevens (2007: 847) and Flinn (2010: 53). In Fleetwood (1999) I focus on the economics of trade unions, to show this same vacillation *apropos* realisticness.

2.2. The ‘Technique of Successive Approximation’ Defence and Its Critique

The method or technique of successive approximation comes from Sweezy (1968: 11). The idea is to start off with models that use unrealistic and false assumptions, and then successively relax these assumptions, bringing the models step by step, closer and closer to an approximation of reality. An obvious example would be the shift from assuming perfect competition to assuming imperfect competition. Consider other examples.

The purpose of this chapter is to describe a simple version of the labour market model that captures the salient features of the theory of unemployment developed in this book. The model does not yet claim to be realistic or empirically implementable. At this stage many of the variables that are likely to be important in an empirical analysis of unemployment are left out. (Pissarides 2000: 4)

Of course, economic models do not have to be realistic to be useful, and the supply-and-demand paradigm is obviously useful for studying many issues in labour economics. But it is equally clear that the simple supply-and-demand approach is ill suited for discussing questions such as those raised in the previous paragraph....Traditional frictionless models assume that a worker can costlessly and immediately choose to work for as many hours as he wants at the market wage. By relaxing these extreme assumptions, search models allow us to think about unemployment and wages in a different light. (Rogerson et al. 2005: 936)

St Paul makes use of something like the method of successive approximation. He starts with a simple model where ‘simple’ means few components - the model is, technically and mathematically, quite complicated.

We start by describing the functioning of a perfect, or almost perfect, labour market. It bears little resemblance to the real world, but it is a useful starting point in order to discuss where the incentives to alter the functioning of the market come from, and will help us to introduce some key concepts and notations. (*ibid*: 21)

After introducing some concept and notation in this ‘no rent society’, St Paul introduces a labour market as an ‘institution that generates a rent for employed workers’ (*ibid*: 27). Such an institution might have a ‘hiring and firing rule’ that makes it more costly for the firm to dismiss a worker and hire an outsider. The outcome is involuntary unemployment. He makes various assumptions, and draws various conclusions before moving on to the next chapter where he introduces a ‘less than perfect world’ (*ibid*: 45). Here he introduces heterogeneity between workers based on skill or income levels and, therefore, introduces conflict between different groups of workers. By the last chapter, a two-tier system is introduced in which the support of incumbent workers is gained by granting that new arrangements will only apply to newly hired workers. It is not clear that the models in this last chapter are any more realistic than those in the opening chapter.

There are, however, a series of problems with the technique of successive approximation, the most important of which are as follows:

- As well as explicit assumptions (e.g., agents are homogeneous) models also contain scores of implicit assumptions, which I refer to as ‘presumptions’. Presumptions are never stated, but are presupposed – e.g., agents’ preferences

create institutions, not *vice versa*. Even if some assumptions are relaxed, presumptions are not relaxed because they are not stated.

- Even if a handful of unrealistic and false assumptions are relaxed, scores remain. Models still contain scores of assumptions that are known to be unrealistic and false.
- The technique often backfires as, more knowingly unrealistic and false assumptions have to be added to shore-up the model as complexity is added.
- The technique might, therefore, be more accurately termed the ‘method of successive falsehoods’ or the ‘method of successive closed systems’ – elaborated upon below.
- It is never clear what the technique of ‘succession’ applies to. Does it apply to several models in one paper or chapter, or one book, and under the control of one author? Or does it apply to a whole paradigm or genre and not, therefore, under the control of one author?
- The technique of successive approximation is written on a promissory note that has never, to the best of my knowledge, been cashed. I am unaware of any orthodox model of labour markets that could, by any stretch of the imagination, be considered to have reached anything approaching a realistic end point.

2.3. The ‘All Models are Unrealistic’ Defence and Its Critique

This defence is found, typically, in introductory labour economics textbooks, as the following examples illustrate.

We could, of course, create a more complex model of the...labour market that incorporates every single one of these omitted factors. Now that would be a tough job! A completely realistic model would have to describe how millions of workers and firms interact and how these interactions work themselves out throughout the labour market. Even if we knew how to accomplish this difficult task, this ‘everything-but-the-kitchen-sink’ approach would defeat the whole purpose of having a theory. A theory that mirrored the real-world labour market...down to the most minute detail might indeed be able to explain all the facts, but it would be as complex as reality itself, cumbersome and incoherent, and thus would not at all help us understand how the...labour market works. (Borjas 2010: 8)

There has been a long debate over whether a theory should be judged by the realism of its assumptions or by the extent to which it finally helps us understand and predict the labour market phenomena we are interested in. We obviously have a better shot at predicting labour market outcomes if we use more realistic assumptions. At the same time, however, a theory which mirrors the world too closely is too clumsy and does not isolate what *really* matters. (Borjas 2010: 8)

The reason we need to make assumptions and create a relatively simple theory of behaviour is that the actual workings of the labour market are almost inconceivably complex.... One may object that these assumptions are unrealistic and people are not nearly as calculating, as well informed about alternatives, or as amply endowed with choices as economists assume. Economists are likely to reply that if people were not calculating, are not totally informed or do not have any choices, then most predictions suggested by economic theory will not be supported by real world evidence. They thus argue that the theory underlying positive economics should be judged on the basis of its *predictions*, not its assumptions. (Ehrenberg & Smith 2009: 4)

The more important point, however, is that economists do not judge a theory by its descriptive content but rather by its ability to predict. The strength of neoclassical theory is that it yields a number of testable predictions regarding the demand for factors of production. It is on the empirical performance of these predictions that theory should be judged. (Fallon & Verry 1988: 99)

In order to conduct an analysis of the labour market we need to abstract the crucial elements of the behaviour of economic agents from the complexity of labour market outcomes. In seeking to understand labour market activity the labour economist theorises as a means of simplifying the complex web of interactions which occupies this aspect of human action. (Smith 2009: 2)

If a model exactly mirrored the reality of a given situation, then it would be too complicated for anybody to comprehend it...Consequently, models must entail simplifications in order for them to be useful...The process of simplification necessarily entails making choices about what to include in the analysis and what to exclude from it. (Laing 2011: 3-4)

Nevertheless, a poorly constructed model that ignores essential details by assuming them away will generally lead to misleading conclusions. Therefore, models must be judged according to whether the necessary simplifying assumptions shed light on a phenomenon of interest or whether they obscure it. Therefore, wisdom, discernment and factual evidence are essential for ultimately judging a model's performance... Models...often entail substantial simplifications in which trivial and annoying details are swept under the carpet. (Laing 2011: 4)

Let me summarise the first defence of unrealistic and false models thus:

Models are unrealistic and false when they simplify, abstract, omit, isolate and idealise. All orthodox models simplify, abstract, omit, isolate and idealise, meaning they are inevitably, and necessarily, unrealistic and false. Models would be realistic and true if they did not simplify, abstract, omit, isolate and idealise. But such models would be descriptively complete, everything-but-the-kitchen-sink models, akin to the Borges Map, exact replicas of reality, as complex as reality itself, cumbersome, incoherent and atheoretical because theory would have been replaced with a mass of empirical detail.

There are, however, a series of problems with this defence. I mention the most important ones.

The unstated, but nevertheless clear, presumption is that descriptively complete, everything-but-the-kitchen-sink models are sought by those who criticize unrealistic and false models. This presumption is simply wrong. To the best of my knowledge critics do not seek, nor have ever sought, descriptively complete, everything-but-the-kitchen sink models.²⁶

The nostrum trades on a subtle asymmetry. The terms 'realistic' and 'true' are equated with descriptively complete, everything-but-the-kitchen sink models, and these models are presented as completely and utterly misguided - only politeness prevents them being presented as 'completely bonkers' or some such. In contrast, unrealistic and false models are presented as the 'default option' which we must, reluctantly perhaps, accept as the best we can do.

This nostrum turns on the *trivialisation* of the terms 'unrealistic' and 'realistic' and, of course, their underlying concepts. These terms are never defined, and neither are terms like 'simplification', 'abstraction', 'ommission', 'isolation' and 'idealisation'. When these ner-

²⁶ It is always possible, given the long history of the debate that someone, somewhere, at some time, has actually argued for something like descriptive completeness. I am unaware of anyone who is currently arguing for this.

defined terms are used along with the idea that all models simplify, abstract, omit, isolate and idealise, we end up seeking ‘through a glass darkly’. Let me elaborate using just one term, ‘simplification’. Every single model, of anything whatsoever, including labour markets, simplifies. No model can include everything in the universe, the solar system, the planet, the country, the society, the community, the organisation, the department, the market, markets for commodities, finance or labour, a particular labour market, some part of a labour market and so on. Any model of a labour market, for example, is a simplification in the sense that it does not include the moons of Venus, the shifting tectonic plates, or the colour of the human resource managers’ eyes. Any model could, *in this sense, be regarded as unrealistic*. But which labour economist, of any stripe, would consider a model of labour markets to be unrealistic simply because it excludes these things? The answer, of course, is ‘none’. But what about a model of labour markets that excludes, from the agent’s decision to engage in education, conscious decision making and non-conscious habit, both set against a background of the structures of class, gender and race that enable and constrain agents’ decisions? Such a model could be said to be unrealistic. But, by never defining the terms ‘unrealistic’, and ‘simplification’ both models are placed ‘on a par’. The exclusion of the decision making and non-conscious habit, set against a background of the structures of class, gender and race, is placed ‘on a par’, with the exclusion of the moons of Venus, the shifting tectonic plates, or the colour of the human resource managers’ eyes, and both are dismissed. It is a *trivial* matter that a model of a labour market excludes the moons of Venus. It is a *non-trivial* matter that a model of a labour market excludes the structures of class or gender. When all this is combined, it results in what I refer to as the *trivialisation of unrealisticness*.²⁷

By trivializing the critique, in a single stroke, the entire discussion of (un)realisticness appears futile, and ceases to be something to concern ourselves with. If, quite literally, every single model (apart from alleged descriptively complete, everything-but-the-kitchen-sink models) is unrealistic, then we would be unable to differentiate, at least on grounds of (un)realisticness, between a ‘*fairy theory of job-matching*’ - i.e., where fairies are responsible for matching job-seekers to job-providers; and an ‘institutional theory of job-matching’ - i.e., where matching institutions (i.e., matching technologies) are responsible for matching job-seekers to job-providers. Before we simply dismiss this as an unhelpful caricature, consider an important lesson it teaches us. The obvious reply to my caricature would be something like: ‘we can differentiate between fairy and institutionalist theories on the grounds of (un)realisticness because everyone knows that fairies are mere fictions’. True, but everyone also knows that infinitely lived agents are also fictions, and they appear repeatedly in orthodox labour economic theory.

Sub-conclusion

Two orthodox defences of unrealistic and false models, namely, instrumentalism, and the technique of successive approximation, both fail. Moreover, their chances of being re-worked are dead in the water. Whilst the ‘all models are unrealistic’ defence also fails, it could possibly

²⁷ Mäki’s sights are so firmly fixed on *truth*, and how to get it into models that he takes ‘the unavoidability of unrealisticness’ (Mäki 1994: 240) for granted, and ends up also trivialising (un)realisticness. That said, he uses the term ‘plain falsity’ to refer to the ‘kind of unrealisticness’ that I refer to as trivial. He writes that ‘unrealisticness in this sense does not, as such, contribute anything of interest to the issue of realism (Mäki 1988: 186). He also uses the term ‘inconsequentially unrealistic’ (2005: 309). He refers to a lack of resemblance between model and reality, to the study of an imaginary world, detached from the real world, and to substitute systems, all of which imply an awareness of the possibility that a model can be unrealistic in a non-trivial sense.

be re-worked and made more sophisticated by an orthodox economist willing to do some meta-theoretical leg-work. The next two main sections on realisticness and truth attempt to do just that.

3. Realisticness

As we saw above, orthodox economists often use the terms ‘abstraction’, ‘omission’ (or ‘exclusion’), ‘simplification’, ‘isolation’ and ‘idealisation’ as criteria with which to decide if a model is (un)realistic. Philosophers of economics add terms like ‘observability’, ‘success in empirical tests’, ‘plausibility’, ‘practical usefulness’, ‘usefulness in approximation’, ‘exaggeration’, ‘omission’, ‘silent omission’, ‘partiality’, ‘aboutness’ or ‘reference’, ‘truth’, ‘essentialism’. Occasionally other terms are thrown into the mix, such as ‘stylised’, ‘fictionalised’, ‘deformed’ or ‘distorted’ and generalised.²⁸ These terms are almost always used ambiguously and inconsistently, and confusion reigns. Rol sums up the confusion succinctly:

In the special sciences generally, and apparently even more in economics, there seems to be little agreement on the meaning of such terms as idealisation, abstraction, *ceteris paribus*, concretisation, and on what counts as unrealistic modelling. There are bewilderingly many meanings in which the so called ‘lack of realisticness’ is discussed in the literature. As can only be expected, confusion is ubiquitous. (Rol 2008: 70)

To make headway here, I use the authority of the philosopher of economics that has done most to elaborate upon (un)realisticness. In a series of papers (1988, 1994 & 1998) Mäki provides a kind of check-list of ‘some of the typical meanings in which these terms are being used by economists and others’ (Mäki 1994: 241). This check-list consists of *fifteen* terms that are, typically, used as criteria for deciding whether a model is (un)realistic. I group them into three, and then dismiss the first two groups, leaving a more manageable set of six terms. I am not suggesting that these dismissed terms have no use, merely that these (dismissed) terms are inappropriate as criteria for this task.

Before getting underway, it makes sense to get the following point out of the way. When reflecting upon some of these criteria we run into the problem of subjectivity and, therefore, the need to make judgements. Now, whilst there are obvious problems of relativism to consider, we need to be careful of rejecting terms (e.g., ‘plausibility’) on the grounds that its subjectivity introduces a degree of judgement and, therefore, mires us in the thicket of judgmental relativism. Quite frankly, judgement is entirely unavoidable *apropos* deciding upon the (un)realisticness of a model. But, whilst judgement always entails epistemic relativism, it does not always entail judgmental relativism, and it is often possible to find acceptable grounds for making judgements. Fortunately, we are often aided by the fact that orthodox models are nowhere near what I refer to as the ‘cusp of realisticness’. There is, therefore, no need to ‘take a sledge-hammer to crack a nut’ - i.e., to employ sophisticated philosophical arguments to establish something that is blindingly obvious.

²⁸ Note that terms like ‘simplification’, ‘exaggeration’, ‘partialisation’, ‘idealisation’, ‘isolation’ and ‘abstraction’ can be used either as verbs (i.e., processes), or nouns (i.e., things resulting from processes such as words or concepts) - e.g., the process of simplification results in a simplification.

Group A

Observability

A model is sometimes regarded as realistic if it is about observable items, and unrealistic if not. This concern prompted revealed preference theory. Many unobservables (e.g., photons) are used successfully in natural science, and many are found in economics – e.g., tendencies, values, norms, agents' habits or indeed preferences. It is, however, a mistake to treat something that we cannot see as if it is unreal and, thereby, a model that contains it as unrealistic. I suggest, then, that we dismiss observability as a criterion with which to decide whether a model is (un)realistic on the grounds that it trades on a mistake.

Success in empirical tests

A theory is sometimes regarded as realistic if it has passed an appropriate set of tests, and unrealistic if not. There are two snags with this.

- a. We could end up in a situation of rejecting a model as unrealistic because up until today it has not passed some appropriate tests, and then tomorrow accepting it because it passes them. Was it unrealistic yesterday?
- b. The concepts of 'truth' and those of 'justification', 'validity' or 'substantive knowledge claims' are not the same. To define truth as I do (i.e., a statement is true if what it says is the case, is the case) says nothing about whether, in this particular example, what the statement says is indeed true: it could turn out to be mistaken, but this would not damage the definition of truth (See Mäki 2001: 12818).

Whilst I am not advocating the abandonment of empirical testing, it is inapplicable as a criterion for deciding whether a model is (un)realistic and I suggest we dismiss it.

Plausibility

A model is sometimes regarded as realistic if it is plausible, and unrealistic if not. Plausibility is a matter of being believed by some person(s), or the weaker sense of being 'worthy of belief' (Mäki 1998: 412).

When an economist finds an assumption or theory plausible, she may think that, given her (evidential and theoretical) beliefs or commitments, this theory or assumption has the chance of being true or believable... It is the coherence with other believed or accepted statements that ascribes plausibility to a statement...[T]here is a strong flavor of subjectivity in this notion of realisticness. (Mäki 1998: 412)

There are two snags here.

- a. The 'strong flavor of subjectivity' is problematic. What counts as plausible can, for example, come and go, and/or can vary from person to person, meaning that (un)realisticness of a model can do the same.
- b. A model or some part of a model might be said to be plausible if it coheres with other believed or accepted theories or models, or other parts of theories or models. This

means some part P or theory T might be said to be plausible if it coheres with part Q of theory U, *even if theory U is unrealistic*. Plausability could, therefore, confer realisticness on unrealistic models.

I suggest, then, that we dismiss plausibility on the grounds that it could lead us to mis-attribute (un)realisticness.

Practical usefulness

A model is sometimes regarded as realistic if it serves in the pursuit of a practical end, and unrealistic otherwise.

A representation is often regarded as realistic in one sense if it serves well the pursuit of some practical ends. [Some] formulae are practically...useless, hence unrealistic (some might say as unrealistic as the formulae of the Arrow-Debreau construct) for manipulating the rate of unemployment. (Mäki 1994: 243)

Practical relevance and usefulness are defined in terms of the goals that the economist finds important. (Mäki 1998: 412)

Whilst models that are not practically useful have their own problems, it is not clear that this makes them unrealistic. I refrain from pursuing this, however, because there are more immediate snags.

- a. First, the term ‘useful’ introduces the same notions of subjectivity and judgement as we saw with plausibility.
- b. Consider three examples of ‘practical ends’ or the ‘goals’ that an economist could deem to be important.
 - The end could be coherence with other accepted statements. Some component of a model might be said to be practically useful on the grounds that it coheres another component when this second component is *unrealistic*. We might end up conferring realisticness on an unrealistic model.
 - The end could be elegance. This would make an elegant model realistic even if it was unrealistic on other grounds. We might, again, end up conferring realisticness on an unrealistic model.
 - The end could be making a prediction. A model that made a prediction, then, could be said to be realistic, even though it might be unrealistic on other grounds. This would be an interesting inversion of Instrumentalism.

I suggest, then, that we dismiss practical usefulness on the grounds that it could lead us to mis-attribute (un)realisticness.

Useful approximation

A model is sometimes regarded as realistic if it is a useful approximation, and unrealistic otherwise. There are, however, two main snags.

- a. First, the term ‘useful’ introduces the same notions of subjectivity and judgement as we saw with plausibility and practical usefulness.

- b. If we stress the term ‘useful’, a ‘useful approximation’ could mean ‘practically useful’ and we run into the same snags as we did with practical usefulness just noted.

I suggest, then, that we dismiss useful approximation on the grounds that it could lead us to mis-attribute (un)realisticness.

Group B

I will present the next four terms, and then dismiss them in ‘one go’ as it were.

Simplification

A model is sometimes regarded as unrealistic if it simplifies, although it is not easy to know what the opposite might be – i.e., should it be regarded as realistic if it (say) complexifies? ²⁹

Silent omission

A model is sometimes regarded as unrealistic if it silently (i.e., without explicit mention) excludes or omits components that are crucial to the operation of the target, and realistic if otherwise.

Partiality

A model is sometimes regarded as unrealistic if it is partial, and realistic if it is (more) complete, or whole.

Abstractness

A model is sometimes regarded as unrealistic if it is abstract, and realistic if it is concrete. Now, of all the criteria under discussion, abstractness is perhaps the most misused and misunderstood. For the time being I will use it as orthodox economists do – i.e., to mean simplification or omission. I will have a lot more to say about this below.

Dismissing simplification, silent omission, partiality and abstractness

There are four problems here:

- a. It is difficult to untangle simplification, silent omission, partiality and abstractness because models that simplify also silently omit, are partial, abstract and so on.
- b. All these terms involve the same notions of subjectivity and judgement as we saw with some of the criteria in group A.
- c. Whilst Mäki (2004: 322) is correct to say that ‘most of the universe is excluded from consideration by means of silent omission’, the same goes for simplification, partialisation or abstraction. Omitting the moons of Venus, or the colour of the HR managers’ eyes are not, however, the kinds of thing anyone has in mind when arguing that a model of labour markets is unrealistic. To use them for this purpose is to trivialize (un)realisticness.
- d. It is probably correct to say, quite literally, that all models simplify, omit, are partial and are abstract. If so, then using these criteria to decide whether a model is realistic

²⁹ I include ‘over-simplification’ in the term ‘simplification’.

or unrealistic is futile. *Criteria that apply to all models cannot be used to differentiate between models.*

For these reasons, especially the last, I suggest we should dismiss simplification, silent omission, partiality and abstractness as criteria for deciding if a model is (un)realistic.

Group C

I will now quickly run through six criteria that are often used to decide whether a model is (un)realistic and establish basic definitions. I will return to them later and elaborate in more depth.

Aboutness and referentiality

A model is sometimes regarded as realistic if it is *about* something real, something that exists other than itself, and unrealistic if not. A model is sometimes regarded as realistic if it refers to a real entity, and unrealistic if it does not. Both involve subjectivity and judgement. I am not sure there is a distinction between these two terms. Even Mäki notes that ‘to refer to X is to be about X’ (Mäki 1998: 410). Elsewhere he writes: ‘Aboutness’ is an essential condition for something to qualify as a representation, but this does not yet tell anything about the sort of thing that any given representation is intended to be about (2005: 311). For the sake of parsimony, I will use the term ‘aboutness’ to include ‘referentiality’ and will gradually phase out the latter term.

Essentialism

A model is sometimes regarded as realistic if it contains references to the essential properties of a target, and unrealistic if it does not, or if it refers only to inessentials. This is not a straightforward criterion because the concept of essence is not well-understood and is contested. Whilst the essence of some labour market component is real, identifying it involves subjectivity and judgement.

Exaggeration

A model is sometimes regarded as unrealistic if it exaggerates, and realistic if it does not. Mäki exemplifies this via ‘the neoclassical fully informed, maximizing firm’ (189) that crops up in his discussion of Simon. The obvious snag here lies in deciding at what point a model becomes an exaggeration. This involves subjectivity and judgement.

Isolation

A model is sometimes regarded as unrealistic if it isolates (i.e., closes-off) some parts of reality, and realistic if it does not. I will have a lot more to say about this below.

Idealisation

A model is sometimes regarded as unrealistic if it is an idealisation, although it does not make much sense to say that it is realistic if it is not an idealisation, because it is not easy to know what the opposite of ‘idealisation’ is. I will have a lot more to say about this below.

Truth

A model is sometimes regarded as realistic if it is true, and unrealistic if not. I will have a lot more to say about this below, including the distinction between models containing truth, and models being true.

Sub-conclusion

After this process of elimination, we are in a position to offer a working definition of what it means to say a theory of a model is (un)realistic, a definition *that would be acceptable to orthodox labour economists if they were aware of it*.

Models are non-trivially unrealistic when they are not about³⁰ some aspect(s) of real labour markets; are about inessentials; or exaggerate, idealise or isolate these aspects. Models are non-trivially realistic (and true) when they are about some aspect(s) of real labour markets; are about essentials; and do not exaggerate, idealise or isolate these aspects.

The criteria of aboutness or reference, essentialism and exaggeration are fairly straightforward (at least provided we stay away from deep philosophical questions about essences) and I will say nothing more about them – until part five. I will deal with truth extensively below, and hence have dropped it from the definition. There is, however, a lot more to say about isolation, idealisation – and abstraction even though it is not included in this working definition.

A Closer Look at Idealisation, Isolation and Abstraction

Idealisation, isolation, and abstraction are often used ambiguously and inconsistently, and are often confused and conflated with each other, and with other ‘close relatives’ such as simplification, omission and partialisation. The following is a good example:

Abstraction, then, concerns the selection of parameters and the isolation of systems. In some sense it is a kind of idealisation too, (in the more abstract sense of “counterfactual deformation”) because we do know that there is no real system isolated from the rest of the world....This is one of the main reasons for idealising: to simplify our model in order to render it Computable. (Donato Rodriguez & Zamora Bonilla 2009: 111) ³¹

Concealed in this confusion is a problem. It can be illustrated via the following question: *If idealisation is synonymous with isolation, and isolation is synonymous with abstraction, then why do we need three different terms?*³² If they are synonymous, confusion would be reduced by selecting one term and sticking consistently to it. If they are not synonymous, confusion would be reduced by making their differences clear. I argue, below, that they are not synonymous.

³⁰ The term ‘not about’ includes ‘does not refer to’.

³¹ See also Morgan (2010: 157) Morgan & Knuuttitla (2010: 5–6, 19 passim); Elliott-Graves & Weisberg (2014: 177); and Donato Rodriguez & Zamora Bonilla (2009: 111) and Hamminga & De Marchi’s (1994) collection on idealisation.

³² The question could be extended to simplification, omission and partialisation, whereupon the problem would become worse.

A Closer Look at Idealisation

Orthodox labour economists only occasionally use the term ‘idealisation’, preferring terms like ‘simplification’ or ‘abstraction’. Laing (2011: 3) cites the *Oxford English Dictionary* to define a model as: ‘A simplified or idealised description or conception of a particular system, situation or process’. In this way ‘idealised’ and ‘simplified’ become synonymous. Orthodox labour economists do, however, practice ‘idealisation’.

Mäki’s explanation of what the process of idealisation involves helps us to avoid confusing or conflating idealisation with its ‘close relatives’. When discussing ‘commonsensibles’ (e.g., firms, households, people) he notes how they are ‘theoretically modified’, and ‘rearranged’.

Rearrangement amounts to revising the commonsense understanding and replacing it by a theoretical picture of the causal structure of the world. A commonsense picture is replaced with a scientific picture that economists hope will get the causal and other dependencies right. (Mäki 2009a: 88)

Mäki is describing something that will be familiar to all economists: how a commonsense understanding or picture of the world is ‘theoretically modified’, ‘rearranged’, ‘replaced’ and ‘revised’, via processes of ‘selecting’, ‘isolating’, ‘idealizing’, ‘simplifying’, ‘aggregating’ and ‘abstracting’, all of which leads to a theoretical or scientific understanding or picture of the world, complete with an account of its causal structure. His use of multiple terms is probably deliberate, and done in order to ‘get the message across’ as it were, but to reduce ambiguity I select the term ‘*re-conceptualise*’ and use it generically.³³ *To idealise, then, is to take a commonsense interpretation of some phenomenon and re-conceptualise it.*

Now, almost by definition, all theorisation (and modelling is a form of theorisation) involves some form of re-conceptualisation and, therefore, idealisation. When agents engage with labour markets, they interpret them. For example, when confronted by the real wage rates, agents might interpret them as relatively (un)fair or (un)just. When economists interpret these agents’ interpretations they re-conceptualise them – this is sometimes referred to as the ‘double hermeneutic’. Consider two cases where a commonsense interpretation or understanding of a labour market activity is re-conceptualised or idealised.

- A. Orthodox labour economists might re-conceptualise the decision to leave education and enter the labour market as a conscious, and rational, decision to invest in human capital in order to increase future income.
- B. No-orthodox labour economists might re-conceptualise the ‘decision’ to leave education and enter the labour market as a mix of conscious decision making and non-conscious habit, both set against a background of the structures of class, gender and race that enable and constrain agents’ decisions.

In case A, idealisation is done with the fundamental objective of orthodox economics in mind, namely, to deduce predictions and ~~explanations~~, an objective met exclusively by the use of mathematics. The outcome is an unrealistic and false idealisation – and everyone knows this. In case B, idealisation is not carried out with this objective in mind. The outcome is not an unrealistic and false idealisation, but one that has a good chance of being realistic and true. If

³³ It might be that sometimes, the ‘re’ is misplaced, such as when an economist conceptualises something that is not already conceptualised. It is just too complicated to continually differentiate so I stick with ‘re-conceptualise’.

the process of idealisation does not have to result in unrealistic and false distortions, then idealisation *per se* is not a problem. The problem is idealisation that results in unrealistic and false idealisation.

Sub-conclusion

The following is a working definition of idealisation:

To idealise is to re-conceptualise. Idealisation does not have to involve re-conceptualisation in a mathematical form but in contemporary orthodox economics this is always the case. Where idealisation is carried out in order to deduce predictions and explanations using mathematics, the outcome is unrealistic and false idealisations.

Notice that on this definition, isolation is not confused or conflated with any of its ‘close relatives’.

A Closer Look at Isolation

Mäki has championed the concept of isolation in the philosophy of economics, and this section draws heavily upon his work.

The method of isolation is a ubiquitous method used in all scientific disciplines and, indeed, in all human thought. Every concept, model and theory is based on an isolation of a slice of the things and properties in the world to the exclusion of the rest of what there is... In a *theoretical isolation*, a limited set of items is *assumed* to be isolated from the involvement or influence of the rest of the world, in analogy to experimental isolation. (Mäki: 2004: 321)

Isolations can be brought about simply by *omitting* items without mentioning them...Alternatively, explicitly stated idealizing assumptions (many of them at least potentially of the form $p(x) = 0$) may be used, thereby neutralizing the influence of item x . The *ceteris paribus* clause is a special case of such assumptions. (Mäki 2004: 322)

All...isolations involve unrealisticness in excluding something from the theoretical picture. (Mäki: 2004: 322)

In these (and other) comments Mäki seems to treat isolation as synonymous with simplification, exclusion, omission and abstraction. The comment ‘isolations can be brought about simply by ...explicitly stated idealizing assumptions’ seems to conflate the processes of isolating and idealizing. If idealizing requires what we might refer to as ‘idealizing assumptions’, then surely isolating requires ‘isolating assumptions’. Now as it happens, I think Mäki does treat isolation and idealisation as different processes, even if his phraseology sometimes suggests otherwise. Let me explain.

For Mäki, isolating means more like separating, segregating, detaching, shielding, neutralizing or closing-off - but *for a very specific reason*. I fasten on three terms which seem to be the most appropriate: ‘*shielding*’, ‘*neutralizing*’, and ‘*closing off*’. Isolation involves exclusion, but so too does simplification and partialisation and presumably, given the way Mäki promotes isolation, he also means more than simplification and partialisation. To isolate causal mechanism X is to *shield*, or *close-off* causal mechanism X from the influence of other causal mechanisms such as P , Q ... R or to *neutralize* their effects. These other causal mechanisms are isolated by treating them, effectively, as non-existent, or as having no systematic influence on X , in order to focus attention solely upon the way X would operate in the absence of the

influence of these other causal mechanisms. The process of isolating then is a process of *shielding, or closing off some causal mechanism of interest, or neutralizing the effects of other causal mechanisms*. Isolation is, of course, a purely conceptual process – i.e., a real causal mechanism cannot be isolated.³⁴ Isolation is different to idealizing which we saw above is a process of re-conceptualizing.

What are we to make of Mäki's comment (above) that: 'explicitly stated idealizing assumptions (many of them at least potentially of the form $p(x) = 0$) may be used, thereby neutralizing the influence of item x . The *ceteris paribus* clause is a special case of such assumptions'. To my mind, these assumptions ought not to be confused with idealisations as re-conceptualisations. Once the decision to enter university is re-conceptualised as a conscious, and rational, decision to invest in human capital, then we have constructed an idealisation of the decision. If, subsequently, we add an assumption such as $p(x) = 0$, or a *ceteris paribus* clause, we are not altering this idealisation, we are not developing it further. *We are isolating this already idealised element*. In this way, we can see how idealisation is necessary for isolation, without conflating or confusing the two terms.

Sub-conclusion

The following is my working definition of isolation:

The process of isolation involves selecting a major causal factor and shielding it from, closing it off from, or neutralizing the influence of, other causal factors that could conceivably exert an influence on the selected causal factor, in order to focus attention solely upon the way the selected causal factor would operate in the absence of the influence of these other causal factors.

Notice that on this definition, isolation is not confused or conflated with any of its 'close relatives'.

Why is Unrealistic and False Idealisation, and Isolation, Necessary?

Why is it necessary to isolate the causal mechanism under investigation? Phrases like 'the method of isolation...excludes and includes various items in social reality in the endeavour to comprehend economic phenomena' (Mäki: 2004: 319) are insufficiently accurate. And we can now do better than this. Isolation is not undertaken *in order to* simplify, partialize, omit or abstract, but to enable orthodox economists to deduce predictions and ~~explanations~~ using mathematics.³⁵ Consider a very simple wage equation (Rogerson et al 2005: 969)

$$w = w_R + \theta (y - \pi_R - w_R) \quad (12)$$

w denotes the wage rate; w_R denotes the worker's reservation wage; θ denotes bargaining power; y denotes the flow of output; and π_R denotes the firms profit level.

All labour economists (orthodox or otherwise) know that the wage rate is influenced by many causal factors that are excluded from this model. They know, for example, that because of the influence of these causal factors, increases in w_R , and θ , and decreases in y and π_R will *sometimes* cause an increase in the wage rate, *sometimes* a decrease in the wage rate, and

³⁴ This is, of course, possible in some experimental situations, typically, in some natural science disciplines.

³⁵ This is most certainly not Mäki's argument.

sometimes no change at all. This indeterminacy frustrates logical deduction, thereby, making it necessary to isolate the relationship between w , w_R , θ , y and π_R . In addition to this, other components of the model are idealised. Bargaining power, for example, is re-conceptualised as something that workers possess, are aware of, are able to use and is quantified – i.e., as θ . Once isolated and idealised, the association between w and w_R , θ , y and π_R can be expressed as an event regularity.

Notice, however, that equation (12) has the same form as equations (4) to (11) in part one. We can style it as ‘whenever w_R , θ , y and π_R ’. Notice also that this is the same form as ‘whenever event or state of affairs $x_1, x_2, x_3 \dots x_n$, then event or state of affairs y ’ which denotes a closed system. *Idealisation and isolation are used, therefore, to close the system.*

Idealisations are strategic falsehoods. They serve some higher purpose. This purpose is that of theoretically isolating some important dependency relation or causal factor or mechanism from the involvement and influence of the rest of the universe. (Mäki 2009:78)

Whilst Mäki would, almost certainly disagree, the reason for ‘isolating some important dependency relation or causal factor or mechanism from the involvement and influence of the rest of the universe’, is to enable the deduction of predictions and ~~explanations~~, exclusively via mathematics.

A Closer Look at Abstraction

Orthodox labour economists routinely claim to be practicing abstraction, but they do not use the terms ‘abstract’, and ‘abstraction’ with due care. They never define or elaborate upon what they mean by abstraction, and usually conflate it with terms like ‘simplification’, ‘idealisation’ or ‘isolation’. What they appear to mean by the term ‘abstraction’ is ‘leaving things out’. Smith (2003: 2), for example writes of the: ‘need to abstract the crucial elements of the behaviour of economic agents from the complexity....as a means of simplifying the complex web of interactions which occupies this aspect of human action’. In a more advanced article, Mattesini & Rossi (2009) ‘abstract...from the issue of strategic interaction between unions and central banks’, which, essentially, means they leave out this interaction. The real problem comes when we combine ambiguous terms like ‘simplification’, ‘partialisation’, ‘silent omission’, ‘isolation’, ‘idealisation’ and ‘abstraction’, with the ambiguously used ‘unrealistic’. Thus some might claim that all models that simplify, omit, isolate and idealise are unrealistic; equate simplification, omission, isolation and idealisation with abstraction, and conclude, therefore, that all models that abstract are unrealistic. We have seen this kind of problem before – i.e., with idealisation. If abstracting is synonymous with simplifying, and simplifying is synonymous with omitting, and omitting is synonymous with isolating, and isolating is synonymous with idealizing (and so on), *then why do we need all these terms?*

Bone fide abstraction

To abstract is not only to exclude or omit (and thereby simplify) that which is not essential to the analysis at the level of analysis being used, but to leave it out in a way that (a) does not fracture the link between concept and reality; (b) permits left-out concepts to be introduced at later analytical stages – because abstracting does not mean forgetting; and (c) requires that the introduction of a concept at later stages does not violate arguments or conclusions made at earlier stages. There is, of course, no gainsaying the difficulty of doing any of this.

Because labour markets are complex phenomena, consisting of many components, they cannot be theorised or modelled ‘in one go’ as it were – and here I have no disagreement with orthodox labour economists. This means we have to theorise or model labour markets, ‘a bit at a time’ - or more accurately, *in successive analytical stages*. Thus, we may build a model which initially abstracts from component X in stage one, only to introduce it at a later stage, whereupon our model can be said to be less abstract or more concrete. It is important to remember that ‘concrete’ is an epistemic term, meaning something like ‘reality as it is thought or conceptualised’. The process of abstraction involves, therefore, a shift *from the conceptually abstract to the conceptually concrete, not from the conceptually abstract to the real concrete* – whatever such a sentence might mean. The process of abstraction is inextricably tied to theorizing and modeling labour markets in analytical stages. Let us see how the process of abstraction might work.

Suppose we decide to construct a model of labour markets in the knowledge that both the social class *and* gender of labour market agents are important influences on what labour markets are and how they work. Suppose, further, that we decide to abstract from social class in order to concentrate on gender *in the first analytical stage*. If what we then write about gender is unrealistic or false, then we are *not* engaging in a process of *bone fide* abstraction – but a process of fictionalisation masquerading as abstraction.

- If we assume that discrimination occurs because employers have a taste for discrimination, whilst believing this to be non-trivially unrealistic and false then we are *not* engaging in a process of *bone fide* abstraction.
- If we claim that discrimination occurs, in part, because women face the ‘double burden’ of paid and unpaid work, whilst believing this to be non-trivially realistic and true then we are (or at least might be) engaging in a process of *bone fide* abstraction.

It is vital to understand two things. First, even at this analytical stage, where many things are abstracted from, what is *not* abstracted from (i.e., what is included) is understood to be true and can be represented in a non-trivially realistic way. Even at this stage, then, a model of labour markets can be abstract *and* non-trivially realistic *and* true. Second, as we will see below, what is not abstracted from will have been re-conceptualised, although it is important to stress that this does not necessarily mean it will be unrealistic and false.

Second, abstracting does not mean forgetting, so at some later analytical stage it may be necessary to bring social class into the model. Moreover, when class is introduced, it must be done without violating any earlier claims or conclusions that were made or drawn when class was abstracted from. In other words, we might abstract from class at stage one, then include class alongside gender at stage two – and perhaps then include other characteristics such as race or sexual orientation at later stages, and so on. If done correctly, the model can move, in stages, from being abstract, to being (more) concrete.

It is misleading to equate abstraction with simplification, partialisation, silent omission, isolation and idealisation, and the latter terms with unrealisticness. If abstraction is carried out correctly then a statement does not start off being non-trivially *unrealistic*, only to become non-trivially *realistic* after some threshold on the abstract-concrete continuum is crossed. The statement was non-trivially realistic at every stage, including the earliest stage. If a statement is non-trivially realistic, then it is non-trivially realistic irrespective of the level of abstraction.

Nevertheless, a reduction in the level of abstraction (or increase in the level of concreteness) does make a difference to the *inclusiveness, richness or thickness* of the description. Consider the following non-trivially realistic statements.

- ‘Employers, tending to have more power, are able to use their power when bargaining over wage rates’.
- ‘Employers, tending to have more social, political, cultural, ideological and economic power, are able to use their power when bargaining over wage rates’.
- ‘Employers, tending to have more social, political, cultural, ideological and economic power, are able to use their power when bargaining over wage rates to keep workers’ wage demands to the minimum’.
- ‘Employers, tending to have more social, political, cultural, ideological and economic power, are able to use their power when bargaining over wage rates to keep workers’ wage demands to the minimum, especially in the absence of trade unions’.
- ‘Employers, tending to have more social, political, cultural, ideological and economic power, are able to use their power, not only directly when bargaining with trade unions over wage rates to keep workers’ wage demands to the minimum, but also to indirectly set the bargaining agenda.’

All these statements are non-trivially realistic. As the level of abstraction is reduced, however, the statements become descriptively more inclusive, richer or thicker.³⁶

4. Representation and Resemblance

When philosophers of economics say models should resemble their target, it seems to me that they are trying to say that models should, in some sense, *stand for, express, reflect, capture, denote, grasp, correspond to, be analogous to, or be similar to* (some minimal parts of) their target. For brevity I will single-out the term ‘similar’ as being roughly synonymous with resemble, largely because Mäki uses this term.

There is no requirement that a model that resembles, or is similar to, its target is descriptively complete, perhaps in the way a sharp photograph of a person’s face might look like the real person’s face. A caricature sketch of a person’s face often resembles the real person’s face; and the map of the London Underground resembles the real London Underground rail system. Metaphorically speaking, a model resembles its target if we ‘look at’ the target, then we ‘look at’ the model, and we ‘see’ something in the model that resembles something in the target, even if what we see is highly abstract, or idealised.

Mäki is right to note that ‘most contemporary philosophers...treat models as representations’ (Mäki 2011: 55).

I take models as representations to have two aspects; the representative aspect and the resemblance aspect. Models are *representative* of some target system: they are surrogate systems that stand for their targets and are examined in place of their targets. *Resemblance* is a further relationship between the surrogate system and the target system dealing with how adequately the model functions as a representative. (Mäki 2011: 55)

³⁶ I want to thank Andy Brown and Jamie Morgan for their suggestion on these matters.

It is relatively easy to construct tractable and convenient substitute systems, models as representatives, and to examine them so as to generate definite solutions, but it is somewhat harder to do this whilst meeting the constraint of resemblance (Mäki 2005: 305).

Representation does not require that all parts of the model resemble the target in all or just any arbitrary respects, or that the issue of resemblance legitimately arises in regard to all parts. The relevant model parts and the relevant respects and degrees of resemblance must be delimited. (Mäki 2011: 57)

Economists build (or should build) theoretical models as representatives of real systems, as surrogate systems, the properties of which are *directly* examined in order to *indirectly* acquire information about real systems....However, in order for such indirect epistemic access to the real world to be possible and successful, model worlds must resemble the real world in some required ways. (Mäki 2009a: 77)

Resemblance should be ‘genuine’ - as opposed to some kind of non-genuine or spurious resemblance. Henceforth, when I refer to ‘resemblance, I mean *genuine* resemblance – unless stated otherwise. Let us reflect upon what genuine resemblance might mean.

Resemblance is not *mere* resemblance or *mere* similarity. A model that merely resembled labour markets completely, and precisely, could be no more than a descriptively complete, everything-but-the-kitchen- sink model.

Resemblance is not arbitrary. A labour market is a very complex set of social phenomena consisting of thousands of parts, all of which could, conceivably, be included in the model. Decisions have to be made about which of these parts to include and exclude. These are decisions about simplification, omission and abstraction. Operating alongside these decisions are decisions about how to isolate and idealise. All such decisions should not be arbitrary, but be informed by ontological constraints and pragmatic considerations – of which more below.

Resemblance is a matter of degree. Some parts of a model of labour markets should resemble parts of real labour markets ‘closely’, as it were, whilst for other parts, the resemblance may be more ‘distant’. Even a distant resemblance must still be a resemblance of some degree – otherwise it would not make sense to refer to ‘resemblance’ at all. To genuinely represent labour markets, the model must have the appropriate degree of resemblance. What constitutes ‘appropriate’ is a matter of judgement by the modeller, and requires some kind of commentary.

Resemblance does not require that every part of the model resembles every part of the target. Resemblance does not require that all parts of the model, taken as a whole, resemble all parts of the target as a whole. Resemblance does not require that the model resembles all the other causal mechanisms that are, or might be, in operation. Resemblance requires only that the model resembles the key causal mechanism(s)³⁷ in operation. Without this important distinction, the demand for resemblance would degenerate into a demand for descriptively complete, everything-but-the-kitchen-sink model.

Sub-conclusion

Representation and resemblance both refer to the relation between the model and the real world but they refer to different aspects of that relation. A model of X: represents X; stands for X; is X’s representative; is a surrogate for X; can be used instead of X, or examined in place of

³⁷ There may be one, or a small number of key causal mechanism. For simplicity, I refer to the key mechanism in the singular.

X; and can deliver information about X. *In order for a model of X to do all this, it must resemble, or be similar to, X in some respects.*

5. Correspondence and Truth

Unlike the term ‘realistic’, the term ‘truth’ only crops up occasionally in orthodox labour economics. For example:

Once one concedes that the competitive model is not literally true, it becomes an empirical matter of just how good an approximation it is. The claim of this book is that, for many questions, the competitive model is not a tolerable approximation. (Maning 2005: 13)

It is difficult to distil any coherent sense of the way the term is used by orthodox economists, but there does seem to be a vague connection to (un)realisticness. This problem is exacerbated by the fact that there are several conceptions of truth, and I have no idea which of them would appeal most to orthodox economists.³⁸ But, the more sophisticated defence I am trying to make draws on the work of Mäki, who subscribes to some kind of correspondence theory of truth (Mäki 2001: 12818). I also accept this theory, so I am not attempting to ‘foist’ something upon orthodox labour economists that I myself would not subscribe to.

5.1. Correspondence Theories or Accounts

The basis of the correspondence theory of truth is straightforward: a statement is true if what it says to be the case, is the case. The statement ‘women are paid less than men for similar work’ is true if women actually are paid less than men for similar work. There is, in other words, a *correspondence* between the statement ‘women are paid less than men for similar work’ and women really being paid less than men for similar work.

There are three well known objections to correspondence theories. It is often argued that a statement (or a series of statements constituting a model) and some target entity (such as a labour market) cannot stand in a relation of correspondence to one another.

1. As Bhaskar (1978: 249) puts it: ‘There is no way in which we can look at the world and then at a sentence and ask if they fit. There is just the expression (of the world) in speech (or thought)’. A labour market and a model of a labour market, like chalk and cheese, cannot stand in a relation of correspondence to one another.
2. The relation between a labour market and a model of a labour market is always conceptually mediated, meaning that (ignoring the chalk and cheese problem) there can be no one-to-one-correspondence between them.
3. Because of conceptual mediation, the epistemic frameworks through which we interpret the world (our intellectual spectacles) constantly evolve. The same object can, therefore, be defined differently at different times. If later definitions turn out to be at-

³⁸ Besides correspondence theories, the other approaches to ‘truth’ are: coherence theories, consensus theories, idealized consensus theories, pragmatic theories, deflationary theories, and various relativist conceptions such as those contained in perspectival or standpoint theories of knowledge

odds with earlier definitions, then these earlier definitions could not have corresponded to their target.

Notice, however, that these objections are only plausible if the term ‘correspond’ is interpreted, quite literally, to mean something like ‘is identical to’ or some such – this is reminiscent of the trivialisation of (un)realisticness. Correspondence theorists *do not*, however, interpret the term ‘correspond’ literally. ‘Everyone understands that if the inspector says “your inventory did not correspond to what was really in the warehouse”, she is not complaining that a sheet of paper did not resemble a stack of tinned fruit’ (Collier 1994: 240). Once understood metaphorically, correspondence loses the literal sense.

Key to Mäki’s argument are the concepts of ‘truth maker’ and ‘truth bearer’. A statement is accepted as a candidate for being true if what the *truth bearer* says is the case about the *truth maker*, really is the case. A ‘truth bearer’ is a statement (in the model) and a ‘truth maker’ is the part of reality to which the truth bearer applies.

5.2. Truth ‘of’ versus Truth ‘in’ Models

Mäki alerts us to a subtle distinction, often overlooked, between saying a model *is true*, and saying a model *has truth* or *contains truth* – i.e., between the truth *of* a model and truth *in* a model.

The final issue remains whether we might now be entitled to talk about truth *of* models or more modestly just about truth *in* models. The latter is clearly less problematic. We have located a component in the Isolated State, the Thünen mechanism, and it is right here that we may have a truth *in* Thünen’s model. Now there is a way of seeing things that would permit us to infer that we may also have truth *of* Thünen’s model. Having the above truth *in* Thünen’s model means having the truth *of* its component. If component m_n —the Thünen mechanism—has been isolated (under the guidance of the pragmatics of this representation) as *the only* relevant truth bearer in model M , then this means that the truth of m_n is both truth *in* M and truth *of* M . So we may say M is true simply because none of its other parts are supposed to be relevant candidates for truth.... So saying that m_n is true and saying that M is true amount to the same thing. I am not claiming that one is compelled to talk in this way about truth in models and truth of models, just that one might not be compelled not to. (Mäki 2011: 62)

I agree that we are ‘not compelled to talk in this way about truth in models and truth of models’, but the idea that we ‘might not be compelled not to’ do so is appealing. The inference Mäki alludes to is plausible because ‘saying that m_n is true and saying that M is true amount to the same thing’. A model *contains* truth if what the truth bearer says about the truth maker is the case. A model *is* true if what the truth bearer says about the truth maker is the case. Put another way, a model *is* true in virtue of it *containing* truth. A model cannot be said to *be* true if it *contains* no truth. Notice, however, that this inference relies upon the model actually containing truth – i.e., what the truth bearer says about the truth maker must be the case..

Sub-conclusion

We can now say the following:

A model has, or contains, truth if what the truth bearer says is the case about the truth maker, is the case. A model is true in virtue of it having, or containing, truth.

6. Sophisticated Orthodox Defence: Unrealistic Models can be True³⁹

Armed with more sophisticated understandings of resemblance and truth, we can now develop a more sophisticated defence of unrealistic and false models, using the insights of Mäki. In the introduction I sketched this as follows:

4. All models are unrealistic, but they may *be* true if they *contain* truth – i.e., if what the truth maker says about the truth maker is the case.⁴⁰

Mäki's overall argument, in a nutshell, is this:

I have actually used formulations that invoke a paradox, such as 'the truth of false idealisations' (2011), and I have often said that 'there is more truth in economic models than easily meets the eye'. The point is that models and idealizing assumptions appear to be (mostly, always or necessarily) false, but when appropriately understood, they may be given the chance of being true. In particular, the features of models and their assumptions usually considered as sufficient reasons for their falsehood are not sufficient. Models can be true in spite of such apparent falsehoods or even by virtue of them. (2013: 269-70)

Models consist of several components, and they play different roles. Some of these components are privileged, believed to be true, are the model's truth bearers, and are idealised and isolated. Other components are *non*-privileged, not believed to be true, believed to be false, are the model's non-truth bearing components, and are not isolated and idealised – e.g., axioms, assumptions, presumptions, idealisations or re-conceptualisations, and a commentary.

The privileged, and true, components of a model represent only the *key causal mechanism*⁴¹ thought to be in operation in the target. Models represent by resembling. But resemblance does not require that every part of the model resembles every part of the target, nor that all parts of the model, taken as a whole, resemble all parts of the target as a whole, nor that the model resembles all the other causal mechanisms that could influence the key causal mechanism. Resemblance requires only that the model resembles the real key causal mechanism in operation. The model's key causal mechanism then are privileged, believed to be true of the real key causal mechanism, idealised and isolated, and is the model's truth bearer.

Let us first consider the privileged components. Once the real key causal mechanism have been identified, its representative, i.e., the model key causal mechanism, must be idealised, and then isolated by shielding, neutralizing or closing off the influence of the representatives of other real causal mechanisms that could influence it – remember, all this is taking place in the conceptual realm.

³⁹ A note on 'partial' truth. According to Mäki: 'If we take partial truth to reflect the respects of resemblance or similarity between the model and its target, approximate truth can be viewed as reflecting degrees of resemblance, once the relevant respects have been fixed (2011: 62). See also Mäki 2001: 9937). I cannot pursue this matter here.

⁴⁰ Note that there is no reference to the term '(un)realisticness'. This reflects Mäki's belief in 'the unavoidability of unrealisticness' (Mäki 1994: 240). I would, of course, interpret this as a case of trivialisation of the term (un)realisticness. My point, however, is not to criticize Mäki, but to use his work to mount a more sophisticated defence.

⁴¹ There may be one or several key causal mechanism. I will use whichever term is most appropriate.

But a model cannot ‘isolate itself’ as it were, and has to be performed by the modeler, introducing notions of purpose, pragmatic concerns, audience and commentary. Mäki sums this up neatly:

Agent *A* uses object *M* (the model) as a representative of target system *R* for purpose *P*, addressing audience *E*, prompting genuine issues of resemblance between *M* and *R* to arise; and applies commentary *C* to identify the above elements and to coordinate their relationships. (Mäki 2011: 55)

Idealisation and isolation are carried out ‘under the guidance of’ (Mäki 2011: 62) two constraints (i) pragmatic constraints, including purpose and audience; and (ii) ontological constraints. The commentary helps manage all this. Whilst reality is the ultimate arbiter of what the real key causal mechanism are, reality cannot ‘tell us’ this: we have to figure it out. And in figuring it out, economists bring to bear their pragmatic constraints, including purpose and audience.

If the model key causal mechanism are believed to be true of the real key causal mechanism, that is, if what the truth bearer says is the case of the truth maker, is the case, then the model is said to *contain* truth. And a model that contains truth is, *in virtue of this, a true model*.

Now let us consider the *non*-privileged, believed to be false, non-truth bearing, not isolated and idealised components, – e.g., axioms, assumptions, presumptions, idealisations or re-conceptualisations, and a commentary. They are not idle or inert. Their unrealisticness and falsity are not mistakes or accidents. They play an important, yet different role to their privileged counterparts. They make the processes of idealisation and isolation possible, as well as making it possible for the privileged components, the truth bearers to be true.

Sub-conclusion

The sophisticated orthodox defence of unrealistic and false models can be summarised as follows:

*All models are unrealistic, but they may be true when they resemble, not all the potential causal mechanisms in operation, but the key causal mechanism; and resemble them in such a way that what the truth bearer (i.e., the idealised and isolated causal mechanism) says is the case about the truth maker (i.e., the real causal mechanism), is the case, even if the model is replete with unrealistic and false components.*⁴²

7. A Critique of the Sophisticated Orthodox Defence

First, let us deal with the opening sentence: *All models are unrealistic*. This works only when the term ‘unrealistic’ is used in a trivial sense – i.e., ‘all models simplify’, or ‘all models exclude the moons of Venus’. But we now have a more sophisticated, non-trivial understanding of (un)realisticness:

⁴² There are lessons here for those who advocate the technique of successive approximation. All models will always be unrealistic and false, irrespective of how many assumptions are successively relaxed, or initially omitted components are successively added.

Models are non-trivially unrealistic when they are not about some aspect(s) of real labour markets, are about inessentials, exaggerate, idealise or isolate these aspects.

Let us take, as an example, a model constructed by Bilkic et al. (2012: 708), appearing in *Labour Economics*, and ask: is it non-trivially (un)realistic?⁴³

Decision problem

The education decision is a timing problem concerning the entry into working life. We need to compare the net value of education V (for any educational achievement) with the option value F of further education and a better income profile. Once the net value of education and the option value of waiting have been determined, the question of whether or not to wait for another period will be answered by the solution to:

$$\max_T g \{V(T), F(T)\}.$$

The student will decide in favour of another year of school if the option value of waiting is higher than the expected net value of the earning stream. Solving this continuous decision problem determines the time of entry into the labour market.

Solving for expected time of leaving school

The expected time of entering the labour market can be obtained in three steps. First, we determine the threshold $Y^*(T)$, which represents the entry-level wage required to make one's education profitable. Beyond the threshold the value of the earning stream becomes higher than the option value of waiting and the student enters the labour market. Second, the student simultaneously observes the development of the relevant entry-level wage $Y^*(T)$ in the market, compares the threshold for their academic attainment with the corresponding current entry-level wage, and verifies if the threshold has already been reached. Third, if they decide to stay at school they will predict the expected duration of schooling.

Entry threshold

In order to determine the income value that triggers the switch we need to consider the standard conditions of a stochastic dynamic programming problem. In addition to the H–J–B equation for the option value F and applying Ito's Lemma to dF we have to use the well-known boundary conditions, namely Eq. (8), the value matching condition (9), and the smooth pasting condition (10)

$$F(0) = 0 \tag{8}$$

$$F(Y^*) = V^{gross}(Y^*) - I(T) \quad \text{value matching condition} \tag{9}$$

$$dF(Y^*) = d V^{gross}(Y^*) - I(T) \quad \text{smooth pasting condition} \tag{10}$$

$$\frac{dF}{dY} = \frac{d V^{gross}}{dY}(Y^*)$$

⁴³ I chose this model because it is easy to locate and reproduce an appropriate excerpt. In terms of orthodox labour economics, it is a good example of the kind of paper that is now widespread and published in the leading journal *Labour Economics*. Equation numbers refer to Bilkic et al.'s paper.

to solve for the threshold income Y^* . Once this threshold is reached the student decides to enter the labour market.

At first glance, Bilkic et al.'s model appears to be about leaving the education system and entering the labour market. But this is only because it includes phrases like 'the student will decide in favour of another year of school'. But we should not get too carried away by the mere inclusion of terms that appear to refer to something. Would we say that a '*fairy theory of job-matching*' is about real job-matching because it included phrases like 'job-seekers are matched with job-providers'?, clearly not. Bilkic et al.'s model is not about anything real. Bilkic et al.'s model also exaggerates, albeit in a kind of negative way. The decision problem is exaggerated by re-conceptualizing it as being triggered merely by the existence of an income value.

Bilkic et al. re-conceptualise the decision to leave education and enter into working life as a conscious, rational maximising decision based upon the intertemporal comparison of a small number of quantities. At first glance this looks like it is about essentials. After all, what could be more fundamental to this decision than its real causes? Unfortunately, the real causes are not analysed. In order to isolate the idealised decision process, Bilkic et al. silently omit the fact (and it probably is a fact) that the 'decision' (if it be⁴⁴) is caused by the agent engaging in a mixture of conscious decision making, and non-conscious habit, both set against a background of the social structures of *inter alia* class, gender and race, and the norms and stereotypes generated within these structures, that enable and constrain agents' decisions and habits.

It seems reasonable, then, to conclude that Bilkic et al.'s model is unrealistic in a non-trivial sense of the term. It is a substitute system.

Substitute systems [as opposed to surrogate systems] are examined only for their own sake, with no further aim or wish of connecting with real world systems: the study of substitute systems substitutes for any interest in real systems. (Mäki 2009a: 77)

To be blunt, Bilkic et al.'s model tells us absolutely nothing about the way real people make decisions *apropos* leaving education and joining the labour market. It is an exercise in mathematical modelling entirely for its own sake.⁴⁵

Second, modelling is not driven by ontological, but pragmatic constraints. As we noted above, models are built for certain purposes, by economists with anticipated and actualised audiences in mind, especially other orthodox economists. Orthodox labour economists do not start with ontology: they start with epistemology. They do not start with the material to be worked upon: they start with the toolbox. They do not start with ontological questions like 'what are real labour markets like?' and then proceed to epistemological questions like 'how, therefore, should we analyze them?' They start from the belief that the fundamental objective of their 'science' is the deduction of predictions and ~~explanations~~, exclusively by the use of mathematics. They know that this is how their orthodox colleagues proceed, and if they are to be taken seriously by their colleagues, they must also proceed like this.

Every aspect of real labour markets that will eventually be represented in a mathematical model must be re-conceptualised or *idealised* in a mathematical form; a form consistent with this mathematical form; or (silently) omitted. Qualitative aspects of labour markets must be re-

⁴⁴ Hence the use of scare quotes on the term 'decision'. Non-conscious 'decisions' are ill-described as decisions.

⁴⁵ In comparing their model to an alternative, Bilkic et al. (708, emphasis added) write, '*In reality*, the decision to complete one's education with a degree....' they seem oblivious of the fact that their own model has nothing to do with reality.

conceptualised as *variables* or (silently) omitted. The relations between these variables must be expressed in causal terms, with causality conceived of as event regularity. This requires the *isolation* of the model's key variables. Functions like $x = f(y)$, styled 'whenever event or state of affairs x then event or state of affairs y ' describe closed systems. Non-mathematical components are added to the model to facilitate re-conceptualisation or idealisation; to ensure mathematical tractability; and to isolate. The net results of all this are models replete with unrealistic and false components. Moreover, because labour markets are modelled as closed systems when they are almost certainly open systems, they fail to represent real labour markets and are, in an aetiological sense, unrealistic and false.

At this point the sophisticated defence of unrealistic and false models 'kicks in'. Models containing unrealistic and false components may, nevertheless, be true when they resemble (only) the key causal mechanism, and resemble them in such a way that what the truth bearer (i.e., the idealised and isolated causal mechanisms) says is the case about the truth maker (i.e., the real causal mechanisms) is the case.

Let us see how this works in the context of labour markets. Let us, along with many orthodox labour economists, identify the forces of labour supply and demand as the real key causal mechanism in operation in labour markets.⁴⁶ Once identified, the real forces of labour supply and demand are represented in the model in the idealised form of labour supply and demand functions. These representative functions are then isolated by shielding, or closing off, the influence of the representatives of other real causal mechanisms such as institutions. The model labour supply and demand functions are the truth bearer, and the real forces of labour supply and demand are the truth maker. The model labour supply and demand functions are idealised, and isolated but, nevertheless, believed to be true of the real forces of labour supply and demand. What the truth bearer says is the case of the truth maker, is believed to be the case. The model is believed to *contain* truth and, in virtue of this, the model *is* believed to be true.

But here comes the rub. What the truth bearer says is the case of the truth maker, is *not* the case. The model idealised and isolated labour supply and demand functions are not true of the real forces of labour supply and demand. The real forces of labour supply and demand do not manifest themselves as labour supply and demand functions, nor as the laws of labour supply and demand. Labour supply and demand functions, and the laws of labour supply and demand, are social constructions, idealised and isolated representations of the forces of labour supply and demand. The model cannot *contain* truth and, in virtue of this, the model *is* not true. The overall result is not only a model that is *not* true, but one that is also replete with unrealistic and false components.⁴⁷

Third, what if we reject both the idea that the fundamental objective of orthodox labour economics is to logically deduce predictions and ~~explanations~~, and the use of mathematics? In this case, it is unnecessary to represent parts of real labour markets in an idealised mathematical form; a form consistent with this mathematical form; or to (silently) omit them. It is not necessary to re-conceptualise qualitative aspects of labour markets as variables or (silently) omit them. Without functions or variables like $x = f(y)$ it is not necessary to isolate the x 's and the y 's by shielding, neutralizing, or closing off the influence of the representatives of other

⁴⁶ An alternative key causal mechanism might be matching technology. See Fleetwood (2016: 284-90) for a summary of the searching and matching approach as a potential competitor with the supply and demand approach for the title of *The core of orthodox labour market models*.

⁴⁷ The same argument could be deployed in the case of matching technology, represented by a matching function. The matching function is a social construction.

real causal mechanisms. An alternative conception to causality as event regularity, namely, causality as tendency can be introduced that does not require systemic closure. It is no longer necessary to add unrealistic and false, non-mathematical components to the model. The sophisticated defence of unrealistic and false models turns out to be a sophisticated defence only of *mathematical* models. It is unnecessary in the case of non-mathematical models.

8. Models as Inferential Devices

In the introduction, I presented the fifth defence of the use of unrealistic and false models thus:

5. The critique of unrealisticness and falsity misunderstands the purpose of models which is not to resemble reality, but to act as inferential devices.

Now, I cannot do justice to this defence here, but rather than simply ignore it, I prefer to offer some response, even if it has to be exceptionally brief. Whilst some philosophers of economics have attempted to clarify what it means to say that models should represent their targets, this cuts no ice with others such as Morgan (2012) and Morgan & Knuuttitla (2010). The latter locate the problem:

in the attempt to find such properties both in the representational vehicle (the model) and the real object (the target system) by virtue of which a representational relationship can be established between a model and its target object. (Morgan & Knuuttitla 2010: 28)

Because of the apparently insuperable difficulties of establishing a relationship of resemblance between models and their targets, they seek to re-orientate the problematic by ‘focus[ing] attention instead on the kind of work that models do in economics’ (ibid: 30), especially, a models ability to help us make inferences.

Modellers...build hypothetical model systems in the light of the anticipated results or of certain features of the phenomena they are supposed to exhibit. If a model succeeds in producing the expected results or in replicating some features of the phenomenon, it provides an interesting starting point for further conjectures and inferences. These further investigations might be theory related or world related. (ibid: 41-2)

My response is that we should not abandon the quest for models that represent and resemble, for three reasons. First, understanding models as inferential devices does not avoid the issue of representation or resemblance, nor similarity, realisticness, truth and so on, it merely suppresses them. Morgan & Knuuttitla note that ‘If a model succeeds in replicating some features of the phenomenon, it provides an interesting starting point for further conjectures and inferences’. Reference to a model that replicates some features of its target seems like a reference to a model that represents and/or resembles its target. What kind of starting point would be provided by a model that failed to replicate, represent and/or resemble any features of its target? Other inferentialists do similar things. For Rodriguez & Bonilla (2009: 115) ‘what allows the making of an inductive inference from the model to the real system is only the belief

that the model rightly includes aspects that, in the real world, produce the phenomenon our inferences are about’.

Second, in my opinion, inferentialists end up giving philosophical cover for the use of unrealistic and false models.

mathematical modellers...resolve “conceptual problems” by providing answers to such questions as: “Is it *possible* for there to be a set of social institutions in which people will reveal their true preferences for public goods, and for the approximate quantities of these goods people want to be provided?...[M]athematical models are used for learning about the structure and behaviour of possible economies which fulfil certain requirements or have certain characteristics, and they are answered by constructing models of the world in which those characteristics hold true, that is, in thought experiments. (Morgan & Knuuttila 2010: 42)

What they refer to as ‘possible economies’ are not economies of any kind, they are models. Moreover, even if they are understood as models of economies, they are not models of ‘possible economies’, but models of ‘impossible economies’. They are precisely the unrealistic and false models I have been alluding to throughout this chapter. Third, I will demonstrate, in section II that it is possible to build a model of labour markets that does resemble real labour markets. It is to this matter that we now turn our attention.

SECTION II.

In section I present the latest version of a non-mathematical model of labour markets that I have been developing over the last few years. Some of the ideas and terminology have changed, as have the various diagrams I have used, but the fundamental ideas have not. The model should be understood, and compared, to the orthodox supply and demand model and used in the same way – i.e., as a device for organising our thoughts.

My objective is entirely meta-theoretical. It is to explain how a realistic and true, non-mathematical, model of labour markets can be built without it being a descriptively complete, everything-but-the-kitchen-sink model, and provide a ‘sketch’ of such a model. Pursuing this objective means leaving out much empirical detail about the actual workings of labour markets.

The model is built upon two foundations. First, the theoretical and empirical knowledge referred to elsewhere as the ‘*socio-economics of labour markets*’ (SELM), stemming from the work of non-orthodox labour economists, and non-economists who theorise and conduct research on labour markets.⁴⁸ Second, it rejects the idea that the fundamental objective of ‘scientific’ orthodox economics is the derivation of predictions and ~~explanations~~, by logical deduction from premises, using mathematics to integrate the various components. It replaces this with the meta-theoretical perspective of critical realism (CR).⁴⁹ This perspective is now quite well established in non-orthodox economics circles (which does not mean it is without its

⁴⁸ See Fleetwood (2006) for examples of who is included in this group.

⁴⁹ For the origin of CR see Bhaskar (1978). In economics see Bigo (2006) Fullbrook (2009) Lawson (1997, 2003, 2009, 2012, 2013, 2004, 2015), Lewis (2000, 2003, 2004, 2005), Faulkner (2002), Faulkner & Runde (2004), Pratten (2004, 2007, 2014). In labour economics see Fleetwood (1999a&b, 2001, 2006, 2007, 2008a&b, 2011a, 2012, 2014a, b & c, 2016), Wilson (2007a, 2007b).

critics) so *I will elaborate only the terms and concepts absolutely necessary for the chapter's purposes. The meta-theoretical approach, in a nutshell, is as follows:*

- The 'scientific' method is replaced with a causal-explanatory method, where the goal is not to predict, but to explain. To explain is to provide an account of the factors (i.e., causal mechanisms) that causally condition agents' actions.
- Ontological and methodological individualism is replaced with an ontology where agents reproduce or transform socio-economic phenomena.⁵⁰
- Rational Economic Man (REM) is replaced with a conception of a human agent that is consciously deliberating and unconsciously acting upon habits.
- The regularity view of causation and the regularity view of law are replaced with a conception of causality as power or tendency.
- An epistemology based upon event regularities, and therefore closed systems, is replaced with one based on open systems.
- There is no *a priori* commitment to quantification, measurement, quantitative research techniques, mathematics or statistics.
- Integrating device is not mathematics, but the Morphogenetic-Morphostatic (M-M) approach.

I refer to the combination of the socio-economics of labour markets, and CR meta-theory, as the *SELM^{CR}* perspective, and the model as the *SELM^{CR}* model.

The metaphor of 'sketching' this *SELM^{CR}* model is used to manage expectations. In 1932, when Hicks eventually pulled together the existing components of orthodox economic theory to build the first supply and demand model of labour markets, he had a whole tradition to draw upon, and he was working entirely within this tradition. My situation is entirely different. Whilst I draw upon existing insights from SELM and CR this does not constitute a tradition. In a sense I am 'making the tradition' as I go. The best I can hope to do, therefore, is 'sketch' the rough outlines of what I think an alternative model of labour markets might eventually look like.

I start by replacing the terms 'institution' and 'structure' with 'socio-economic phenomena'. I then introduce the M-M approach, and use it to explain (a) how socio-economic phenomena make socio-economic action possible, and (b) what kind of thing labour markets are. This paves the way to build the *SELM^{CR}* model.

9. From 'Institutions' and 'Structures' to Socio-Economic Phenomena

In order to utter intelligible sentences, people engage with, or draw upon, the rules of grammar. In order to work in a healthy and safe environment, people draw upon health and safety regulations. This basic idea is often generalised and referred to as the 'agency and

⁵⁰ I did not mention this in part I, but it is well known that orthodox economics is committed to methodological and ontological individualism. What is less well known is that, because of this commitment, orthodox economics cannot, or at least should not, have any conception of institutions, rules, or any other kind of socio-economic phenomena, existing independently of agents and causally conditioning their actions. Whilst they repeatedly refer to institutions, often rules, these are no more than the outcome, or pattern, of agents action and are, therefore, entirely reducible to them. See Hodgson (2007).

structure' interaction, or we might say, an 'agency - institution' interaction. The terms 'structure' and 'institution' are commonly used as placeholders for a range of socio-economic phenomena like the rules and regulations just mentioned. A moment's reflection, however, shows that agents also draw upon:

agreements, codes, conventions, culture, cultural structures, customs, directives, guidelines, institutions, laws, mores, networks, norms, obligations, precedents, procedures, regulations, responsibilities, rituals, responsibilities, rules, routines, scripts, social structures, standards and templates.

Referring to all these different phenomena as 'institutions' or 'structures', glosses important differences between them. To prevent this, I first substitute these two placeholders with the generic term '*socio-economic phenomena*',⁵¹ and then attempt to group them in ways that respect their differences. There may well be disagreement over exactly which term belongs in which group, but the point of the exercise is to make a start. Allow me to present my classification in Table 1, and then explain it below.

Some socio-economic phenomena are relational – e.g., social structures and, perhaps, networks. A *social structure* is a latticework of internal relations between agents. Importantly, however, the relation itself causally conditions the actions of agents who enter into these relations. The moment an employer and employee enter into employment relations, their actions are causally conditioned by that relation.

Some socio-economic phenomena are engaged with *consciously* – e.g., agreements, codes, conventions, directives, guidelines, institutions, laws, precedents, procedures, regulations, rules, routines, scripts, standards and templates. Agents have to be conscious of them in order to follow them.⁵²

Most of the above socio-economic phenomena, engaged with consciously, are located in artefacts - i.e., written down in various texts (hard copy or e-form). This includes images, signs and discourses⁵³ located, for example, in magazines or films.

Some socio-economic phenomena are engaged with non-consciously – e.g., norms, mores and values.⁵⁴ *Values and mores* are similar to norms, but with an ethical dimension. To know what to do in a given situation extends to knowing what is morally acceptable (See van Staveren 2001, chapter 7).

Table 1. Classifying socio-economic phenomena

Socio-economic phenomena			
	<i>Habitual and/or automatic</i>	<i>Conscious or Non-conscious</i>	<i>Location</i>
<i>Social structures</i>	no	conscious	in relations

⁵¹ To be accurate I should use a term like 'social-economic-legal-historical-political-ethical-cultural phenomena'. For obvious reasons this would be a non-starter. In Fleetwood (2010), I referred to them as Institutions, Structures, Organisations and Mechanisms (ISOMS) but now think socio-economic phenomena is the best – of a bad bunch. See Jackson (2009) who tries to unpack the term 'culture'.

⁵² To avoid having to constantly refer to all these terms, I will select 'regulations' and use it as an exemplar.

⁵³ I select the term 'discourse' and use it as an exemplar.

⁵⁴ I select 'norms' and use it as an exemplar.

<i>Regulations</i>	no	conscious	in artefacts
<i>Norms</i>	yes	non-conscious	in the cognitive system
<i>Images, signs, discourses</i>	yes	non-conscious	in artefacts

Some socio-economic phenomena are engaged with non-consciously, habitually, and automatically. Norms may be habitual in the sense they are acquired by repetition, and when they causally condition action, they do so automatically. Norms are located in agents' cognitive systems. Discourses are internalised in the form of stereotypes which also causally condition action automatically.

Some regulations and norms may well have started off by being consciously drawn upon, and gradually 'slip into the back of the mind' as it were and end up being drawn upon unconsciously – although, if pushed, agents may be able to identify the rule or norm they are drawing upon. What matters, is that agents can, and very often do, draw upon regulations and norms without deliberation

I do not have a separate category for institutions. There are two reasons for this. First, because *institutions* are usually defined, in economics, as systems of established rules, regulations and norms that become (usually unconsciously) embodied or internalised within agents as habits, via a process of habituation (Hodgson 2002, 2004, 2006a&b, 2007). Second, because anything can be institutionalised, in the sense that it 'stands for' something – e.g., a piece of paper becomes an institution when it stands for money. Institutions are, then, already encapsulated in the other terms. Incidentally this does not invalidate the fundamental ideas of (Old) Institutionalism, it simply, if paradoxically, recognises that the term 'institution' may not be the best one.

It is worth mentioning habits because they are often mentioned alongside institutions and often confused. Habits are not socio-economic phenomena: they are agential, socio-cognitive phenomena. Following Hodgson (2003, 169) I define a habit as the tendency to repeat the same act in similar conditions. A habit should not be thought of as an observable behaviour, pattern, action or outcome, but as a *disposition, capacity, power or tendency*. Kleptomaniacs possess the habit of stealing, but this does not mean they steal all the time: sometimes they do and sometimes they do not, but the habit is always present as a tendency to steal. (See Camici 2006; Lawson 1997 and 2003; and Fleetwood 2008b.)

Not all socio-economic phenomena are *labour economic* phenomena. The regulations associated with organizing a cycling club, for example, are not *labour economic* phenomena, indeed, they might be referred to as *cycling* socio-economic phenomena. I try to use the term 'socio-economic phenomena', without the prefix 'labour market', but occasionally it is clearer to refer to 'labour market (oriented) socio-economic phenomena'.

To say that an agent's action is causally conditioned by (say) rule R, does not mean that her action is *not* also causally conditioned by other phenomena – e.g., other rule S, or perhaps norm N. It simply means that rule R, exerts a causal influence on her action. To say that an agent's action is causally conditioned by rule R does not mean that her actions are fully determined by rule R. The concept of human agency I operate with is one where agents have the ability to resist the causal influence of rule R. Thus her actions can range from completely complying with rule R, to completely ignoring it – although there may be consequences for doing this. To say that an agent's action is causally conditioned by rule R does not mean that it

only *constrains* an agent's action: rule R might also facilitate or *enable* an action. In this way, various kinds of determinism are avoided.

Let us conclude this section with examples of the different socio-economic phenomena that might be drawn upon, reproduced or transformed by labour market agents.

- a. A group of workers are observed regularly donning 'hard hats' when entering a workplace. This action might be causally conditioned by the Health & Safety (H&S) regulation stipulating the use of safety clothing.
- b. A group of workers are observed regularly taking twenty-minute rest-breaks without incurring negative sanctions from their line managers, despite their official rest-break being fifteen minutes. This action might causally condition the workplace norm, deeming it acceptable to take unofficially extended rest-breaks.
- c. A group of male line-managers are observed regularly favouring male workers over female workers vis-à-vis hiring, firing, training and promoting. This action might be causally conditioned by discourses that constantly portray women in household, family and care-giving settings. Once internalised, these discourses generate stereotypical attributes attached to the category 'women'. Male line-managers might develop stereotypical beliefs that women are 'domestically, rather than work-oriented' and, therefore, choose men for jobs, and subsequent training and promotion.
- d. A group of young people are observed regularly finding (only) low paid and insecure work. This action might be causally conditioned by the social structures of class.⁵⁵

10. The Morphostatic-Morphogenetic (M-M) Approach

In social theory, several different theories and approaches exist to explain the way people are constrained, and enabled, by socio-economic phenomena, although this is more commonly known as the 'agency-structure' approach – e.g., *structuration theory*, (some versions of) *social practice theory*, *convention theory*, *institutional theory* and the *approche sociétale*. These approaches are criticised by *actor network theorists*, and others.⁵⁶

There is, however, one approach that I believe is more sophisticated than the other 'agency and structure' type approaches, and can withstand the various critiques, namely, Archer's '*morphostatic-morphogenetic (M-M) approach*' (Archer 1995, 1998, 2003). The labour market model I develop here is based, fundamentally, in this M-M approach.

Archer's M-M approach is rooted in five crucial ideas, although I add one refinement (f) below:

- a. Agents and socio-economic phenomena (i.e., not just 'structures') are different kinds of things.
- b. Socio-economic phenomena are rooted in, but irreducible to, agents' actions. Emergence explains this.

⁵⁵ See footnote 51. Orthodox economists cannot, consistently, sustain this kind of ontology of socio-economic phenomena.

⁵⁶ See Lizardo (2010) for an overview, Martins & Dennis (2010) for the rejection, and Stones (2005) who draws links between Structuration and M-M.

- c. In order to undertake any form of action, agents must draw upon existing socio-economic phenomena. At any stage in the M-M cycle, some socio-economic phenomena always *pre-date* agents' interaction with them, and causally condition their action. Whilst socio-economic phenomena causally condition agents' actions, they do not *determine* them. The rules of grammar causally condition the sentence I am typing at the moment, but they do not determine this sentence.
- d. When agents draw upon socio-economic phenomena, there is an important temporal separation between past, present and future, so that at any (present) moment these socio-economic phenomena pre-date their actions. One of the most common mistakes in social science is to confuse the temporal sequence involving agents, the socio-economic phenomena they draw upon, and the resulting action/outcome. It is, for example, extremely common to find institutions conceived of simultaneously as phenomena that *causally influence* agents' actions, and as *patterns of agents' actions*, typically in the form of regularities. This cannot be correct. In order for a language speaker to utter a sentence, she has to draw upon rules of grammar. These rules *must*, logically, exist prior to the utterance and causally condition it. In the utterance, the rules of grammar are reproduced or transformed
- e. Agents then reproduce or transform these socio-economic phenomena.
- f. The reproduction or transformation of socio-economic phenomena can occur *consciously explicitly and non-tacitly, or unconsciously, implicitly and tacitly*.

This might sound a little complicated, but it is actually quite straightforward. Labour market agents enter a world replete with labour market (oriented) socio-economic phenomena - e.g., laws of private property. This particular cohort of agents did not produce these socio-economic phenomena, but in order to act they have no option but to draw upon them. By doing so, they reproduce them (hence *morphostasis*), or *transform* them (hence *morphogenesis*) so that these phenomena continue to exist independently of them in the next time period, ready to be drawn upon by other agents. As they reproduce or transform socio-economic phenomena, these agents simultaneously reproduce or transform *themselves* as labour market agents - e.g., as employed, unemployed, skilled, etc.

Some labour market (oriented) socio-economic phenomena *constitute* labour markets. Just as chess has no existence apart from the rules of chess, labour markets have no existence apart from the socio-economic phenomena that *constitute* them. To say socio-economic phenomena *constitute* labour markets, is to say that labour markets are (socially) constructed, made, or built out of, some stuff called socio-economic phenomena. No-one would deny that without the laws of private property there would be no labour markets. But the laws of private property do not merely regulate antecedently existing entities called labour markets; *these laws, in part, constitute* labour markets. And what goes for private property goes for scores of other socio-economic phenomena. Without labour market (oriented) socio-economic phenomena there simply would be no labour markets. Labour markets *just are, or are constituted by*, socio-economic phenomena, meaning that labour markets have no existence apart from the socio-economic phenomena that *constitute* them.

The concept of *emergence* is necessary to avoid the collapse of agency into socio-economic phenomena; the collapse of socio-economic phenomena into agency, or the conflation of agency and socio-economic phenomena. A simple analogy may help (Elder-Vass 2007a, 2007b and 2007c and 2010.).

A sandcastle is made out of, or constituted by, sand. However, it is misleading to say that a sandcastle *just is* sand because a sandcastle is more than *just* sand, it is more than just a *pile* of sand. Sand can be just a pile and not constitute anything, except a pile of grains of sand. But sand can be arranged in many ways. When sand is arranged in a particular way, it can constitute a sandcastle. A sandcastle emerges from the sand. Whilst a pile of sand is reducible to (grains of) sand, a sandcastle is not. A sandcastle is irreducible to the sand that constitutes it. Put these concepts together and we can say that a sandcastle is emergent from, but irreducible to, the sand that constitutes it. It is not that sand and sandcastle have merged; rather, a sandcastle has emerged from sand.

A labour market is made out of, or constituted by, socio-economic phenomena. It is misleading to say that a labour market *just is* socio-economic phenomena because a labour market is more than *just* socio-economic phenomena, it is more than just a *pile* of socio-economic phenomena. Socio-economic phenomena can be arranged in many ways. When socio-economic phenomena are arranged in a particular way, they can constitute a labour market. A labour market emerges from socio-economic phenomena. If a labour market is more than a pile of socio-economic phenomena, then it is irreducible to the socio-economic phenomena that constitute it. Put these concepts together and we can say that *labour markets are emergent from, but irreducible to, the labour market (oriented) socio-economic phenomena that constitute them*. It is not that labour markets and socio-economic phenomena have merged; rather labour markets have *emerged* from socio-economic phenomena.

11. SELM^{CR} Model ⁵⁷

Armed with this conceptual apparatus, it is now relatively straightforward to build the SELM^{CR} model – schematised in figure 6. This (highly abstract) model captures the following characteristics about labour markets. Labour market agents (e.g., workers seeking jobs and employers seeking workers) enter into a pre-existing environment replete with labour market (oriented) socio-economic phenomena. In order to formulate, and initiate, labour market oriented plans and actions, agents have no option but to draw upon these socio-economic phenomena which causally condition their plans and actions. By drawing unconsciously upon socio-economic phenomena like norms, and consciously on social structures and regulations, labour market agents reproduce or transform these socio-economic phenomena. As they do so, these labour market agents simultaneously reproduce or transform themselves as labour market agents – e.g., as job-searchers, employers, unemployed, skilled, discouraged etc. Via this reproduction or transformation of labour markets, labour market agents continue their existence into the future. All this suggests the following definition of labour markets:

Labour markets are constituted by, emergent from, but irreducible to clusters of labour market (oriented) socio-economic phenomena that are consciously and/or unconsciously reproduced or transformed by job-searchers seeking to 'sell' the quasi-commodity labour power in order to secure their means of survival, and by worker-searchers (firms) seeking to 'buy' labour power in order to produce commodities for profit, or non-commodities to satisfy socially sanctioned needs.

⁵⁷ Despite differences in appearance, this model is entirely consistent with the model I have sketched in Fleetwood (2010: figure 5) and (2014, figure 6). Apparent differences are due to me 'telling two different stories' as it were.

The labour market, taken as a whole, is characterised by a myriad of activities such as creating and destroying jobs; searching for jobs; finding or not finding jobs; searching for workers; finding or not finding workers; discriminating or being discriminated against; accepting or rejecting job offers; engaging in education; providing training; bargaining over pay and conditions; joining unions; taking industrial action; becoming self-employed; setting crewing levels and, therefore, ultimately employment and unemployment levels, leaving the labour market and so on. Let me summarise this myriad of activities in the phrase: workers search for jobs, employers search for workers, culminating frequently in job-matching?

What we want, therefore, is a model of the labour market as a whole, that represents workers searching for jobs, employers searching for workers, culminating frequently in job-matching - even if this is at a high level of abstraction. We can then use this model to guide our thinking about specific activities - e.g., explaining how bargaining over pay occurs, or why women are paid less than men for similar work. In this way, when we analyse these specific activities, we avoid the mistake of conceiving of them as *ad hoc*, unconnected activities. This is, after all, what the orthodox supply and demand model claims to offer- even if it does not deliver. Unlike orthodox labour economists, many socio-economists of labour markets want this model of the labour market as a whole to be realistic and true. So how do we go about building such a model?

CR encourages us to set up the mode of enquiry based upon a retroductive question such as: What must the socio-economic world be like in order for workers to search for jobs, employers search for workers, culminating frequently in job-matching? The M-M approach encourages us to tighten the retroductive question and ask: What socio-economic phenomena must exist in order for workers to search for jobs, employers search for workers, culminating frequently in job-matching?⁵⁸ If and when we can answer this question, we will have built a model of the labour market.

Answering this question, and building a model of the labour market is, of course, a very tall order. It would not only require a book-length treatment, it is probably beyond the ability of any one person to do it. I certainly cannot do it. But nevertheless, if it is to be done, eventually, then we have to start somewhere. And this is how I conceive of my 'sketch' of the SELM^{CR} model. It is incomplete, and rather piecemeal, but it is an attempt to figure out what an alternative model should, or could, look like. I will 'sketch' the overall SELM^{CR} model in stages - i.e., the 'supply side', then the 'demand side' at three (decreasing) levels of abstraction. Each stage has its own diagram, these diagrams are cumulative, and the final diagram constitutes my overall SELM^{CR} model.

11.1. The Supply Side at the First Level of Abstraction

Let us consider the main activities undertaken by *workers*⁵⁹ as they seek employment, and the socio-economic phenomena they draw upon in order to do so. I present this in the form of workers undergoing a series of transitions, from being born, via being prepared for work and the labour market, to searching, finding a job and eventually retiring. I could elaborate more

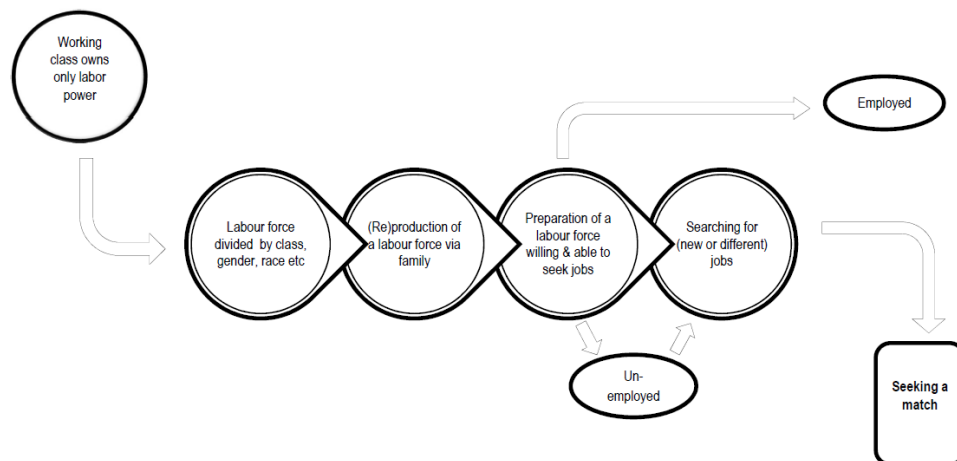
⁵⁸ Note, in parentheses, that this is a different mode of enquiry than one driven by the desire to derive predictions and explanations, by logical deduction from premises.

⁵⁹ The term 'worker' is used rather than 'employee' because not all workers are employees, but all employees are workers. I use it to include *potential* workers - i.e., those who are in the process of actively seeking a job.

fully upon how exactly agents negotiate these transitions, and the specific socio-economic phenomena they draw upon, but given that this is a ‘sketch’, I have to be brief.

Every child is born, and grows up, in a society wherein people are divided by class, gender, race, (dis)ability, family type, space and place, health (physical and mental), housing status, longevity, nationality, political persuasion, religion, sexual orientation, citizenship and residency status (relating to various categories of migrant labour). Every child is located in one, or several, of these categories - although they may be able to move in and out of some of them, over time. Moreover, being located in one, or several, of these categories brings its members into contact with socio-economic phenomena that enable and constrain them. These socio-economic phenomena include social structures, regulations, norms and discourses. The influence of socio-economic phenomena may be immediate and direct, or indirect – i.e., via the child’s parents.

One such socio-economic phenomenon is the social structure of class. Children born into families that own and/or control capital are enabled by the social structure of class. Children born into families that do not own and/or control capital, but own only their own labour power, are constrained by it. This differential enablement starts from birth, manifesting itself in different experiences ranging from access to good basic nutrition and neo-natal healthcare, via access to good quality child-care, to access to primary and secondary schooling and, eventually, universities. The same goes for social structures such as gender and race. Any discrimination that negatively affects the parents, directly or indirectly negatively affects the children also. In the context of labour market analysis, however, class has a significance that none of the other socio-economic phenomena have. In a capitalist socio-economic system, working class people own only their own labour power, and live only by hiring-out that labour power to the class that own and/or control capital. Labour power, therefore, takes the form of a *quasi-commodity*.⁶⁰ The working class is a commodified class, and this is not altered by gender, race or any other of the characteristics mentioned above. At this level of abstraction we abstract from the fact that some members of the working class will leave the labour force in a variety of ways, such as coming to own/control capital, having a disability that prevents them working, or simply becoming discouraged.



⁶⁰ Labour power is a *quasi-commodity* because it is not produced and reproduced via the market: there are no farms producing and selling children.

Diagram 1. The supply side at the first level of abstraction.

The totality of workers that constitutes a labour force does not emerge out of thin air: it is produced in two senses. First, the ‘raw material’ (i.e., a human population) is produced and reproduced, typically, in some form of family unit where primary socialisation occurs. Second, a labour force is not necessarily a *prepared* labour force, that is, one that is educated and skilled, in both ‘hard’ and ‘soft’ skills, active and motivated in the senses of job-seeking, and eventually being willing to work with a degree of commitment. A prepared labour force is not necessarily an *informed* labour force. An informed labour force is one that knows about the available jobs, and knows how to search for them. A prepared and informed labour force is a complex social accomplishment.

Some of the causal impulses in operation on labour market agents have their origin in agents themselves in the form of their own employment-related preferences and needs. Whilst some of this is down to individual subjective preferences and needs, and there is a genuine space for human agency, many of these preferences and needs are themselves causally conditioned by various socio-economic phenomena, often in operation in *inter alia*, families, firms and the state - to mention the three most obvious ones. At this level of abstraction, they are omitted, but not ignored: they will be considered in subsequent levels of abstraction.

If and when workers are prepared, and they join the labour force, they engage in a process of job-searching in two basic senses: unemployed workers seek a job, and employed workers seeking a new job. The objective is to finding a job-match – i.e., with an employer who is seeking to recruit. This process of searching and matching dominates contemporary orthodox labour economists, but exactly how it happens is under-elaborated. Indeed it is simply said to occur via a ‘matching technology’ and re-conceptualised in various types of mathematical searching and matching models.

11.2. The Demand Side at the First Level of Abstraction

Let us consider the main activities undertaken by *employers* as they seek to recruit workers, and the socio-economic phenomena they draw upon in order to do so. Let us consider some of the main activities involved in, and the socio-economic phenomena that are drawn upon by *employers* trying to recruit workers.

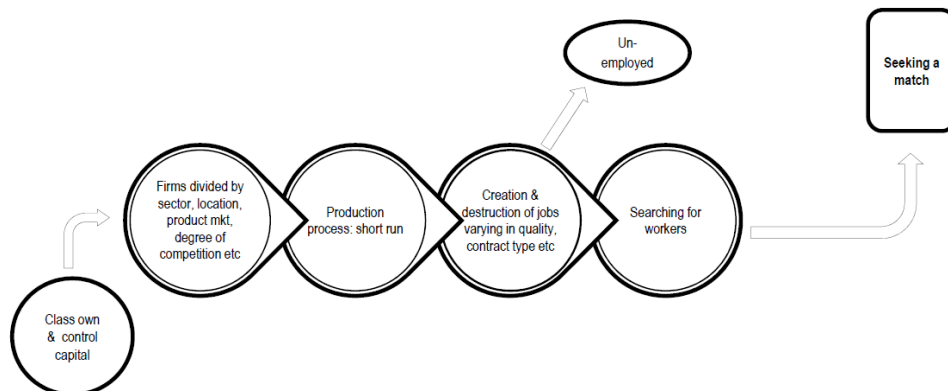


Diagram 2. The demand side at the first level of abstraction.

The starting point is with the class who own and/or control capital, abstracting from the fact that some members of this class will not end up owning/controlling capital, voluntarily or otherwise – e.g., having a disability that prevents them working.

Firms are heterogeneous, divided by size, corporate structure and culture, nature of production (process, manufacturing, extractive, service etc.), the nature of the technology employed, the way they are financed, the stage of maturity, private or public sector, and so on. Different firms are located in different environments. They operate in different product markets and so are influenced differently by the nature of product market demand (differences in the fluctuation of demand for the product, or the degree to which this demand is seasonal or uncertain); they operate in place and space, so their operations might be local, domestic or international; they operate with different degrees of competition; and are related in different ways to different types of financial markets and organisations.

In the short-run, firms produce goods and services with technological, labour and management processes that have a degree of fixity to them. At any point in time a firm will be operating with a labour force that was, largely, educated (at school, college or university) in a past time period; either came to the firm with certain skills, or is in the process of augmenting these skills on the job via some kind of training. It is in the short-run that firms make decisions about crewing levels. Decisions about how to coordinate workers with machinery are multi-causal and multi-dimensional. Whilst a clerical worker can be substituted with a range of ICT devices, an extra pilot cannot be substituted for an aircraft wing, and neither can a robot be substituted for a nurse with a good bedside manner. Even where factor substitution is *technologically* possible, crewing levels, typically, involve a complex set of socio-economic phenomena such as regulations and norms about what is acceptable. Crewing levels are, for example, the subject of extensive bargaining which may or may not involve unions or other workers' representatives, always involves management and very often involves issues of conflict and power. This process forms the basis for the orthodox theory of production and labour demand, but exactly how it happens is under-elaborated. Indeed, it is simply re-conceptualised in terms of a production function.

In the short-run, firms create and destroy jobs not, typically, by altering their crewing levels due to changes in wage rates, but in response to changes in product demand. They do not, however, just create jobs. They create jobs with varying degrees of quality, such as different degrees of worker-friendly and business-friendly flexibility. They create jobs with different types of employment contracts, ranging from permanent contracts to zero-hours contracts, and everything in between. In many cases, the qualitative nature of these jobs and contracts cannot be altered significantly without re-designing the technological, labour and management processes.

In the short-run, firms are not involved in preparing (i.e., educating, skilling, activating and motivating) the labour force, but operate with the levels of preparation already existing. Nor are they involved in creating the means by which information is transmitted. They simply search for workers using the existing mechanisms at their disposal. At some point, they recruit workers.

11.3. The Supply Side at the Second Level of Abstraction

Let us revisit the main activities undertaken by *workers* as they seek employment, and the socio-economic phenomena they draw upon in order to do so, but now with the level of abstraction lowered and a little more detail added. Diagram three illustrates the additional

detail. The arrows are more indicative than literal, intended to show the complexity of the causal relations at work. A literal version would have so many arrows connecting so many boxes and circles, the basic point would be missed. Diagram one is reproduced in diagram three, but is greyed out, allowing us to see clearly what is being added.

A prepared and informed labour force is created by agents drawing upon a set of socio-economic phenomena, of which the families, firms and the state are central. I will discuss the family here, mention firms, and leave the state for the next level of abstraction.

Labour power is produced and reproduced in the family. Unpaid domestic labour involves a set of tasks such as *caring* for children, elderly people and disabled people, and running the household, where 'caring' has biological and also socio-psychological dimensions. As we know, the main responsibility for *caring* has passed onto the shoulders of women and the ensuing gendered division of labour has three main consequences. First, the family produces a steady supply of (duly socialised) workers at absolutely no cost to the firms who will eventually hire them. This is the only input into production (apart perhaps for air) that firms get free of charge. It is not free of course, it costs those who perform domestic labour their labour time. Second, the responsibility for performing domestic labour casts a long shadow over women's participation in labour markets and work, and is largely responsible for various forms of discrimination. Third, the owners and controllers of capital, and their representatives in the state, clearly have an incentive in maintaining the family in something like its current form. As long as women are providing domestic labour 'free of charge', firms and the state can avoid the additional cost that might be incurred if they had to provide these services. Incidentally, the recent rise of women working part-time has not ended this state of affairs, it has merely altered it.

The family also plays a role in the stage of preparation via the process of socialisation, or the process of establishing the *habitus* or habits. A labour force is not just a mass of workers, it is a mass of workers who have acquired an appropriate set of habits. These might, for example, be the habits involved with getting out of bed in the morning and turning up, on time, at school and later at work. Or they might be the habits involved with expectations of 'fairness', something that might even dispose the person towards (or against) trade union membership later in life. Clearly, whilst the family does inculcate habits that are not explicitly sought by employers, the family certainly inculcates some that are (Seccombe 1993, 1995).

Moreover, the categorical differences noted in the previous level of abstraction have a role to play here. It is in the family where boys and girls learn their gendered roles. Little boys learn that they might eventually like to be a welder, but not a beautician; whereas little girls learn they might like to be a beautician, but not a welder. I could go on here to discuss our attitudes to race, sexual orientation, disability, age, migrants and so on, but the point is, hopefully, taken. It is not difficult to see that a range of habits learned in the family have enormous influence on the ideas we eventually come to hold about whether we enter labour markets or not, which segment of labour markets we enter, which industry, occupation or even firms we consider working in, the wages, fringe benefits, pensions and employment conditions we consider fair, the degree of self-expression, creativity, self-actualisation, autonomy, empowerment, or perhaps the degree of alienation, commodification, precariousness, vulnerability and insecurity we expect and so on. Clearly, the way the family instils these habits, and the consequences that they have for labour market participation, is an extremely complicated process. It is also entirely absent in orthodox labour economics.

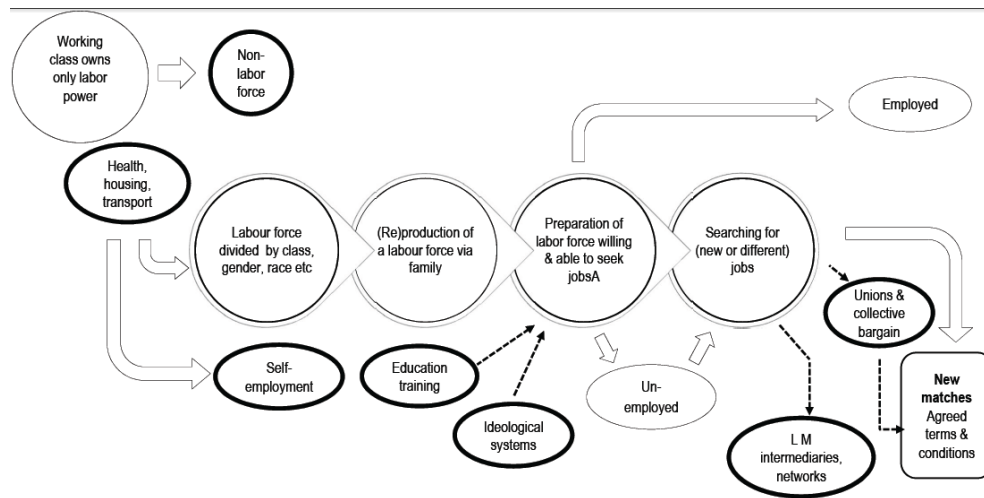


Diagram 3. The supply side at the second level of abstraction.

The family extends to kinship networks, and becomes one of the key socio-economic phenomena allowing information to be transmitted about where to search for jobs and workers. Workers discover where vacancies exist, and gain ‘inside’ information on the nature of potential jobs and on whether the employer is ‘good’ or ‘bad’. Employers often use these networks to search for workers. Labour market intermediaries, that is, organisations that assist the process of job-search and job-match play an important role here.

Over the last couple of decades many workers have become ‘self-employed’. This is, but should not be, confused with becoming a (very) small employer – i.e., the self-employed to not hire workers. In many cases, this has not involved a shift in the nature of the actual tasks done, and often not even in the place of work: it has merely resulted in a shift from being an employee to a worker, typically, some kind of sub-contractor. Whilst some of this may have been driven by workers’ preferences for ‘being their own boss’, or ‘entrepreneurial spirit’, most of it is caused by unemployment of workers or by firms re-negotiating the nature of the employment relation. By and large, this has negative effects for self-employed workers, especially in terms of pensions.

The initial division of the population into several categories often combines with things like housing, health and transport, to have an impact upon labour market activity. Women, especially working class women, for example, tend to have less access to cars and are more reliant on public transport to commute. This constrains women’s ability to consider jobs in certain locations, and perhaps even to remain in a job once they have one, perhaps progressing through any career ladders that may be open to them. Similarly, social class is likely to be a key determinant of which neighbourhood, or which type of house workers reside in and this is likely to have an influence on their education and their chances of being recruited (or not) by certain firms. Class is also likely to have an impact upon things like health and longevity, which has implications for things like health insurance and pensions.

When a match is made, and workers are recruited, several things are finally decided upon, most notably, pay and conditions; the employment level of the firm; the quality (e.g., skill, motivation) of the labour force; the nature of employment relations; mix of employment

contracts, etc. This is also where the consequences of the initial categorisation of the labour force come into effect as (say) whites are recruited before blacks.

The ‘final decision’ about things like pay and conditions, the nature of employment relations and the nature and mix of employment contracts in operation, is influenced by collective bargaining and, therefore, a whole range of socio-economic phenomena such as labour laws and regulations.

11.4. The Demand Side at the Second Level of Abstraction

Let us revisit the main activities undertaken by *employers* as they seek to recruit workers, and the socio-economic phenomena they draw upon in order to do so, but now the level of abstraction is lowered and a little more detail added. Diagram 4 shows the additional detail. Diagram 2 is reproduced and greyed-out.

Firms exist in a wider external environment that contains causal factors that directly influence firms and, therefore, indirectly influence labour markets. This is, of course, well known and expressed in the idea that labour is a *derived demand*. The actions of fiscal authorities, or central banks, can alter macroeconomic conditions, altering the demand for goods and services, and altering individual firm’s demand for labour. Firms operating in highly competitive product markets, or supply chains, often face pressure to pass this pressure on to the workforce in terms of reduced terms and conditions. In this way, causal forces stemming from the external environment influence labour market outcomes, via firms. All this is well known by orthodox labour economists.

This is, however, only part of the story - and it is not even the most important part. The causal influence of these (and many other) external factors does more than merely cause firms to alter the *quantity* of labour they demand, or the quantity of the wages they offer, they offer leaving the organisation of the firm, and the labour market, ‘untouched’ as it were. Moreover, the direction of causality is not one-way – i.e., is not from external environment to labour market via firms. Rather, there is a kind of reciprocal causality between external environment, labour markets and firms. The thesis I will defend is this:

Private sector firms use their economic, social, ideological, discursive, cultural and political power to engage in actions they think will make labour markets function in ways that increase the chances of them meeting their objectives, and through these actions, firms play a role in reproducing or transforming labour markets, that is, in making labour markets, and making them the way they are.

There are two reasons for the specific focus on *private sector firms* here – referred to henceforth simply as ‘firms’. First, to provide a complete explanation of the role played by other organisations in reproducing or transforming labour markets would require an elaboration of dozens of organisations – e.g., public sector employers and local development agencies; public and private sector job centres; labour unions; law firms; schools, colleges, universities and other training providers; financial organisations like banks, insurance companies, pension funds and stock markets; the state; intermediary organisations such as lobby groups; and the family – although some of these will be mentioned below. Whilst I strongly believe such an undertaking is necessary, it is beyond the present chapter (See Clark 2000, 2007).

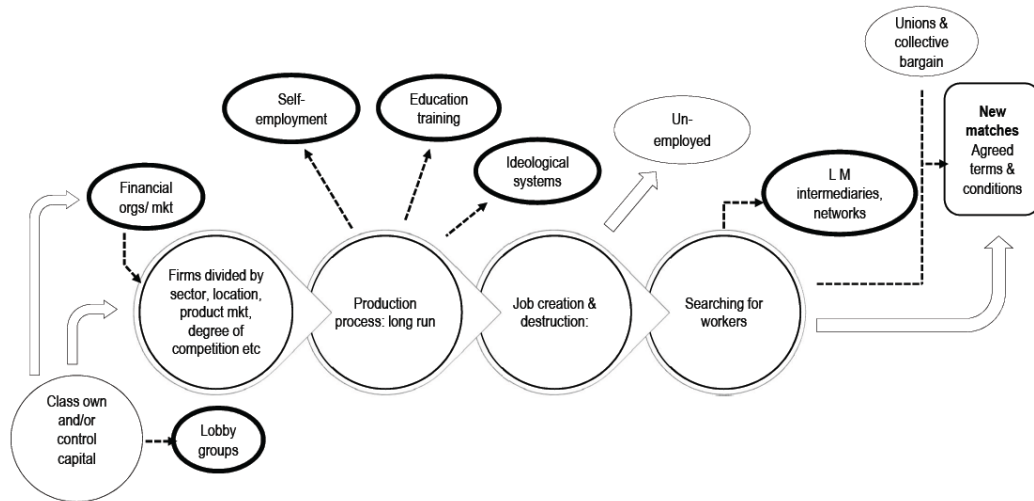


Diagram 4. The demand side at the second level of abstraction.

Second, firms (ranging from trans-national-corporations to small-to-medium-sized domestic enterprises) are amongst the most powerful and influential organisations in society. Their power comes in several guises: economic, social, ideological, discursive, cultural and political. Labour markets are so important to firms that many do not passively just ‘wait and see’, as it were, as to what kind of labour markets happen to emerge. Rather, many firms take a pro-active role (Beynon et al 2000: 26) and engage in various actions that they think will increase the chances of meeting their objectives. As a result, firms often end up playing a role in making labour markets, and making them in ways they think will meet their objectives. That said, firms are not always able to make labour markets in ways that suit their objectives unopposed because they run up against the objectives of other stakeholders, such as the state, mentioned below.

Now, if firms play a role in making labour markets, then they must be engaging in some very specific kinds of actions. What kinds of action? To address this question we need to unpack the notion of ‘action’ and update it by considering (i) what does and *does not* constitute action; (ii) *practical* and *ideational* or *discursive* action; and (ii) *dimensions of action and inaction*.

The action taken by firms can be *practical*, or *ideational* or *discursive*.⁶¹ Practical action is exemplified by things like recruiting and training; ideational or discursive action is exemplified by things like preparing young people with ideas that they will have to be ‘flexible’ if they want to get a job.

There are four dimensions to (practical and discursive) action and all four need to be considered – even if the first two are the most common and will be the main focus here. Let us start by noting two things: first, as critical realism reminds us, causality does not always require action; *lack of action*, *doing nothing*, *absence* or *inaction* can also be causal and, thereby, a form of action; and second, action and inaction can be direct or indirect. The four dimensions are as follows:

⁶¹ See Campbell (2001: 165-7) for an elaboration of ideational or discursive actions.

- *Direct action.* Some of the actions taken by firms that play a role in making labour markets the way they are can be thought of as partly, but *directly*, constituting labour markets.
- *Indirect action.* Some of the actions taken by firms that play a role in making labour markets the way they are can be thought of as partly, but *indirectly*, constituting labour markets.
- *Direct inaction.* Some of the inactions (i.e., action not taken) of firms that play a role in making labour markets the way they are can be thought of as partly, but *directly*, constituting labour markets.
- *Indirect inaction.* Some of the inactions (i.e., action not taken) of firms that play a role in making labour markets the way they are can be thought of as partly, but *indirectly*, constituting labour markets.⁶²

Direct Action by Firms

Some firms explicitly recruit women, particular ethnic minorities, immigrants, disadvantaged youth, and-or non-union workers. Such a firm's recruitment actions' play a role in reproducing or transforming female, ethnic, migrant, disadvantaged youth, or non-union labour markets. The firm's actions involved in recruitment play a role in making female, ethnic, migrant, disadvantaged youth, or non-union labour markets

The way firms' react to a downturn is not mechanically governed, but open to discretion. Senior managers have several ways to deal with a downturn, ranging from immediately downsizing and shedding labour, via reproducing or transforming alterations to the way existing labour is utilised, managed and new labour recruited, to hoarding labour and waiting for the upturn. The actions of firms in shedding, hoarding, or altering the utilisation and management of labour play a role in making slack or tight labour markets.

Firms often make use of temporally flexible working practices, of which it is possible to identify two (broad) types. First there are *worker-friendly* practices such as flexi-time, term-time working, job-share, compressed working weeks, shift swapping, self-rostering and time off in lieu. Second there are *business-friendly* flexible working practices such as involuntary temporary working, zero-hours contracts, unsocial hours working such as twilight shifts and 24 hour rotations, annualised hours and stand-by/call-out arrangements. The firms' actions involved in designing and implementing these practices play a role in making qualitatively different types of flexible labour markets.

Flexibility also extends to the mix of the workforce vis-à-vis permanent and thereby relatively secure employment, and temporary or insecure employment. Many firms have shed permanent (core) employees and recruited temporary (peripheral) workers in their place. Once again, the actions of firms in mixing the workforce in this way play a role in making labour markets characterised by predominantly permanent and secure, or temporary and insecure, employment.

Some firms actively encourage union recognition whilst others hire anti-union advisers, or use legislation to resist attempts by their employees to gain union recognition. Firms that encourage or discourage union recognition are, via these actions, playing a role in making unionised or de-unionised labour markets. Matters are, of course, more complicated than this.

⁶² For ease of exposition, I will refer to all four possibilities (including forms of *inaction*) as 'action'.

Even where firms directly encourage union recognition, their motives are not always as they seem. Many firms realise they have little to fear from contemporary unions who are presumed to be less powerful than in the past. Firms can, therefore, recognise unions, engage with unions where it suits them (e.g., using collective bargaining to set pay and conditions for large workforces where individual bargaining would be too time consuming) and ignore them when it does not, whilst presenting themselves as being good employers who care enough about their workforce to let them have a union. The firms' actions involved in designing and implementing these practices play a role in making labour markets, where unions are present, what is known as 'hollow shells'.

Indirect Action by Firms

The *indirect* actions of firms are a little more complicated. I will explain this by looking at the provision of 14-19 year old education in the UK. Firms get involved in education to pursue several objectives. One objective is for firms to use their knowledge and experience of the business world to provide pupils with 'soft skills' like: 'the culture of the workplace, the roles and responsibilities of managers and employees, team working, formal and informal channels of communication, customer service, presentation skills, etc. as well as generic personal effectiveness skills such as motivation, enthusiasm, commitment, a willingness to learn, giving and receiving feedback and contributing to group activities' (Greatbatch & Lewis 2007, Davies, 2002).

The provision of 'soft skills' engages with the *ideas and attitudes* of potential labour market entrants. These ideas and attitudes include reflections upon themselves, society and employment such as: motivations, beliefs, hopes and aspirations; notions of their position in society, their relation to authority and their relation to co-workers and loyalty and commitment; their ability not just to think, but to think creatively, imaginatively, ingeniously; and their willingness to act in self-directed, self-motivated ways. These ideas and attitudes, however, are a double edged sword. Whilst these ideas and attitudes *can* be harnessed to work for the good of firms, they can also work against firms. The unstated objective of pro-business education, therefore, is to create a workforce not only with pro-business ideas and attitudes, but also with suitably lowered horizons vis-à-vis what they can expect from labour markets. Prospective labour market entrants are 'ideologically groomed' as it were to enter labour markets accepting various pro-business discourses: not to 'buck the (labour) market'; to accept neo-liberal economic ideas and labour market policies as inevitable; to accept, as normal, the idea that there are no longer jobs for life; to accept that they will spend years working flexibly on temporary contracts, 'showcasing' their skills, (whilst being duly grateful to employers for making them 'employable') before being considered for one of the few permanent jobs; to believe that having a constantly revolving clutch of dead-end jobs is a way of exercising individual autonomy, and so on.

Whilst some firms directly promote these 'soft skills' (e.g., by involvement with UK Academy schools), others promote them indirectly, via intermediaries. Firms work closely with government departments, schools and private sector education providers to ensure that firms play a role in setting the curriculum and designing and delivering courses. All 14-19 years olds in the UK, for example, can now formally study courses like *Certificate in Job-Seeking Skills*, *Certificate in Preparation for Employment*; *Certificate in Career Planning*; *Certificate in Personal, Teamwork and Community Skills*; *Certificate of Personal Effectiveness* and

Qualification in Skills for Employment. (See the DfES document, illuminatingly entitled ‘Shaping educational policy’ DfES 2007. See also Leitch 2006).

Whether the *indirect* actions engaged in by firms are interpreted as the legitimate provision of education or the illegitimate inculcation of a pro-business agenda is beside the point. The point is these *indirect* actions play a role in making labour markets the way they are.

Direct Inaction by Firms

Some of the *inactions* taken by firms play a *direct* role in reproducing or transforming labour markets. Firms that *do not* engage in any form of training are, via this inaction, playing a role in reproducing or transforming unskilled labour markets. Firms that hide behind the ‘business case’ for not offering (genuinely family-friendly) flexible working practices when workers request them are playing a role in reproducing or transforming inflexible, family unfriendly labour markets. Inaction does not, of course, always have negative consequences. Firms that *do not* engage in discriminatory hiring, firing, training and promoting are, via this inaction, playing a role in making non-discriminatory labour markets.

Indirect Inaction by Firms

Some of the *inactions* taken by firms play an *indirect* role in reproducing or transforming labour markets. Whilst it often appears that the intermediary, not the business, is the ultimate cause of the *inaction*, closer inspection reveals the causal role of the business. Indirect inaction is often done by ‘turning a blind eye’. Firms that ‘turn a blind eye’ to legislation such as minimum wage and equal opportunities legislation are, via this inaction, playing an indirect role in making low-paid, unequal, labour markets. Firms that use immigrant labour, but ‘turn a blind eye’ to the (unethical or even illegal) activities of gang masters, are via this inaction, playing an indirect role in making unethical, perhaps even illegal, exploitative labour markets.

Intermediary Organisations

Powerful firms are able to play a role in making labour markets in ways they think will increase the chances of them meeting their objectives, in part, because they are able to project their power beyond their spatio-temporal envelopes. They do this, typically, via intermediary organisations such as pro-business lobby groups – at local, national, supra-national and, in the case of intermediaries, global levels.

The number and influence of organisations promoting the interests of firms has grown remarkably over the last decade. Within the UK many firms are members of employers’ associations such as the *Confederation of British Industry* (CBI), *Institute of Directors* (IOD) or *Engineering Employers Federation* (EEF). Within the EU, there are a range of intermediaries representing firms such as: *Business and Industry Advisory Committee* (BIAC) to the *OECD*; the *International Chambers of Commerce* (ICC); the *Union of Industrialists and Confederation of Employers* (UNICE); the *European Association of Craft, Small and Medium-sized Enterprises* (UEAPME); and the *European Round Table* (ERT) (Farnsworth 2005: 66-7). There is also evidence of linkages between national and EU firms and Intergovernmental Organisations (IGOs) meeting through international business-coordinated meetings such as the *World Economic Forum* (WEF). These organisations promote the interests of some of the most important firms.

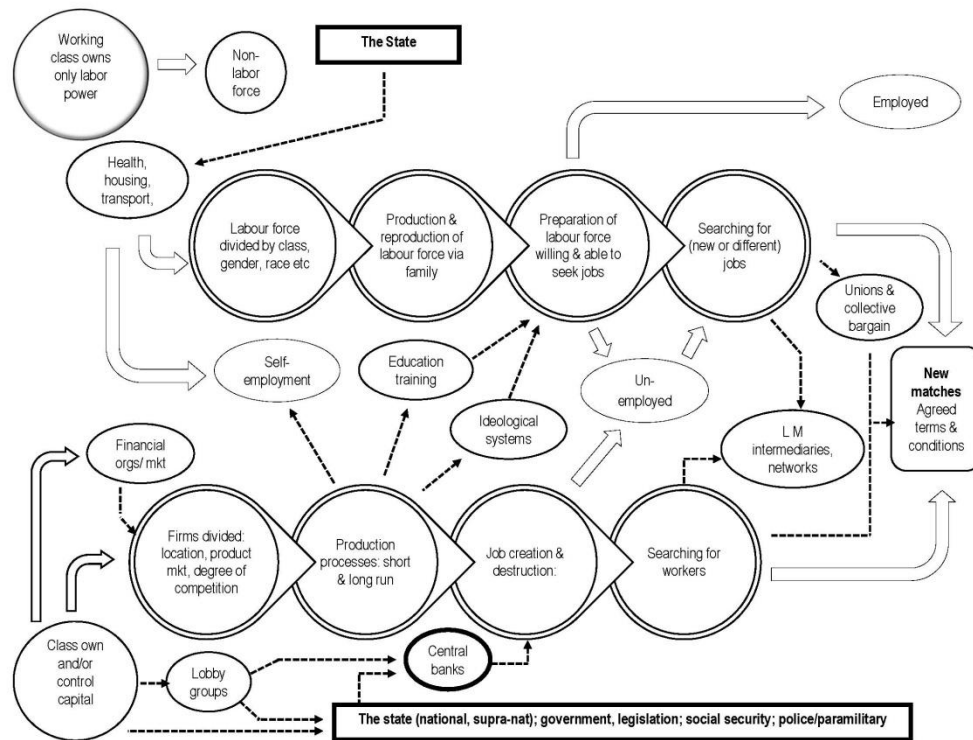


Diagram 5. SELM^{CR} model of labour markets.

11.5. Supply and Demand Sides at the Third Level of Abstraction: SELM^{CR} Model

I now combine the previous four slides in this third level of abstraction, and present the SELM^{CR} model. I could go on adding more detail (and more levels of abstraction) but this would not make the argument of this chapter any stronger.

At this level I now include the local, national and supra-national state, government, legislation relating to labour law, social security arrangements and pension provision, the police and/or paramilitary organisations, as well as central banks, the World Bank the IMF and so on. It is interesting to note the relationship between firms, the many pro-business intermediaries (just noted) that promote their interests, and the state. The fact that many of the ideas driven by these intermediaries find their way into actual policy, strongly suggests that labour market policy that appears to be designed by the state is actually designed by firms operating via intermediaries. In this way, the interests of the owners and/or controllers of capital play a role in making labour markets in ways that they believe will suit their interests.

But the owners and/or controllers of capital are not always able to make labour markets that suit them. Some states play a crucial role in terms of funding and administering a raft of welfare provisions out of taxation. This plays a key role in partially de-commodifying labouring activity and differentiating between labour markets in Coordinated Market Economies (CME's) and Liberal Market Economies (labour market LMEs). For example, in some CME's, policies have eased the 'double burden' from the shoulders of women, allowing them to enter labour markets and employment in greater numbers with subsequent effects on the gender pay gap. Through these actions, the state plays a role in making labour markets characterised by a relatively egalitarian distribution of income.

Conclusion: Is the SELM^{CR} model realistic and true, or unrealistic and false?

I want to conclude by using the sophisticated definitions of (un)realisticness, realisticness, truth and falsity developed in section (I) to evaluate the SELM^{CR}. Let us start with (un)realisticness, and remind ourselves that:

Models are non-trivially unrealistic when they are not about some aspect(s) of real labour markets, are about inessentials, exaggerate, idealise or isolate these aspects.

The SELM^{CR} model does not just appear to be about some of the most essential aspect(s) of real labour markets, it *is* about them - and genuinely so. If there is any exaggeration (e.g., non-workers end up owning and/or controlling capital) this is due to the level of abstraction, not the demands of mathematics, and can be corrected at a later stage. Recall that to (properly) abstract is not to forget, but to 'keep things in mind' as it were, to be introduced or altered as the level of abstraction is lowered. Because the model does not require the key causal mechanism to be isolated, that is, does not require systemic closure, there is no need to introduce unrealistic and false isolating assumptions, presumptions, or re-conceptualisations.

The SELM^{CR} model does idealise. For example, re-conceptualising firms as operating in the short-run, producing goods and services with technological, labour and management processes that have a degree of fixity to them is a theoretical re-conception. But, as I made clear in part three, when the process of idealisation is not done with the objective of deriving predictions and ~~explanations~~, by logical deduction from premises, via the use of mathematics, then idealisations do not have to be unrealistic. The idealisations in the SELM^{CR} model are not unrealistic. The SELM^{CR} model is, therefore, non-trivially realistic.

Let us now turn to truth, and remind ourselves that:

All models are unrealistic, but they may be true when they resemble, not all the potential causal mechanisms in operation, but the key causal mechanisms; and resemble them in such a way that what the truth bearer (i.e., the idealised and isolated causal mechanisms) says is the case about the truth maker (i.e., the real causal mechanisms), is the case, even if the model is replete with unrealistic and false components.

Parts of this definition are no longer applicable. The opening phrase 'all models are unrealistic', should read 'all models are *trivially* unrealistic'. Moreover, if the SELM^{CR} model is non-trivially realistic, then the opening sentence is incorrect. The definition extends to models that isolate and, as just established, the SELM^{CR} model does not isolate – although it does idealise.

The SELM^{CR} model resembles, not all the potential causal mechanisms in operation, but the key causal mechanisms in the form of the socio-economic phenomena that, for example, enable or constrain agents as they make the transitions from being born, via being prepared for work and the labour market, to searching, getting a job, and retiring. At this level of abstraction, only a few socio-economic phenomena have been elaborated upon, and even those that have, are still very under-elaborated – e.g., the structures of social class.

The SELM^{CR} model also resembles the key causal mechanism, *qua* key socio-economic phenomena, in such a way that what the truth bearer (albeit idealised) says is the case about the truth maker (i.e., the real socio-economic phenomena) is the case. It is, for example, the case that (real) crewing levels are the subject of extensive bargaining which often involve issues of

conflict and power and, therefore, structures of class and maybe gender if, for example, unions strike bargains that secure men's jobs at the expense of women's. The SELM^{CR} model is, therefore, true.

Finally, it is important to note that the SELM^{CR} model cannot be dismissed as a descriptively complete, everything-but-the-kitchen-sink model. Consider the example of wages. In the basic orthodox model, wage rates are determined by the intersection of labour supply and demand functions. More sophisticated models have moved away from this entirely. For example, in Rogerson et al.'s (2005: 969) model (section one part three above) wages are determined by four variables: the worker's reservation wage; the flow of output; the firm's profit level and bargaining power θ . Even if the 'the reservation wage' really exists, it is almost certainly socially constructed, and constantly changed, by a whole range of socio-economic factors that orthodox labour economists do not even begin to consider. The same goes for 'bargaining power' - although its existence is not in doubt. If truth be told, then, wage rates cannot be predicted and explained by logical deduction, from premises including a handful of variables. Moreover, framing matters in this way makes it impossible to arrive at a *bone fide* explanation of the determination of wage rates.

So, how would wages be dealt with in the SELM^{CR} model? Socio-economists have coined the term 'administered wages' to reflect the fact that wage rates are determined by a combination of the following causal factors:

- Psychological contract, including notions of fairness and justice
- Motivational philosophies, strategies and mechanisms
- Empowerment philosophies, strategies and mechanisms
- Job evaluation mechanisms
- Job and competency analysis
- Equal pay mechanisms
- Pay audits
- Pay structures
 - Narrow graded
 - Broad banded
 - Job family
- Reward philosophies, strategies and mechanisms (individual and/or team) such as:
 - Performance related pay
 - Profit related pay
 - Competence related pay
 - Contribution related pay
 - Skill-based pay
 - Shop-floor incentive schemes
 - Non-financial rewards
- Performance management strategies and mechanisms
- Employee benefits – cars, expenses etc.
- Pension schemes
- Managing the reward of special groups, such as:
 - Senior executives
 - International and expatriates

Furthermore, the ‘administered wage’ might be set by the firm’s recruitment specialists using some of the above factors, then offered to the potential recruit on a take it or leave it basis, or it might be the outcome of an individual bargain taking place at the time of recruitment. Alternatively, the wage might be set and offered to the individual on the basis of on-going collective bargaining; on the basis of collective bargaining taking place elsewhere; on the basis of customs and practice, with a historical legacy adding inertia; on the basis of legislation such as minimum wage or equal opportunities legislation. Bargaining-power plays a key role at the individual or collective level. But the idea that it can be re-conceptualised and quantified as θ is banal. Consider the collective level. Employers, tending to have more social, political, cultural, ideological and economic power, are able to use their power not only to directly influence wage bargaining, but also to indirectly set the bargaining agenda. In the UK, for example, employers, operating via the state, intermediaries, and with no little help from the media, have managed to convince union leaders that ‘resistance is futile’, thereby, diminishing much of the power that unions have.

If we are serious about explaining wages, we need to analyse causal factors like those listed above, decide which of them are operational in the context under investigation (they are never all operational simultaneously); ascertain which agents are involved, and which socio-economic phenomena they are drawing upon; make judgements about the strength of the tendencies (not regularity laws) generated; and weld all this together to forge a causal explanation. The SELM^{CR} model (or something like it) encourages us to explain wage determination (and other labour market phenomena of interest) via realistic and true models. Orthodox models trap us in unrealistic and false models: it is time we abandoned them.

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