The complex roots of economic liberalism

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Introduction

- In this talk I wish to suggest that with the growing acceptance of social and political liberalism, economic theory has tried to accomodate itself to that position but, in so doing, has led us to a view that is at odds with what has been happening in many other disciplines.
- I blame, for this, the relentless insistence on the idea, that if individuals are left, insofar as possible. to their own devices, the economy will self organise into a state which has satisfactory welfare properties.
- This, I claim is backed neither by empirical evidence nor by theory. It has become an assumption.

Complex Collapse

Complex collapse

- The Western Antarctic Ice Sheet is now subsiding into the sea more rapidly than previously. Furthermore, this process is now irreversible, according to two articles in Science (Ian Joughin et al. 2014) and Geophysical Research Letters (Rignot et al. 2014). This will lead to a « short term » rise in sea level of over one metre and a longer term rise of much greater magnitude.
- Anthropogenic causes are an important part of the explanation

Complex collapse 2

- Why is this of interest to economists?
- First, because it is claimed that human behaviour has been, in part, responsible for the changes that have led to the collapse (already forecast by John Mercer *Nature* (1978))
- Secondly, because the nature of the causality is not as simple as might be thought.
- The obvious argument is that rising air temperatures caused by increasing CO_2 emissions have increased sea temperatures and that this has caused the melting.

Complex collapse 3

- In fact the mechanism is more indirect. Stronger winds have pushed warmer water which rises naturally towards the Antarctic region. These are caused, it is claimed, by global warming.
- This coupled with the increased Ozone hole, due in part to the emission of aerosol gases has led to the change in the ice sheet's stability.
- BUT AND HERE IS THE IMPORTANT POINT
- « There is no stabilising mechanism » as one of the authors said.
- Changing the things which we can control will not help now to prevent the phenomenon but could slow it.
- The system has self organised into an unstable state.

Lessons for economists

- We also are faced with a complex adaptive system over which we have very limited control.
- Sometimes it is not possible to reverse the consequences of well-intentioned but erroneous measures.
- The way in which the system self organises creates its own dynamics and incentives.
- Crises are an intrinsic feature of our economies but not of our models so we cannot justify, with theory, any idea of stable self organisation.
- This however is a relatively recent conclusion

How did we get here?

- Adam Smith's « Invisible Hand » is regularly cited as the first justification for economic liberalism or « laissez faire ».
- Examination of what he actually said and his « Theory of Moral Sentiments » leads one to doubt this.
- But the progress of the free trade argument and the pieces of legislation associated with it and the power of the arguments of Mill and others and the political and moral positions of liberals such as Gladstone reinforced this interpretation.

Market Forces

Presentation at teh ESHET conference
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Cournot's view of markets

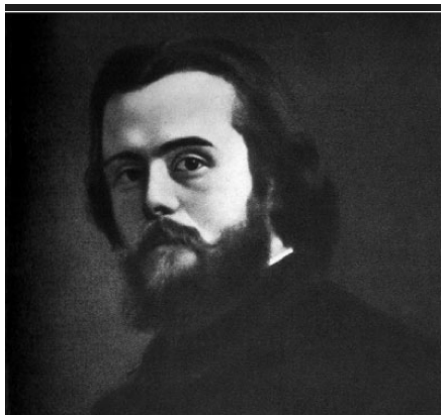
« economists understand by the term *market* not any particular market place in which things are bought and sold but the whole of any region in which buyers and sellers are in such free intercourse with each other that the prices of the same goods tend to equality easily and quickly »

A. Cournot, « Recherches sur les Principes Mathématiques de la Théorie des Richesses », Chapter IV

But how does this happen?

Two approaches to solving this conundrum.

The Walrasian Road



- Prices on markets will adjust and drive the economy to an « equilibrium state » in which resources are allocated efficiently.

The Austrian Road.

- The individuals in an economy will react to the signals they perceive and despite their local and limited knowledge will allocate resources efficiently

Walras and Economic Science

- All these results are marvels of the simple application of the language of mathematics to the quantitative notion of need or utility. Refine this application as much as you will but you can be sure that the economic laws that result from it are just as rational, just as precise and just as incontrovertible as were the laws of astronomy at the end of the 17th century.
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- *Lettre no. 1454 to Hermann Laurent in Jaffe (1965).*

Schumpeter on Walras

« So far as pure theory is concerned, Walras is in my opinion the greatest of all economists. This system of economic equilibrium, uniting, as it does, the quality of « revolutionary » creativeness with the quality of classic synthesis, is the only work by an economist that will stand comparison with the achievements of theoretical physics. Compared with it, most of the theoretical writings of that period – and beyond – however valuable in themselves and however original subjectively, look like boats beside a liner, like inadequate attempts to catch some particular aspect of Walrasian truth. It is the outstanding landmark on the road that economics travels towards the status of a rigorous or exact science and, though outmoded by now, still stands at the back of much of the best theoretical work of our time »

Schumpeter (1954), p.827

Walras on equilibrium

"like a lake stirred by the wind, in which the water continually seeks its equilibrium without ever achieving it".

Walras (1877) P.310

« Eh bien, le mode de résolution des équations d'équilibre, étudié par M. Walras, est absolument conforme à l'idée que Jevons c'est faite de la nature de ces équations. Quant au problème de l'échange, M. Walras l'envisage au point de vue purement statique, en ce sens qu'il suppose les quantités possédées de produits comme étant des quantités constantes, et les courbes de rareté comme ne variant pas; ces suppositions, il les maintient en traitant la question de la résolution des équations de l'échange par la hausse et la baisse des prix. »

Von Bortkiewicz, (1890), p. 359

Walras on equilibrium

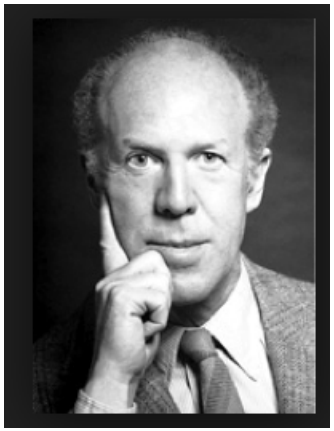
Edgeworth thinks that « « I am engaged in absolutely useless exercises in my efforts to demonstrate that the operations of the raising and lowering of prices, of the increases and decreases of the quantities of products produced, etc on the markets are nothing other than the solution by tatonnement of the equations of exchange, of production and of capital formation »,

Letter no. 927 to Von Bortkiewicz, in Jaffe (1965).

Hicks' Scepticism

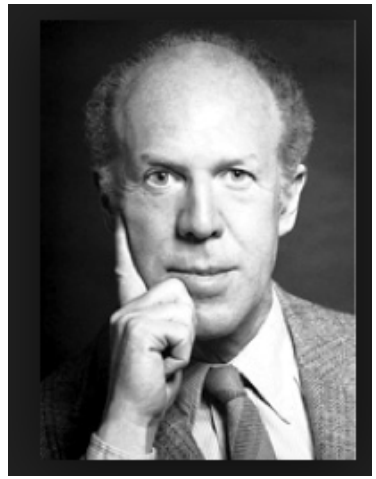
- "To some people (including no doubt Walras himself) the system of simultaneous equations determining a whole price-system seems to have vast significance. They derive intense satisfaction from the contemplation of such a system of subtly interrelated prices; and the further the analysis can be carried (in fact it can be carried a good way)...the better they are pleased, and the profounder the insight into the working of a competitive economic system they feel they get."
- *John Hicks, Value and Capital, 1939: p.60*

The Equilibrium View



One of the aims of the mathematical theory that Walras founded in 1874-77 is to explain the price-vector and the actions of the various agents observed in an economy in terms of an equilibrium resulting from the interaction of those agents through markets for commodities. In such an equilibrium, every producer maximizes his profit relative to the price-vector in his production set; every consumer satisfies his preferences in his consumption set under the budget constraint defined by the value of his endowment-vector and his share of the profits of the producers; and for every commodity, total demand equals total supply.

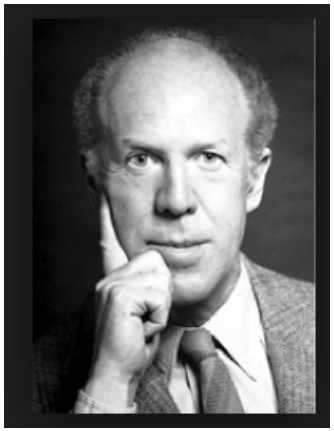
Equilibria and Optima



Two theorems are at the center of that area of welfare economics. The first asserts that if all the agents of an economy are in equilibrium relative to a given price-vector, the state of the economy is Pareto-optimal. Its proof is one of the simplest in mathematical economics. The second provides a deeper economic insight and rests on a property of convex sets. It asserts that associated with a Pareto-optimal state s of an economy, there is a price-vector p relative to which all the agents are in equilibrium

Gerard Debreu Nobel Prize lecture 1988

Debreu's Historical Heritage



He cites Cournot, Walras, the founder of the mathematical theory of general economic equilibrium, Edgeworth, and Pareto.

His reference to Edgeworth was not in line with the others: recall the interaction between Walras and Edgeworth

But he also referred to Von Neumann, Koopmans, and to Dantzig

The Equilibrium View:

From the time of Adam Smith's *Wealth of Nations* in 1776, one recurrent theme of economic analysis has been the remarkable degree of coherence among the vast numbers of individual and seemingly separate decisions about the buying and selling of commodities. In everyday, normal experience, there is something of a balance between the amounts of goods and services that some individuals want to supply and the amounts that other, different individuals want to sell. Would-be buyers ordinarily count correctly on being able to carry out their intentions, and would-be sellers do not ordinarily find themselves producing great amounts of goods that they cannot sell. This experience of balance is indeed so widespread that it raises no intellectual disquiet among laymen; they take it so much for granted that they are not disposed to understand the mechanism by which it occurs.

Kenneth Arrow Nobel Prize lecture 1972

F. A. Hayek

Hayekian Objections

- In the standard literature we are talking about centralised adjustment of uniform price vectors.
- Hayek suggested individual price vectors and the pursuit of profitable opportunities.
- He argued that the process he described would « tend to equilibrium »
- But nowhere does he « show » this. A little example can show that some restrictions on the nature of « individual demands » are necessary!

Hayek and time

- Hayek insisted on the fact that time was a vital part of the economic process and was severely critical of Keynes' failure to develop a theory of capital.
- But there is little indication as to precisely what the process consists of.
- Hayek was convinced that the reallocation of resources and the « distortion » of prices caused by a Keynesian stimulus would disrupt the relations between producers and their suppliers and that, in the end there would be a reduction of employment.
- So Hayek was concerned by the structure of the economy .

Hayek's criticism of Keynes

- ... it is alarming to see that after we have once gone through the process of developing a systematic account of those forces which in the long run determine prices and production, we are now called upon to scrap it, in order to replace it by the short-sighted philosophy of the business man raised to the dignity of a science. Are we not even told that, "since in the long run we are all dead," policy should be guided entirely by short-run considerations? I fear that these believers in the principle of apres nous le deluge may get what they have bargained for sooner than they wish. (Hayek, 1941, p. 410)

Some Things to Note

- Nowhere is the mechanism by which prices change explicitly mentioned. Individuals are adjusting, but how exactly?
- When Hayek says « in the right direction » does he have the idea of « towards equilibrium » in mind. His followers mostly deny this. But.

- "it is my conviction that if we want to explain economic phenomena at all, we have no means available but to build on the foundations given by the concept of a tendency toward an equilibrium. For it is this concept alone which permits us to explain fundamental phenomena like the determination of prices or incomes, an understanding of which is essential to any explanation of fluctuation of production. If we are to proceed systematically, therefore, we must start with a situation which is already sufficiently explained by the general body of economic theory. And the only situation which satisfies this criterion is the situation in which all available resources are employed."
- (Hayek, *Prices and Production* in Hayek 2008: 225)

What is more!

- Here is Hayek on the concept of general equilibrium from an interview as transcribed in the book *Nobel Prize-Winning Economist: Friedrich A. von Hayek* (1983, pp. 187-188):

  "Of the direct significance of equilibrium analysis to the explanation of the events we observe, I never had any doubt, I thought it was a very useful concept to explain a type of order towards which the process of economics tends without ever reaching it. I'm now trying to formulate some concept of economics as a stream instead of an equilibrating force, as we ought, quite literally, to think in terms of the factors that determine the movement of the flow of water in a very irregular bed."

Work in this Direction

- Ever since Edgeworth there has been a view that market equilibrium if ever attained will be so by « higgling » or decentralised bargaining and not by any centralised setting of prices.
- More recent attempts to pursue that line have been those of Fisher, Feldman, Foley, Gintis, Miller and Tumminello and others.
- Though the Hayekian approach has an intuitive appeal the convergence of the « private prices » called out by the individuals is still to be proved and without specific restrictions on the type of utility function etc the problem has not been laid to rest.

The Relation with G.E. Stability

- How then does the process explained by Hayek answer the fundamental problems posed by Sonnenschein Mantel and Debreu?
- Just to recall their results show that the only restrictions that our usual assumptions on individuals impose on aggregate excess demand are four well known properties.
- So if you want to show that the equilibria of any such aggregate demand function are stable then you must find an adjustment process which would converge from arbitrary starting prices to an equilibrium.
- And here is the rub, Saari and Simon showed that any process which would ensure such convergence would use **an infinite amount of information!!**
- Information comes back to the fore.
- Despite the valiant efforts of Herings and many others the problem has not been solved and one is tempted to accept Debreu's assertion that the problem is simply intractable.

Could the solution be achieved by planning?

Hayek and Planning

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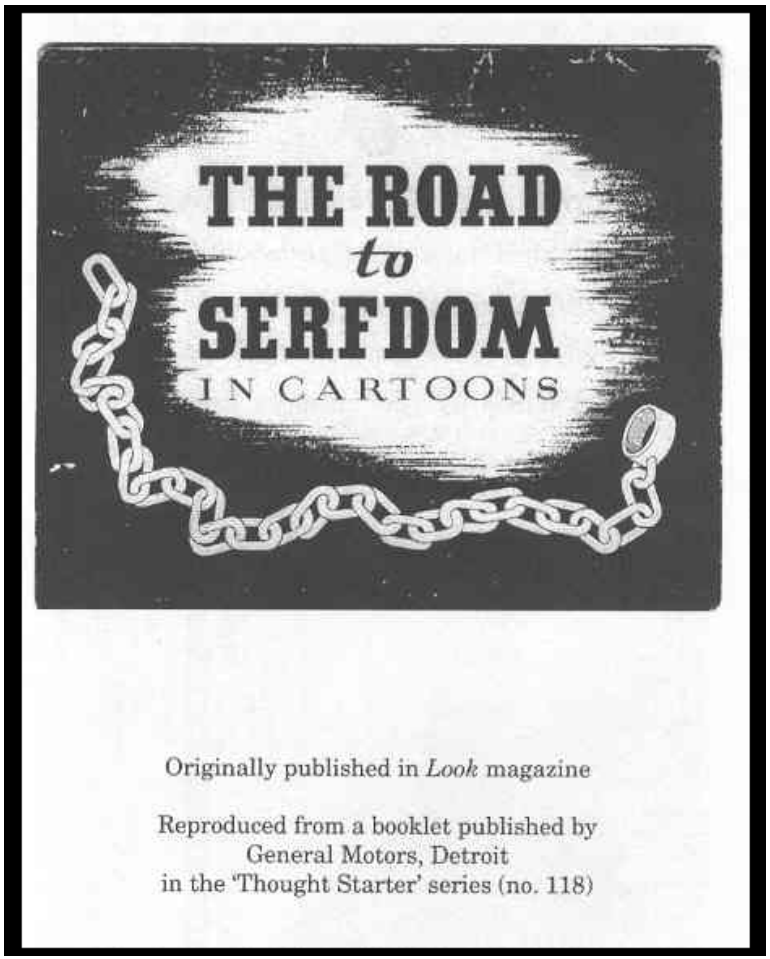
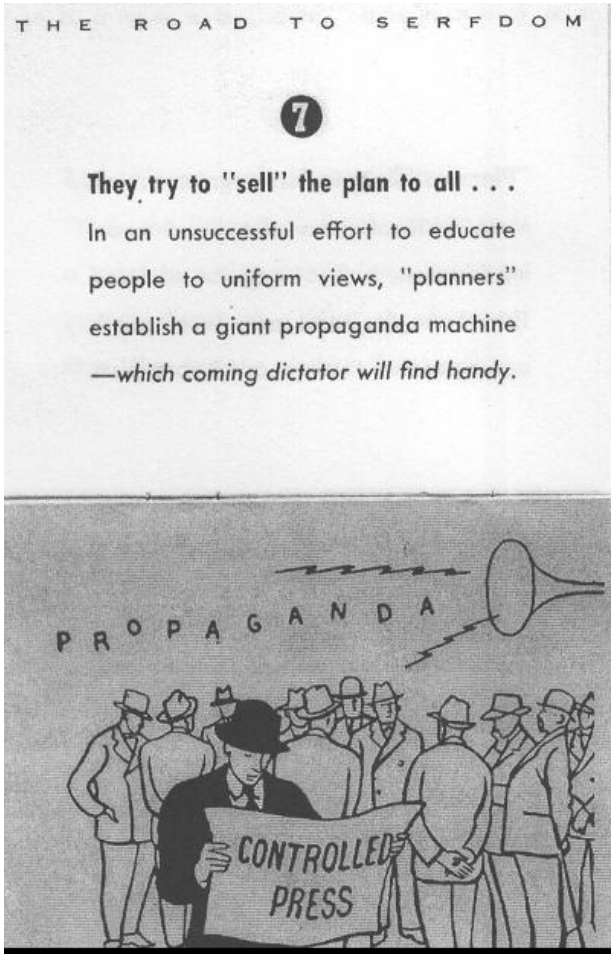
Hayek and Planning

- If you think that Hayek's criticism was mild and academic, I could share with you the cartoon book of The Road to Serfdom

Hayek's Views on Planning



Hayek and Planning



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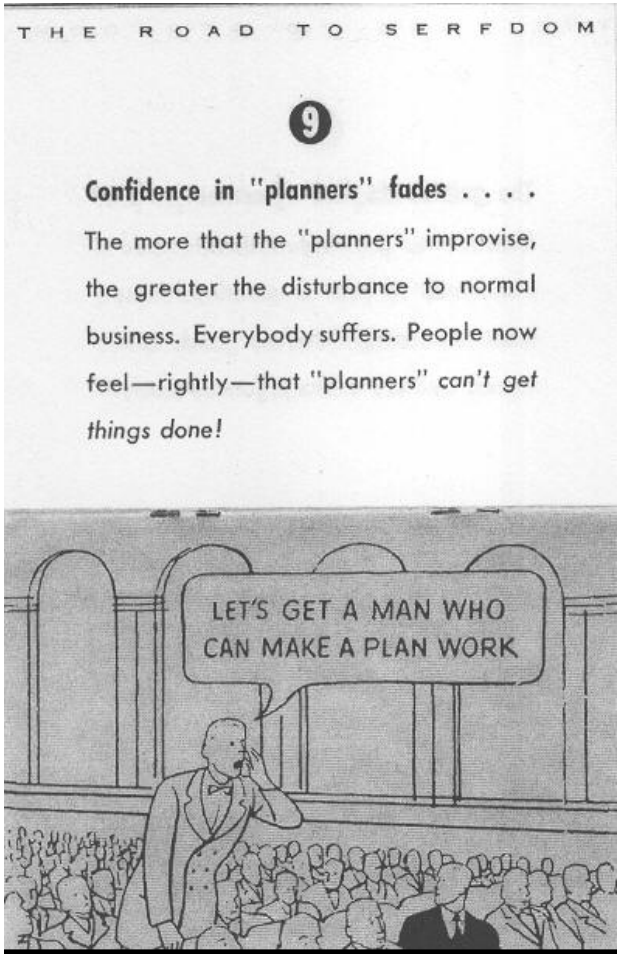

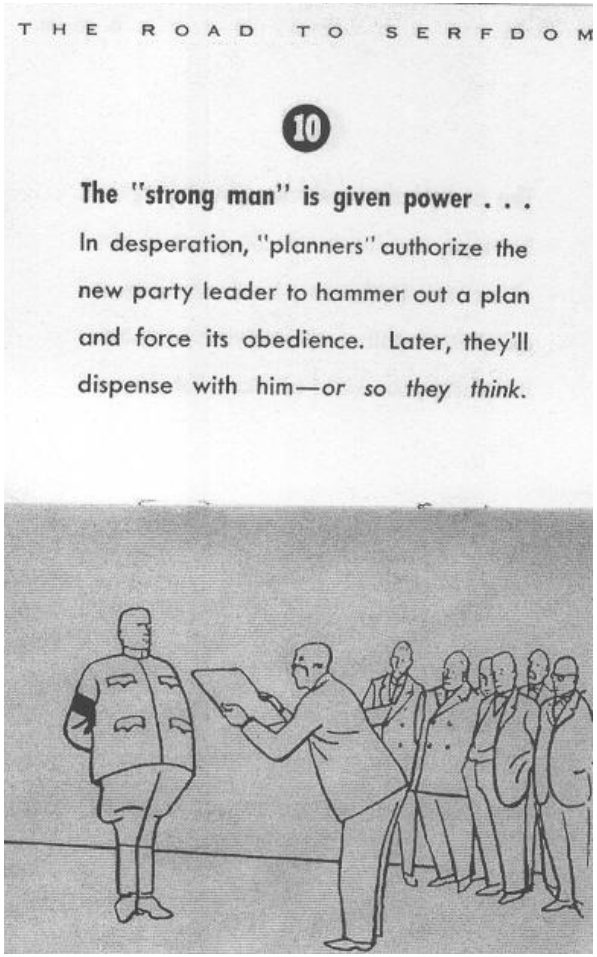

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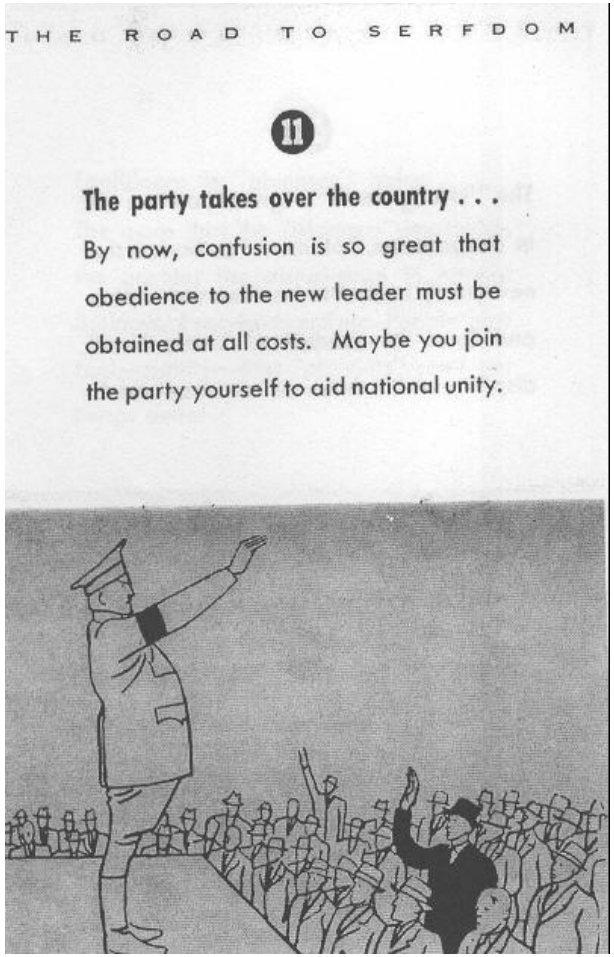
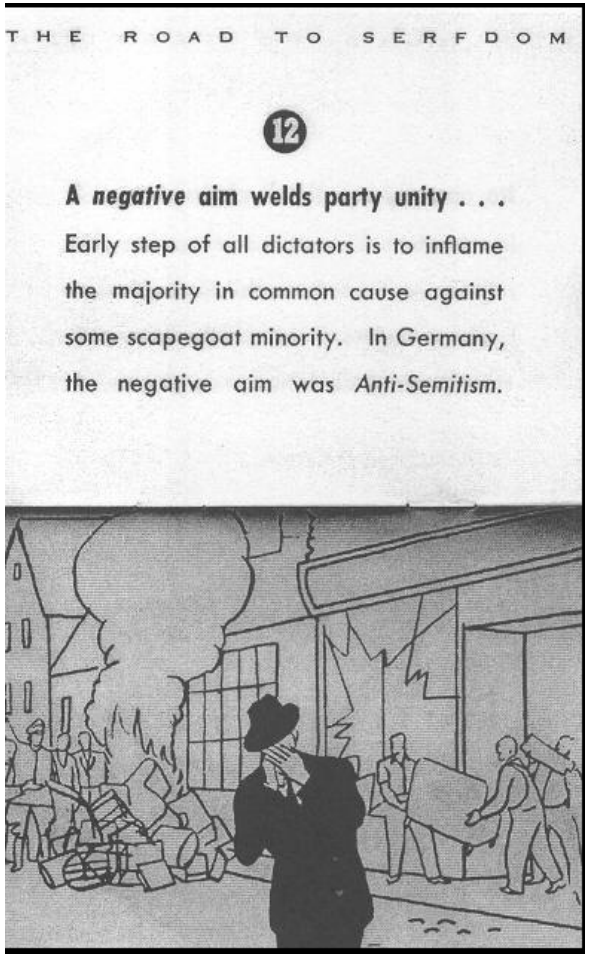
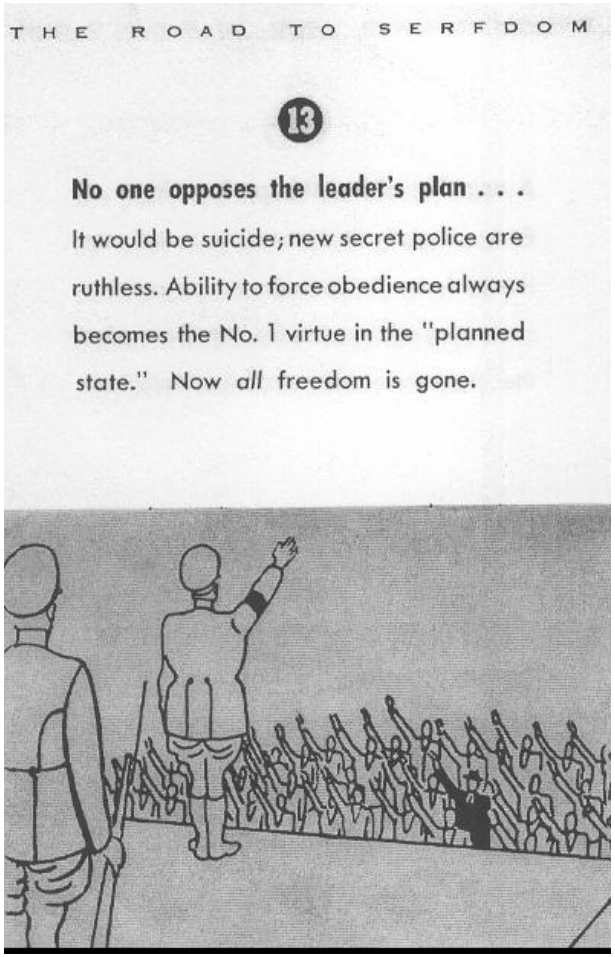
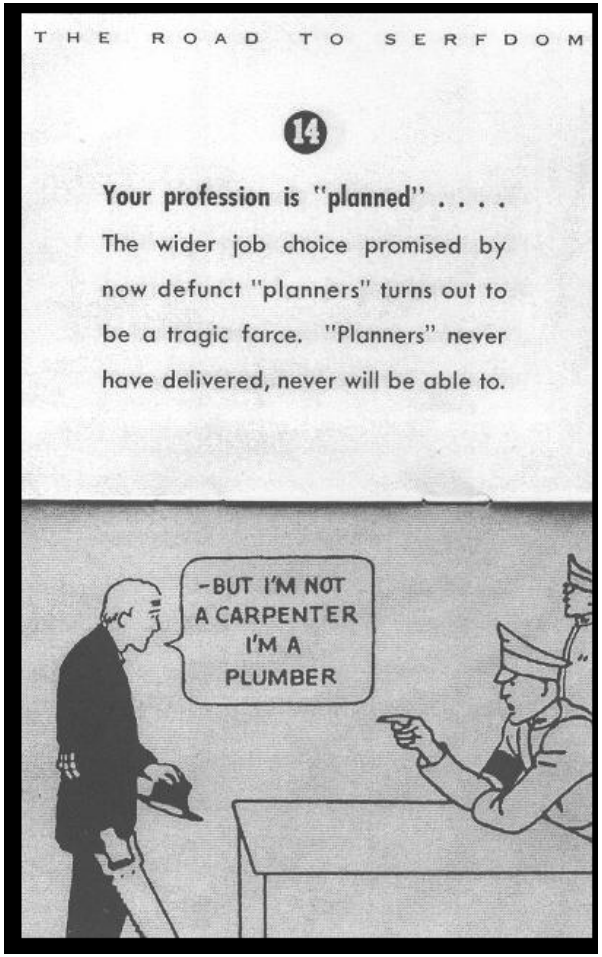




Hayek and Planning





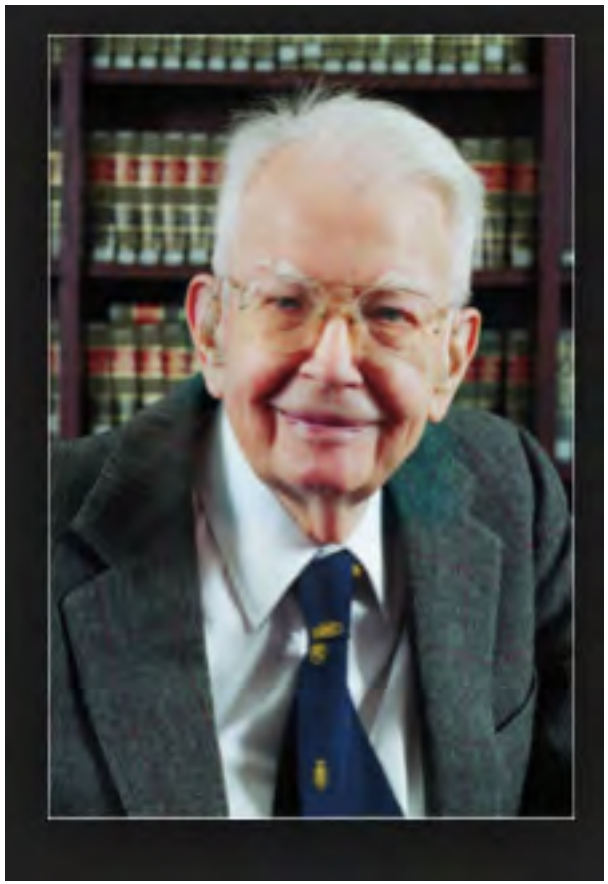
Irony

- That book, incidentally, was published and distributed by General Motors!!!!!

- Ironically one of the major problems with Hayek's writings is that while castigating centrally planned economies he failed to observe what Ronald Coase pointed out which is that a large part of modern industrialised societies is made up of large firms which are nothing other than centrally planned institutions

Ronald Coase

How did one reconcile the views expressed by economists on the role of the pricing system and the impossibility of successful central economic planning with the existence... of these apparently planned societies, firms, operating within our own society. (Coase, 1992, p.715):



Rational Expectations

- As soon as uncertainty is introduced into the General Equilibrium model, one has to specify peoples' expectations about that uncertainty. The original solution proposed by Muth (1961) was to suggest that people correctly understood the stochastic process governing the evolution of the economy and took their decisions in consequence.
- They had « rational expectations »
- Muth denied the empirical relevance of this notion.

Hayek's anticipation of Rational Expectations

"It appears that the concept of equilibrium merely means that the foresight of the different members of the society is in a special sense correct. It must be correct in the sense that every person's plan is based on the expectation of just those actions of other people which those other people intend to perform, and that all these plans are based on the expectation of the same set of external facts, so that under certain conditions nobody will have any reason to change his plans. Correct foresight is then not, as it has sometimes been understood, a precondition which must exist in order that equilibrium may be arrived at. It is rather the defining characteristic of a state of equilibrium".

(Hayek 1937: 41–42)

Hume's Scepticism

- In reflecting on my action, which am to perform a twelve-month hence, I always resolve to prefer the greater good, whether at that time it will be more contiguous or remote; nor does any difference in that particular make a difference in my present intentions or resolutions . . . But on my nearer approach, those circumstances, which I at first over-look'd begin to appear, and have an influence on my conduct and affections. A new inclination to the present good springs up, and makes it difficult for me to adhere inflexibly to my first purpose and resolution.
- (Hume, 1739–40/1978: 536)

Simon's View

- « A very natural next step for economics is to maintain expectations in the strategic position they have come to occupy, but to build an empirically validated theory of how attention is in fact directed within a social system, and how expectations are, in fact, formed.
- Taking that next step, requires that empirical work in economics take a new direction, the direction of micro-level investigation proposed by Behavioralism. »
- *Herb Simon (1984)*

Rational Expectations

- Originally claimed to be a way of closing our models but has become an article of faith
- As several econometricians have pointed out it would be unreasonable for individuals to have « rational expectations » if the underlying DGP has structural breaks for example.

The econometric problem

- In a world with structural breaks in the underlying stochastic process the RE hypothesis is unjustified.
- As Hendry and Mizon (2010) point out

« The mathematical derivations of dynamic stochastic general equilibrium (DSGE) models and new Keynesian Phillips curves (NKPCs), both of which incorporate 'rational expectations', fail to recognize that when there are unanticipated changes, conditional expectations are neither unbiased nor minimum mean-squared error (MMSE) predictors, and that better predictors can be provided by robust devices »

Woodford on Rational Expectations

- “It has been standard for at least the past three decades to use models in which not only does the model give a complete description of a hypothetical world, and not only is this description one in which outcomes follow from rational behavior on the part of the decisionmakers in the model, but the decisionmakers in the model are assumed to understand the world in exactly the way it is represented in the model.
- More precisely, in making predictions about the consequences of their actions (a necessary component of an accounting for their behavior in terms of rational choice), they are assumed to make exactly the predictions that the model implies are correct (conditional on the information available to them in their personal situation) "

- *M. Woodford (2011)*

Woodford : The Logical Problem

- This postulate of "rational expectations," as it is commonly though rather misleadingly known, is the crucial theoretical assumption behind such doctrines as "efficient markets" in asset pricing theory and "Ricardian equivalence" in macroeconomics. It is often presented as if it were a simple consequence of an aspiration to internal consistency in one's model and/or explanation of people's choices in terms of individual rationality, but in fact it is not a necessary implication of these methodological commitments. It does not follow from the fact that one believes in the validity of one's own model and that one believes that people can be assumed to make rational choices that they must be assumed to make the choices that would be seen to be correct by someone who (like the economist) believes in the validity of the predictions of that model. Still less would it follow, if the economist herself accepts the necessity of entertaining the possibility of a variety of possible models, that the only models that she should consider are ones in each of which everyone in the economy is assumed to understand the correctness of that particular model, rather than entertaining beliefs that might (for example) be consistent with one of the other models in the set that she herself regards as possibly correct.
- Mike Woodford 2011

Consistency of forecasts

- Surveys indicate a considerable difference in individual forecasts of economic variables
- We know that even expert forecasters differ widely in their forecasts even though (luckily) their forecasts tend to converge as the forecast horizon approaches.
- Efforts to explain the fact that the forecasts do not seem to be consistent with rational expectations have taken several forms.
- One idea is to concentrate on forecast revisions and for this, in particular “sticky information”(Mankiw) or “noisy information” (Woodford) models have been proposed.
- But given the dispersion of forecasts none of these alternatives can, alone, account for the differences

A more modest view

« I just think it is not realistic to think that human beings can fully anticipate all possible interactions and complex developments. The best approach for dealing with this uncertainty is to make sure that the system is fundamentally resilient and that we have as many fail-safes and back-up arrangements as possible »

Ben Bernanke Interview with the IHT May 17th 2010

A Parallel Road: Financial Markets

- If the laissez faire argument was to apply throughout the economy then it should also apply to the financial sector.
- On the roads I have discussed so far money plays essentially no role.
- Yet the idea that minimising any interference with the autonomous functioning of markets produces the best results is nowhere stronger than in financial markets.

Crises, Bubbles and Asset Markets

- Hayek on many occasions insisted that crises, speculative bubbles etc were due to well-intentioned but misguided interference by the government.
- He claimed that, left to their own devices, markets would not avoid bubbles and crashes but would diminish their impact. He suggested that the individuals within a market would tend to an equilibrium.
- But given the importance he attached to information he failed to see an important endogenous source of instability

An Inference Problem

- Hayek argued as many have done, that prices transmit the underlying, otherwise dispersed, information to market participants. Individuals therefore only need to act on the basis of prices.
- But what if the reasoning is inverted and individuals infer the information that produced a change in prices from the actions that produced that change, and then change their own actions and forecasts?
- If this is the case, as Poincaré pointed out, the system may well be unstable.

The Efficient Markets Hypothesis

- This is very simple
- All relevant information is contained in prices therefore there is no need to look anywhere else: paradox
- This basic argument comes from the work of Bachelier but in the report on his thesis it was said…

Un Avertissement

- Quand des hommes sont rapprochés, ils ne se décident plus au hasard et indépendamment les uns des autres ; ils réagissent les uns sur les autres. Des causes multiples entrent en action, et elles troublent les hommes, les entraînent à droite et à gauche, mais il y a une chose qu'elles ne peuvent détruire, ce sont leurs habitudes de moutons de Panurge. Et c'est cela qui se conserve

Henri Poincaré *Report on Bachelier's thesis 1900*

But there were other clear warnings

- From the outset Poincaré and others argued that the underlying Gaussian assumption was flawed. The empirical evidence showed this
- Keynes questioned Bachelier's assumptions, Mandelbrot spent most of his life arguing against the efficient markets hypothesis
- Yet, Markowitz developed his optimal portfolio theory on this basis
- Worse, Black-Scholes is based on the same assumption

Where does the efficient markets hypothesis go wrong?

- Remember Poincaré's warning
- Individuals do not only look at their own information they also observe the actions of others and infer information from those actions.

Looking into the sky quickly gets passers-by to follow.

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A week on the wild side
I'VE GOT A STOCK HERE THAT COULD REALLY EXCEL
REALLY EXCEL?
EXCEL?
SELL?
SELL?
SELL
SE
SELL!
SELL!
SELL!
SELL!
ELL!
SELL!
THIS IS MADNESS! I CAN T TAKE ANYMORE
GOOD BYE?
GOOD BYE!
BYE?
Buy?
Buy!
Buy!
BUY!!
Buy!
Buy
Buy!
I'VE GOT A STOCK HERE

No panic !

A note on macroeconomic shocks

- Condemned to work in an equilibrium framework the only explanation for sudden and major changes in the economy were exogenous shocks.
- There were « aggregate » shocks which were ascribed to « technological change » and idiosynchratic shocks to firms. But the latter were many and since the shocks were independent they cancelled each other out.

Buiter

- "Those of us who worry about endogenous uncertainty arising from the interactions of boundedly rational market participants cannot but scratch our heads at the insistence of the mainline models that all uncertainty is exogenous and additive." Buiter (2009).

Yet another problem

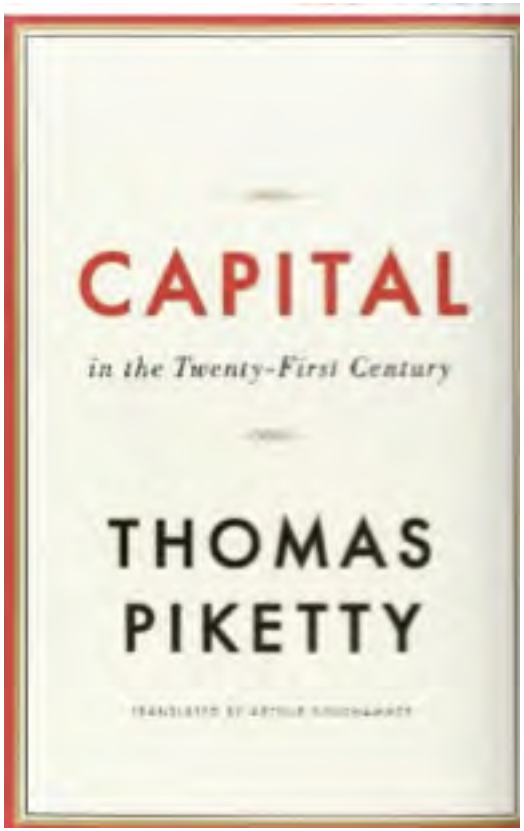
- If the system does self organise what is the resulting distribution of income
- Hayek's argument was an extreme one
- Trying to correct income distribution in the name of « social justice » would only lead to inefficiency
- This view is well summarised as follows.

Income Inequality

- “It is important to understand that income inequality is a byproduct of a well-functioning capitalist economy. Individuals’ earnings are directly related to their productivity. Wealthy people are not wealthy because they have more money; it is because they have greater productivity. Different incomes reflect different productivity levels. The unconstrained opportunity for individuals to create value for society—and the fact that their income reflects the value they create—encourages innovation and entrepreneurship .....A wary eye should be cast on policies that aim to shrink the income distribution by redistributing income from the more productive to the less productive simply for the sake of 'fairness'. »
- *Thomas Garret St. Louis Fed*.

Income Inequality

- But see Thomas Piketty:




VOUS AVEZ LE
DROIT
DE GARDER LE
SILENCE
ET LAISSER LEUR
ARGENT
NOUS SOMMES
99%
OCCUPY FRANCE
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Arrest
the
Bankers!

The view of those responsible in the U.K

- « But there is also a strong belief, which I share, that bad or rather over-simplistic and overconfident economics helped create the crisis. There was a dominant conventional wisdom that markets were always rational and self-equilibrating, that market completion by itself could ensure economic efficiency and stability, and that financial innovation and increased trading activity were therefore axiomatically beneficial. »

  Adair Turner, Head of the U.K. Financial Services Authority

Economists and Models

"And the first thing that came to mind was something that people said many years ago and then stopped saying it: The euro is like a bumblebee. This is a mystery of nature because it shouldn't fly but instead it does. So the euro was a bumblebee that flew very well for several years. And now – and I think people ask "how come?" – probably there was something in the atmosphere, in the air, that made the bumblebee fly. Now something must have changed in the air, and we know what after the financial crisis. The bumblebee would have to graduate to a real bee. And that's what it's doing".

Speech by Mario Draghi, President of the European Central Bank at the Global Investment Conference in London 26 July 2012


EURO
ARE YOU SURE YOU WANT TO KEEP ON DOING THIS?
BILLINGS

Economists and Models

- We are so wedded to our models that when they do not correspond to empirical reality, we wonder what the problem with the evidence is

Crises as Rare Events

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- "With notably rare exceptions, Germany remained largely at peace with its neighbours during the 20th century."
- "With notably rare exceptions, Alan Greenspan has been right about everything."
- *Comments on the blog Crooked Timber*

Was there no alternative route?

- Even if we accept the basic tenet of liberalism should we not envisage as Hayek sometimes seemed to do, that the system would not converge to an equilibrium?
- The natural avenue is that of seeing the economy as reflecting the idea that the agents acting freely but also interacting with each other is in a constant state of flux and can easily pass abruptly into an unstable state

Two basic approaches

The standard approach

- Our models must be built on sound microfoundations
- Lucas, one should only make assumptions about individual characteristics
- Individuals should satisfy economists' axioms of rationality
- They should optimise in isolation
- They undertand the economy they function in.
- Aggregate behaviour is like that of a rational « representative agent »

The economy as a complex system

- Individuals follow simple rules
- They adapt to their environment.
- They are not irrational and do not act against their own interest
- They have limited and largely local information
- Aggregate behaviour emerges from the interaction between individuals.

Bob Shiller

- Of course, the problem with economics is that there are often as many interpretations of any crisis as there are economists. An economy is a remarkably complex structure, and fathoming it depends on understanding its laws, regulations, business practices and customs, and balance sheets, among many other details.

Bob Shiller

- Yet it is likely that one day we will know much more about how economies work – or fail to work – by understanding better the physical structures that underlie brain functioning. Those structures – networks of neurons that communicate with each other via axons and dendrites – underlie the familiar analogy of the brain to a computer – networks of transistors that communicate with each other via electric wires. The economy is the next analogy: a network of people who communicate with each other via electronic and other connections.

Bob Shiller

The brain, the computer, and the economy: all three are devices whose purpose is to solve fundamental information problems in coordinating the activities of individual units – the neurons, the transistors, or individual people. As we improve our understanding of the problems that any one of these devices solves – and how it overcomes obstacles in doing so – we learn something valuable about all three.

http://www.project-syndicate.org/commentary/the-neuroeconomics-revolution#01DugqtByVO8W50F.99

Elinor Ostrom and Complexity

« When the world we are trying to explain and improve, however, is not well described by a simple model, we must continue to improve our frameworks and theories so as to be able to understand complexity and not simply reject it ».

Elinor Ostrom (2010) AER

The last words should be left to Mervyn King (Former Governor of the Bank of England)

Presentation at teh ESHET conference
Lausanne May 2014

« It is hubris to think that we understand how the economy works, we don’t »

"You want to keep an open mind but you don't want to open it so far that your brain falls out."

Buz Brock

How long will it take?

« A new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar with it »

Max Planck, A Scientific Autobiography (1949).

For those who wish to know more