Introduction to
“On the Mechanics of Crime”

A view of social science in general and the necessity of including microeconomics in criminology

He (an economist) must study the present in the light of the past for the purpose of the future.

-John Neville Keynes

We must, however, acknowledge … that man with all his noble qualities, with sympathy which feels for the most debased, with benevolence which extends not only to other men but to the humblest living creature, with his god-like intellect which has penetrated into the movements and constitution of the solar system- with all these exalted powers- Man still bears in his bodily frame the indelible stamp of his lowly origin.

— Charles Darwin

The meaning of "normal" social science

In 1759, Adam Smith, for the first time, used the term *the invisible hand* in *The Theory of Moral Sentiments* (1759). In Part IV, Chapter 1, Smith describes a selfish landlord as being led by an invisible hand to distribute his harvest to those who work for him:

> *"The proud and unfeeling landlord views his extensive fields, and without a thought for the wants of his brethren, in imagination consumes himself the whole harvest … [Yet] the capacity of his stomach bears no proportion to the immensity of his desires … the rest he will be obliged to distribute among those, who prepare, in the nicest manner, that little which he himself makes use of, among those who fit up the palace in which this little is to be consumed, among those who provide and keep in order all the different baubles and trinkets which are employed in the economy of greatness; all of whom thus derive from his luxury and caprice, that share of the necessaries of life, which they would in vain have expected from his humanity or his justice…The rich…are led by* ***an invisible hand*** *to make nearly the same distribution of the necessaries of life, which would have been made, had the earth been divided into equal portions among all its inhabitants, and thus* ***without intending it, without knowing it****, advance the interest of the society…"*

In some sense, with these underscoring lines, Adam Smith created not only economic science, but also social science. Social science is, in some respect, all about the invisible hand. Social science is about the idea that civilization and society is the result of some spontaneous order, and thereby an order, which is the result of natural forces and NOT the result of a central planner or human design. However, many people simply cannot grasp this. They cannot imagine an order among men, which no one ever has created. Even an early genius like Aristotle believed that: "*An order among men could extend only so far as the voice of a herald could reach."*[1]

This is what I have in mind, when I start teaching a new class in economics with the novel *I, Pencil, My family tree* by Leonard Read. In this first person novel, a pencil tells us that no person in the whole world knows how it was made. This postulate seems absurd; of course, someone knows how to make pencils! How could this be possible? But then the pencil starts to detail the complexity of its own creation, listing its components:

[1] Aristotle (ethics 9-10)

(cedar, lacquer, graphite, ferrule, factice, pumice, wax, glue) and the numerous people and factories involved, down to the sweeper in the factory and the lighthouse keeper guiding the shipment into port. After a while, it is clear to the intelligent reader, that the pencil is living in a system that is infinitely more complex than any single brain, and, therefore, must be controlled by an invisible hand (price signals).

This order must be the result of human action, but NOT human design.[2] This idea of an order outside the perception of humans was dramatically expanded further in 1859 by Charles Darwin and the important work *Origin of the Species*. This was the consequence, even though Darwin did not mention *homo sapiens* at all until page 488, where he wrote: "*light will be thrown on the origin of man and his history.*" This may give the impression that Darwin was not really concerned with man, but this is not correct. What is correct is that Darwin didn´t write explicitly about man until his second main work *Descent of Man* 1871. This second work was all about man, sex, and races. But we do know from Darwin's early notebooks that he had considered in depth the consequences of evolutionary theory at the sociological level. The reason he did not publish his ideas at that time was his concern about the shock his theory would create from a theological point of view. Theological views were all too familiar to him due to his beloved wife, who was a deeply religious woman (Rachels 1990, Weikart 2004).

Darwin's work and the idea of evolution, I believe, became the real centerpiece of modern social science. Great thinkers like Smith, Hume, Montesquieu, Smith, and Marx were classically educated. They tried hard to think in terms of dynamics and evolution, but none of them could free themselves from the thinking of their time and the explicit or implicit idea of a central planner and a mastermind. Once the ideas of Darwin were in place, this really created an explosion in thinking, because it was now obvious, that our civilization actually wasn't created by anyone. Social scientists, therefore, had to deal with two tracks, which are the creative forces of society.

The **first track** is the idea that man's biology, brain, and physique, is in itself the creation of evolutionary forces. Biological evolution still prevails, which means it is critical to our understanding of different phenomena in society; such as, the relationship between men and women, the correlation between IQ and human capital, and/or economic and social growth. At

[2]The novel from 1958 became famous, when Milton Friedman used it in his 1980 PBS television TV-program *Free to Choose*

the same time, it should be very clear, that society cannot be the sole consequence of biological forces. A society of ants could be the sole result of biological forces, but humans are exactly what they are because they are able to restrict their own impulses using a force we sometimes call *rationality*.

Therefore, a **second track** exists: society is the result of human action, but not of human design, which in turn means that society in itself is the consequence of something which could be described as adaptation or cultural evolutionary forces[3]. See e.g. (Popper K 1959, Hayek 1967, Hayek 1988). Herbert Spencer (1820-1903) was an early important thinker along this track. It would be highly beneficial to have an estimation of the weight of the two tracks. Modern human genome science and the prestigious human genome project have recently cast some light on the issue, confirming what many hold as a rule of thumb; namely that approximately 50 percent of human action and *culture* is determined by biological traits. [4]

The logical consequence of the idea of evolution, whether we express it as biological or cultural evolution, is the idea that some *objective truth* and *objective knowledge* exists as a force outside the sphere of man. Karl Popper's complex philosophy was centered on that specific fact(Popper 1973). Hence, there is really no difference between the natural- and social sciences. Social science must, therefore, behave like the natural sciences. This is not to say some specific problems in the social sciences are not present in natural science. The whole idea of rational expectation e.g. (Lucas 1976) is, I believe, an example which is unique in the field of social science. The implication of rational expectation implies for example, that the stock market cannot be predicted, and therefore, we never will be able to identify a bubble. Why? Because, if the bubble could be predicted, people would take advantage of that information and the bubble could not occur in the first place. For this surprising result, which is a consequence of pure deductive thinking, see e.g. the work of Eugene Fama. (Fama 1970) This logical impossibility is totally unknown to the field of natural science. The weather will not be affected if we are *looking* and *creating* models[5].

[3]Sociocultural evolutionary theories were developed independent of Darwin. Early contribution came from A. Comte, H. Spencer and L. W. Morgan

[4] For a very recent study from the United Kingdom, see:
http://www.pnas.org/content/early/2014/10/02/1408777111

[5]I am actually not sure about this. As I understand it, one result from Niels Bohr and quantum physics was that the result was seemingly dependent upon, the *expectation* of the observer: the one who was watching. See. e.g. http://www.sciencedaily.com/releases/1998/02/980227055013.htm

Even if there are many differences among classes of scientific issues, science is merely science. And science in itself is the belief in the idea that there is some *objective truth* out there. A psychologist has very different problems in extracting truth than does an economist, and physicians have still other problems. Methods of extracting truth are therefore different and cannot be generalized from one field to another nor to different levels of aggregation. What brings us all together is our search for objective knowledge. That is why *knowledge* in Latin means *scientia.* To obtain knowledge, it is important to follow a systematic methodology based on evidence. Our *goal* using knowledge is to create a good model f(x) based on some inputs (x) which are able to form some prediction(y). Expressed in other words, science is about creating knowledge, but the *goal* of science is to form a prediction.

The problem with the "law of great numbers"

In this problem we have one very important question to ask: if science is about creating a *model* which could be used to make some kind of *forecast* based on *inputs,* then exactly what do we mean by the terms: a model, forecast, and inputs? Certainly, most people in the field of natural science think in terms of some quantitative forecast. Therefore, we also need quantitative inputs and a purely synthetic and mechanical model. If this is the criteria for science, then no science regarding individual behavior and choices, for example psychology, could ever be *science*. The human brain consists of 100 billion neurons and 100 trillion synapses with an unimaginable level of complexity, which means that choices cannot be predicted in a simple way (Pinker 2002). However, such a hard-core, positive view of science is simply unreasonable. It is not even valid in natural science itself.

However, sometimes we are able to overcome the problems of complexity by using the *law of great numbers.* Suppose, for example, we want to make a forecast of the number that will show at a throw of the dice. In theory, it would be possible to make a forecast if we had access to all the relevant data; i.e. wind speed, angles, and the force of the throw. But in reality, we all know that the complexity is so high that we are not able to create a mechanical model that could perform and make a winner in Las Vegas. However, if the assumptions

behind the law of large numbers are fulfilled (for example that the dice is not false), we are able to make a forecast at the aggregate with some sort of probability. This is the basic idea behind many relatively new fields of science (i.e. the whole field of meteorology).

The idea of using the *law of large numbers* is also the backbone of the whole field of *econometrics,* which makes use of historical aggregate data to create a quantitative, non-biased forecast. The aim is to guide short-term economic public management. As we all know, and what econometricians certainly know, is that the underlying model structure is very complex, and that typical historic data often have problems with quality regarding homogeneity. These kinds of problems mean that the econometric model is very vulnerable to unobserved *structural shifts.* See e.g.(Edward 1983) It is simply not possible to handle the unknown if we have no idea of what it is that we do not know. Hence, all statistical forecasts or evaluations of parametric value are nearly worthless unless we have a very good theoretical model, which is able to give us at least some sense of causalities. Without this, estimation cannot be trusted to be truly non-biased.

For example, if we want to predict the outcome of a football match, it is common knowledge that historical data contain some important information. But it is also clear that the past cannot predict the present if the underlying parameters in our theoretical model are not constants — which they obviously are not, because all players have changed over time (many structural shifts). Econometricians do have tools to deal with autocorrelation, homogeneity of variance, heteroscedasticity, identification problems etc. But an econometric model simply cannot be better than the information we have when we are building that model. A model is by definition a simplification of reality; however, if that reality is extremely complex, it cannot be captured in a model if relevant psychological variables cannot be observed and quantified. Because the rate of complexity in forecasting a football match is clearly beyond our scientific possibilities, a truly non-biased estimation of parameters is obviously not possible. The huge question is: do we actually have reason to believe it is *easier* to create non-biased estimations in social science than in a ball game? The problem in econometrics was illustrated in 2008, by the Chief Financial Officer of Goldman Sachs, David Viniar, who said "*We were seeing things that were 25-standard deviation moves, several days in a row*.[6]" This statement was

[6]This is a very famous statement. It show some panic in the core of the economic machine room during the financial crises in 2007-2008. The statement can be found in *The Financial Times* http://www.ft.com/intl/cms/s/0/d2121cb6-49cb-11dc-9ffe-0000779fd2ac.html#axzz3ICIsTRkb

made during the financial crises 2007-2008, where financial institutions trusted their models and the stability of the underlying structure so much that they were able to maintain a very high gearing.

However, it is now clear they underestimated the true risks. For example, how likely is a 25-standard deviation? A five-sigma event will occur every 14,000 years; six-sigma events will occur once every four million years; a seven-sigma event will occur once every four billion years; and an eight-sigma event will occur once in the lifetime of the universe. There is no logical way to explain how unlikely a 25-sigma event was (most software programs run out of numbers). Hence, the assumption behind the model wasn't fulfilled in the first place.

I am not trying here to postulate that econometrics is just a pseudo-science, which has moved far beyond the scope of what really is possible. Actually, I think we are able to learn a lot about the complexity of the world from model building and from the model builders. (We find our limits by pushing them.) But we need to be very careful, regarding finding patterns of causalities.

The importance of good theorizing might be seen from an example in the field of leadership. Four writers have investigated 110 articles published in the previous 10 years in top-tier leadership Journals (Antonakis 2010). They did find that researchers failed to address at least 66 percent and up to 90 percent of design and estimation conditions that make causal claims invalid. Their findings do not refer to investigators who failed to correct for endogenity, but investigators who simply did not even consider the problem in the first place; therefore, they didn´t even try to use instruments and/or fix effects. Additionally the authors conclude: "We believe that the low number of papers in strategic management journals that account for endogeneity may indicate a failure of empirical research in strategic management."

The above conclusion brings me to my own motivation for entering the field of *criminology* (or as I call it, *the economics of bad behavior*), because my underlying belief is that the present situation in criminology seems to make causal claims and policy recommendations on the basis of observational studies without paying much attention to the underlying theoretical structure. I do not claim that important progress hasn't been made, especially in the understanding of creation of individuals preferences, but criminology seems to be defective when dealing with the overall problem, namely that any policy recommendation creates

institutional changes, and that people adapt, at the aggregate level, to these changes. Let me give a simple example:

> *Suppose we have sets of identical twins who have lived in the same environment. All twins have committed exactly the same type of crime. Now, we split the twins into group A and B. Group A we now give $100.000 dollar each if they choose to give up crime. Group B is the control group. After one year, we observe that group A is significantly less criminal than group A. Are we now able to conclude that it is a good idea to give criminals $100,000 dollars if they give up crime?*

An economist would immediately raise the red flag. Because it is clear that any such observation at one aggregation level cannot simply be extrapolated (by inductive reasoning) to a higher aggregation level, and then be used as a guide for policy recommendation. The reason, of course, is that a reward of $100,000 dollars would have a high impact on the *unobserved marginal criminal.* Hence we cannot trust any conclusion made from this kind of experiment unless we also carefully evaluate the impact on the marginal criminal. Our main interest as social scientists, at least at the aggregate level, is not the *sick* criminal, but the unobserved marginal criminal. Of course many criminologists are aware of the problems of endogenity. But because a correct handling of endogenity seems to involve microeconomics and highly sophisticated econometric techniques, there has been some critic against criminology from the economist camp (Fisher 1978, Nagin 1998, Levitt 2006, Nagin 2013)

On the other hand I ***do not*** claim, that any aggregated approach can simply be extrapolated and viewed as fruitful at a much lower aggregate level, and then be used to explain the preference structure of individuals. Likewise a psychologist is not an economist, an economist is not a psychologist. Sometimes, economists seem to forget that utility theory and economics have been developed precisely as tools to handle the problems of inductive reasoning. But there is no free lunch. The price economists pay to at least partly deal with the problem of induction, is a generalized perception of man. This is problematic when trying to explain human action from a psychological perspective. Any approach that claims to recover the distribution of individual utility parameters from aggregate data based on arbitrary distributional and functional form assumptions is dubious at best.

My personal view of social science

Allow me to extract my personal view of social science from the above. Social science is looking for some kind of external truth outside man himself. It is therefore the search for objective knowledge that has been generated from the spontaneous order (Human action, but not human design). In principle, man´s action must therefore obey some *laws*, which, if we were able to identify them, could be used to make a forecast. However I am a skeptic regarding the idea that we should be able to find the quantitative number of parameters. I do not reject quantitative analysis, and I certainly do not reject the important value of historical data in its quantitative form. However I find it doubtful that we should be able to make a quantitative forecast on the basis of a mechanical model, because often, the reality and dynamics are just too complex to be put into a mechanical model. I certainly go along with Mark Blaug, a Professor Emeritus from the University of London, who says:

> *"… that economic theories must sooner or later be confronted with empirical evidence as the final arbiter of truth, but that empirical testing is so difficult and ambiguous that one cannot hope to find many examples of economic theories being decisively knocked down by repeated refutations….Economic theories are not simply instruments for making accurate predictions about economic events, but genuine attempts to uncover causal forces at work in the economic system."(Blaug 1997)*

As a first order approximation, my opinion is that social law follows patterns, which in many, but not all, cases are so complex they seem to blow out our mathematical and model building possibilities in the same way as we simply cannot predict the outcome of a football match. But this doesn't mean there is no such thing as an expert in football, and that any opinion is just simply an opinion. By using historical data in combination with other kinds of human experience, we are certainly able to tell what one would expect and what is not to be expected.

So social science is certainly able to make some *prediction of patterns* as Hayek once called it. For further discussion of what we really should expect from economic science, see also (Becker 1976, Lucas 1976, Blaug 1997, Hume 2008).

Because of the high level of complexity and abstraction in social science, quantitative analysis cannot be trusted; therefore social scientists largely depend on good theorizing. Good

theorizing means theorizing which is logical and consistent; so it seems rather obvious that mathematics, which is the language of logic, should be used wherever feasible. Starting with some reasonable generalization of human behavior, mathematics can help us revealing patterns at the aggregate level that would otherwise be outside our perception. We are using mathematics, not because we want to make things difficult, but because we want to make things easier, and at least be able to have some idea about causality. My all-time favorite quotation comes from John Von Neumann, who stated:

> *"If people do not believe that mathematics is simple, it is only because they do not realize how complicated life is."*[7]

This quotation goes right to the heart of the issue. As a teacher, I always get a lot of questions from students who want to know why they need formalism in their arguments. They say that "the model is not realistic." Then I ask; "shall we make it more realistic?" I put one or two more variables into the arguments, and the math becomes much more difficult. This will silence the majority of students.

John Von Neumann illustrates this point. Any theory which is considering social behavior at a higher aggregate level needs some sort of a microeconomic foundation to at least deal with the big philosophical problem of mankind *induction* (moving from specific observations to broader generalizations and theories) by instead using *deduction* wherever feasible. Without some tools to deal with the induction problem, we have huge problems in trying to use the tools of statistics, which by nature only reveal something about correlation between variables. In this matter, I strongly disagree with F.V. Hayek who always warned against the use of mathematics[8].

This doesn't mean we should always use mathematics in dealing with social phenomena. Actually, mathematics could be biased against certain answers too, because it limits us to

[7]Remark made by von Neumann as keynote speaker at the first national meeting of the Association for Computing Machinery in 1947, as mentioned by Franz L. Alt at the end of "Archaeology of computers: Reminiscences, 1945--1947", Communications of the ACM, volume 15, issue 7, July 1972, special issue: Twenty-fifth anniversary of the Association for Computing Machinery, p. 694.

[8]When I was younger I was very interested in the economic debate between Hayek and Keynes nearly 100 years ago. It did strike me, how much time they used trying to explain what they really meant. Hayek felt that mathematics and statistics could be used as a tool for the central planner against the free society. For Hayek, freedom was an absolute.

dealing only with problems that can be analyzed mathematically. But if you are not using mathematics and logic as tools, then you are using language as a tool. And language also has its limitations.

First of all you have to deal with the problem of induction and the huge amount of complexity. Then you have to deal with the subjective structure of language. As noted we don't use mathematics, because we want to make things more complicated. We use math because we want to make things simpler! Mathematics allows us to deepen our analysis, taking one variable at a time. Mathematics gives us discipline. It makes us aware about how and when we are able to use the *law of great numbers* and the tools of statistics. But most of all, it tell us when using statistics is not feasible, and when we must find ourselves turning to philosophy and history.

If one believes in this kind of extreme complexity in social science, one has to be very skeptical about the ideas of positivism and determinism as suggested by August Comte (1798-1858) who more or less believed in the extremely optimistic scientific viewpoint, that we would be able to isolate the relevant variables and determined causality simply by extrapolating some insight from micro to macro. This high ambition, now present in many parts of sociology, is understandable; if the sociologists are right, they will make economists, look foolish. I personally believe the most fruitful way to go, is by starting with some common sense and something which is very close to tautological, and the ideas of *completeness* and *transitivity*. With the assumption of *continuity*, this creates the possibility of establishing a utility function and using mathematical analysis and methodological subjectivism.

However my inbuilt skepticism toward sociology is not unique among economists. Actually, the criticism of sociology and August Comte by economists has been there from the very beginning. Economists like Alfred Marshall, John Cairnes, and John Neville Keynes took Comte to task for his superficial critique. Keynes sums up the economic view of sociology in his textbook *The Scope and Method of Political Economy* by saying:

"Comte charged political economy of being radically sterile as regards result. But what results has sociology, conceived as a master-science, dealing with man´s social life, yet to show? (Svedberg 1990)

Constructivism: The alternative way of looking at social science

As noted in the beginning of my thesis, the spontaneous order is abstract. To even understand that such an order exists is really difficult, because it involves the concept of cultural and biological evolution, and therefore also the psychologically frightful idea, that "we are not always in control." To understand evolution among animals is one thing; to understand evolution in mankind is seemingly more difficult. It is a total abstraction compared to daily life experiences, but we could expect that scientist would at least have some idea of the problems involved. This, I am sorry to say, is not always the case. And the consequence follows straight away. If a person cannot see the involvement of evolutionary processes, then it logically follows that institutions in society must have been created on purpose (society as a social construct). Hayek himself called this *constructivism* (Hayek 1967, Hayek 1973-79, Hayek 1988). Popper called it *naïve rationalism* (Popper K 1959, Popper 1973). Another line of interpretation of the missing idea of evolution comes from the field of *evolutionary psychology*. Steven Pinker, a Harvard psychologist, describes the idea of constructivism as the belief in *the blank slate (Pinker 2002).* The blank slate refers to the idea of man as a *tabula rasa* described by John Locke in his *An Essay Concerning Human Understanding* from the 17thcentury. Locke himself was deeply religious, and it was simply obvious to him that man was created by God, and because God was just, God created man with the same initial endowments – therefore, as a blank slate. Again it follows from deduction, as a consequence of this first order principle, that inequality must be some kind of *sickness,* because the initial condition of man is equality. Hence the blank slate creates a moral codex of *egalitarianism*, which is very useful if one wants to *change things* and remove the aristocracy and ruling classes.

Man as a *blank slate* was, the backbone of the *rationalist* movement during the French revolution 1789-1799 (*Liberté, égalité, fraternité*)[9]. And man as a *blank slate* is the central first order principle of Marxism, socialism, and even a variety of interpretations of liberalism. Marx's vision: "*From each according to his ability, to each according to his need,*" is indeed a way of describing this way of thinking.

[9]J.J Rousseau(1712-1778) put it famously as; "Man is born free, and everywhere he is in chains"

Another example along these lines could be found in the philosophy of John Watson, the founder of behaviorism, who is known for saying;

> "*Give me a dozen healthy infants, well-formed, and my own specified world to bring them up in and I'll guarantee to take any one at random and train him to become any type of specialist I might select – doctor, lawyer, artist, merchant-chief and, yes, even beggar-man and thief, regardless of his talents, penchants, tendencies, abilities, vocations, and race of his ancestors."*[10] .

From a Darwinian perspective, where heritage by definition must have a smaller or larger role to play, this way of thinking is problematic. Equality, from a Darwinian point of view, cannot be a moral absolute. Hence because the idea of the blank slate has been so powerful throughout history, we are dealing with two very different perceptions of mankind. One perception believes that man and society is a consequence of evolution, and that inequality is a natural state, which of course is something we can do something about by accepting a cost (maybe becoming more inefficient). The other perception believes that man and society is the consequence of *man's action by purpose*, and that equality is really the natural state of mankind. The evolutionary psychologist Kevin MacDonald sees this bias toward equality as in itself a consequence of hundreds of thousands of years of living in small hunting tribes (Macdonald 1988). MacDonald and with him many others such as Hayek, Popper, and certainly Darwin himself[11], claim that solidarity and altruism are instinct that help man to survive in nature. If one agrees with MacDonald on this issue, then the idea of man as a blank slate could be "a cry from our inner voice" created long ago to help us survive in small tribes, then the blank slate is really a platform criticizing and destroying civilization in itself.

It again follows from first order principles that if egalitarianism can always be declared as the benchmark of *best*, then scientific progress must be defined as a way of trying to create more and more equality between men. Therefore, the blank slate if pushed far enough must, by definition; end up in hyper-relativism. If this is correct, some part of social science is therefore paradoxically very dangerous for institutions of society, because it follows, as a

[10] This quote is famous. But actually Watson continued saying that; I am going beyond my facts and I admit it, but so have the advocates of the contrary and they have been doing it for many thousands of years. P.82, Watson, J. B. (1930).Behaviorism (Revised edition). Chicago: University of Chicago Press.

[11] Darwin claimed that the golden rule; *one should treat others as one would like others to treat oneself,* was a consequence of nature, NOT culture. (see. E.g. Weikart on this issue)

result of the underlying idea of the blank slate, that it wants to overcome the prevailing order of society.

I think we are able to summarize the two versions of man in the following way:

Unconstrained Vision (Man as a *tabula rasa*)	**Constrained Vision** (Man as a creation of nature)
Human nature is malleable and can be improved – perhaps even perfected – if social conditions are improved. Anything is possible if the artificial constraints placed on human beings can be removed. (Marxism, constructivism, socialism, liberalism[12]) Science: postmodernism, relativism, social constructivism	Human beings need external structures or constraints in order to behave well, cooperate, and thrive. These external constraints include law, institutions, custom, traditions, nations, and religions. (classical liberalism, conservatism, critical rationalism) Science: Evolution, adaptation, heritage

In earlier days, the *blank slate* was more a matter of political opinion. Today the *blank slate* has moved beyond the point of politics and created a lot of confusion about the word *science* itself. This again follows from first order principles, because for the constructivist the invisible hand is truly invisible, which means that ***no objective knowledge*** can exist outside the sphere of man. Hence, from this logical starting point, it must be evident that "economics are just another way of doing science." The blank slate therefore leads to democratization or relativism of the idea of science. In the most extreme cases the constructivist claims that even natural science is, in the end, a social construct. This is at the center of the idea from the strong program normally associated with sociologists centered in the Edinburg school: David Bloor, Barry Barnes, Harry Collins, Donald A. MacKenzie, and John Henry. Of course, the *strong program*, in sociology *(the postmodernist)* was rejected by people in the field of

[12]Liberalism has many different lines of thinking. But the idea of "equality by law" was initially a revolutionary idea. John Locke certainly believed in the blank slate. So did J.S. Mill. Montesquieu did not.

natural science such as Norman Levitt, Paul R. Gross, Jean Bricmont, and Alan Sokal[13]. To my knowledge no people from social science took part in this *war of science*, which could be a sign, that social science is now all but totally swamped by the constructivist approach. I certainly hope this is not the case. But from my perspective, constructivism has had a huge impact on social science, which has transformed social science and education from an aristocratic field where the goal was to contribute, to *civilization's big bowl of human capital*. Instead historic knowledge has become irrelevant knowledge, which also means that the idea of using mathematics to reveal "objective laws" looks, from a constructivist point of view, as an illusion.

Today it is not quite clear what really distinguishes scientific knowledge from everyday knowledge in some fields of social science. From a constructivist's perspective, history cannot be of any special importance; therefore, there is no civilization's bowl of accumulated human capital. Historical data points are by definition common knowledge, and not objective knowledge. The Edinburgh school could be viewed as an extreme. But this is a wrong interpretation. The Edinburgh school simply took the first order principle of the blank slate and sociological determinism to its logical endpoint. Hence, anyone starting with the assumption of man as a blank slate is, from the beginning, on a path that ultimately leads towards hyper-relativism. A surer route to learn nothing is very hard to find.

[13]Sokal, became famous in 1996 when he published in *Social Text* the paper; *Transgressing the Boundaries: Toward a Transformative Hermeneutics of Quantum Gravity*. Sokal, as a natural scientist, postulated that quantum gravity is a social and linguistic construct. Later Sokal published, that the article was as a pseudoscientific hoax and by purpose totally nonsense. In the aftermath Sokal claims that; *My goal isn't to defend science from the barbarian hordes of lit crit (we'll survive just fine, thank you), but to defend the Left from a trendy segment of itself. . . . There are hundreds of important political and economic issues surrounding science and technology. Sociology of science, at its best, has done much to clarify these issues. But sloppy sociology, like sloppy science, is useless, or even counterproductive. Bruce Robbins; Andrew Ross (July 1996). "Mystery Science Theater".Lingua Franca. . Reply by Alan Sokal.*

Digging deeper, coming up muddier (the background for constructivism)

Evolution exists; objective knowledge, therefore, also exists. But as I have pointed out, I ***do not*** believe in the vision that historical laws are easy to extract, and therefore, can be stated in a simple mechanical form, which could generate a quantitative forecast. I certainly do believe in the power of mathematics, not as machinery creating historical laws, but as a tool, generating knowledge about the spontaneous order of things. Because mathematics, which has to deal with many variables and dynamics, can so easily become extremely complex, I also recognize that there are many different ways to follow in social science. However, I do not like the idea from constructivism that evolutionary forces and objective knowledge do not even exist. As I see it, because constructivism is now such a huge force — explicit or implicit — in social science, and certainly in the field of criminology, I have to explain myself in more details.

As noted, I see constructivism as another term for "anti-evolutionary thinking". The constructivist does make claims at the aggregate level by simply observing some kind of behavior at the micro level, and then uses extrapolation (Induction) to create chains of causality patterns at the aggregate level. This is the normal way of human thinking, because this is exactly the way our brain works. As a human species, we are, *biased* against induction, which is very helpful in our daily life. This means constructivism is, in some sense, the original (or primitive) way for man to do social science. Constructivism is the way people thought about things ***before*** Adam Smith, David Hume, and Charles Darwin. But as David Hume has already noted, there are some huge problems with induction, even if we certainly have to rely on induction in science as well. Hume advocated a practical skepticism based on common sense, where the inevitability of induction is accepted. But if this was possible to understand in 1748[14], why do we have trouble understanding it in 2015?

[14]This enquiry into human understanding was a masterpiece and became highly influential; it is now widely recognized as a classic in philosophy.

My own personal hypothesis is that many problems in social science today, as a matter of fact, could be trace back to the devastating World War II. Like the Civil War in the United States[15], the two great European wars, were apocalyptic events for Europe. Europe was ruined economically as well as morally. In France alone, half of the population of young men lost their life in World War I. In World War II, millions of civilians lost their lives in what Dr. Goebbels in his perspective, called "the great race war."

I don't think that we can over-emphasize the disastrous situation in 1945. And I don't think we can overstate the need for peace and the necessities for healing the wounds. But what was World War II really about? More or less exactly the same matter as was the catastrophic Civil War in United States (1861-65): namely a conflict of man's view on races in the biological understanding of the word. Should different human races be treated equally by the law, or were human races to be found in some kind of hierarchical social order. In the southern states of the USA, the white population believed they were given their privileges by God. And for many whites it was simply horrendous and blasphemic to even think that black people should have equal civil rights. That's why people go to war. They go to war because they want to protect their traditions and their way of life. Not because they wanted to protect some abstract economic privileges for some rich landowners. But the ethic views in the South were morally unacceptable for the North. In Germany, seventy years later, the arguments were nearly the same, but they were stated in a more *scientific* form, developed directly from Darwin's evolutionary theories. I believe this was a disaster for all of us who claim the starting point of social science should be evolution. Let me just give a short explanation.

Scientific Racism and Eugenics

If one wants to understand the scientific development from the late 19th century, in the field of social science, it is crucial to cast an eye to the economic situation in the world economy:

[15]The American Civil War was a catastrophe. Nearly 620,000 soldiers died. The total population of the United States in 1865 was approximately 31 million. Most families were touched by terrible losses.

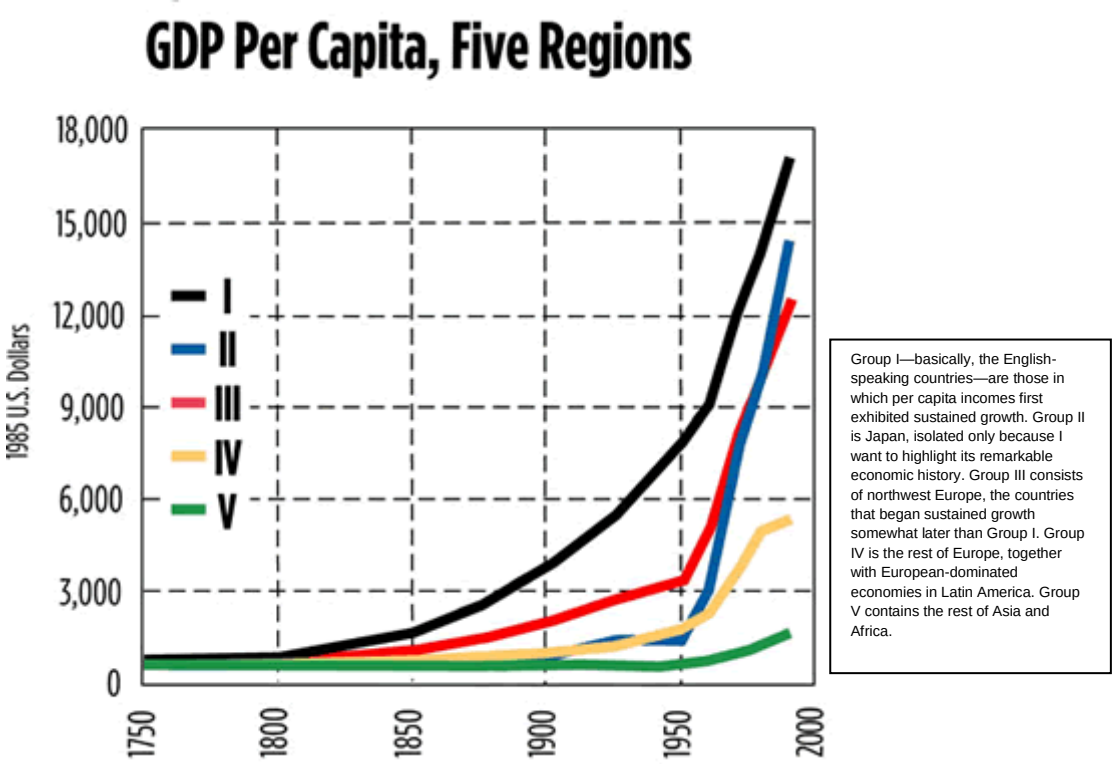


Figure 1: GDP pr. capita in the very long run, five regions[16].

It is evident that in the middle of the 19th century there was already a high income differential between the western world and the rest of the world. Wherever people looked outside the western hemisphere, everything was dark, poor, and very much uncivilized. Christian missionaries had traveled to every corner of the English empire and tried to bring and educate new customs and habits, they failed miserably. The figure above may actually underestimate the true numbers of economic growth differential. One big question in economic history is whether the standards of living actually started to differ long before the industrial revolution. The general theory is that GDP per capita was roughly the same across the world until the industrial revolution because of the Malthusian trap. But lately, new proof has been given regarding the English economy, showing that the Malthusian trap only existed at the margins, and that the general standard of living was much above the existing level long before the industrial revolution. See. e.g. (Broadberry 2006, Broadberry 2011)

[16] https://www.minneapolisfed.org/publications_papers/pub_display.cfm?id=3333& (Robert E. Lucas, industrial revolution, past and present, the Federal Reserve Bank of Minneapolis)

What social scientists therefore need is a good theory to explain this huge gap in income, and Charles Darwin's theory of evolution gives them precisely that[17]. The evolutionary theory says that man is the consequence of natural forces; thus there is absolutely no reason to believe that man should have been created equal. On the contrary, if man was created by evolution, and if man has lived under different climate circumstances, then there should be no reason to believe that all men are equal in the sense that all men are a blank slate[18](Rachels 1990, Rushton 1995). Therefore it is nearly inevitable, that Darwinism creates a sociological hypothesis, suggesting the income differential between the West and the rest of the world is based, at least partly, on *biological* factors[19]. This kind of logic started systematically with Sir Francis Galton, a cousin of Darwin, and the father of Eugenics.

The basic idea is simple: European civilization was not only built on top of Christian institutions (as the church has thought and explained), it was built on natural forces originating from the creation of a special *race*, the so-called Aryan or the great Nordic race (Grant 1916)[20]. It follows, nearly as a chain reaction of logic, that any heritage trace, which might be seen as a threat to the Aryan (the aggregate agent) should be eliminated or at least contained. Many important scientists agreed that something had to be done to protect against the danger of genetic degeneration, especially among the so-called undersized. See. e.g. (Black 2003). Adding to the fear was the fact that the fertility rate among the poorest in some places was very high, and in the middle- and upper-classes seemingly low. So, starting with Galton, the horrible scenario was that Western civilization would actually one day consist of morons if things were left to *Nature* and nothing was done. This was further emphasized by archeologists, suggesting the Roman Empire collapsed because of genetic degeneration. (Nilsson 1921, Weikart 2004, Watson 2011). In line with this kind of Darwinian thinking, the

[17]I think many people would argue that the basic element of racism in Germany was in place, already with the huge holistic philosophical systems of Hegel (1770-1831), who, to my knowledge, was the first to put race at the center of historical development.

[18]Ernest Haeckel, the good friend of Darwin, certainly did bring this view to central Europe.

[19] When I wrote these lines, I was becoming aware that Nicholas Wade, a reporter for *New York Times*, once again moved this hypothesis forward. Wade, N. (2014). A troublesome inhertitance. New York, Penguin.

[20] For a more modern approach to a biological explanation of the industrial revolution, see e.g. Clark, G. (2009). The inidcted and the wealthy: surnames, reproductive success, genetic selection and social class in Pre-industrial England, http://www.econ.ucdavis.edu/faculty/gclark/Farewell%20to%20Alms/Clark%20-Surnames.pdf.

Italian Cesare Lombroso (1835-1909) suggested, that most criminals were somehow people who could be viewed as being on a lower rung on the ladder of the evolutionary hierarchy. Hence, crime at its prime was merely inherited. Lombroso today is regarded as the father of modern criminology in the positive sense. (Lombroso 1876, Gottfredson 1990).

As noted, this war against the weak didn´t come out of the blue and from evil, but was actually an honest scientific attempt to build and maintain the welfare state (Koch 1996). Surely, what is now a forgotten fact is, that Sweden had a much more developed sterilization program than Germany had (Lynn 2001). And it was no coincidence that the head of the British Eugenic movement from 1937-44 was a bright economist whose name was John Maynard Keynes (Brignell 2010). On top of this, again it seems to have been forgotten that Darwin himself, in *The Decent of Man* p. 168-169, actually said;

> *"With savages, the weak in body or mind are soon eliminated; and those that survive commonly exhibit a vigorous state of health. We civilized men, on the other hand, do our utmost to check the process of elimination. We build asylums for the imbecile, the maimed, and the sick; we institute poor-laws; and our medical men exert their utmost skill to save the life of every one to the last moment. There is reason to believe that vaccination has preserved thousands, who from a weak constitution would formerly have succumbed to smallpox. Thus, the weak members of civilized societies propagate their kind. No one who has attended to the breeding of domestic animals will doubt that this must be highly injurious to the race of man. It is surprising how soon a want of care, or care wrongly directed, leads to the degeneration of a domestic race; but excepting in the case of man himself, hardly anyone is so ignorant as to allow his worst animals to breed."*

He then continued by saying:

> *"The aid which we feel impelled to give to the helpless is mainly an incidental result of the instinct of sympathy, which was originally acquired as part of the social instincts, but subsequently rendered, in the manner previously indicated, more tender and more widely diffused. Nor could we check our sympathy, even at the urging of hard reason, without deterioration in the noblest part of our nature. The surgeon may harden himself whilst performing an operation, for he knows that he is acting for the good of his patient; but if we were intentionally to neglect the weak and helpless; it could only be for a contingent benefit, with an overwhelming present evil. Hence we must bear without complaining the undoubtedly bad effects of the weak surviving and propagating their kind; but there appears to be at least one check in steady action, namely the weaker and inferior members of society not marrying so freely as*

the sound; and this check might be indefinitely increased, though this is more to be hoped for than expected."

Darwin, himself, thereby put his finger on the huge moral problem between civilization and humanism and the real and frightful natural forces we have to face, if we truly want to create a better world. This indeed shows how many scientists saw things in the beginning of the 20th century. But if one maintains that the danger of genetic degeneration across a population is for real, one has to deal with the question of races as well. At that time, the central question among scientists was not whether races existed, but rather whether all mankind had been created from the same source in Africa (the out of Africa hypothesis) or whether man was created spontaneously around the world (Coyne 2009). If man was created from the same source, it seems to suggest that men were not that different. At least there was a high overlapping standardization at the group level suggesting that race was not a very good selection mechanism from a central planner's point of view.

This was actually Darwin's original position in *Descent of Man*, which also was the reason why Darwin deeply condemned slavery (Rachels 1990). However others, especially many German scientists, tried to push forward the idea that man actually was created from different sources, and therefore, didn´t actually belong to the same species. This, of course, resulted in something that looked very much like plain racism. I do not know the precise center for this very tough position, but it seems the Kaiser Wilhelm Institute in Hamburg played a major role. Today it is nearly forgotten, that in 1905 Germany had already created the first KZ death camps in Namibia: Konzentrationslager auf der Haifisch-Insel vor Lüderitzbuch[21] at Shark Island. At least 2000 men, women and children from the Herero's were simply worked to death. The experience gained from these KZ camps was later used in the Nazi's death camps (Weikart 2004).

[21] http://en.wikipedia.org/wiki/Shark_Island_Concentration_Camp. It is notable that this homicide has been nearly forgotten today.

The Disaster in Germany

There is no doubt that scientific racism was present all over the western world in the first half of the 20th century. Compared to modern standards, many people's views were obscure, to say the least. But in general, their views came from the fact that they just couldn´t imagine civilization outside the western world. This means it was, especially in light of Darwin very obvious, that western civilization was at least partly built on top of some biological factors. Not many scientists were actually victims of the so-called *natural* fallacy, where any humanism could be abandoned as an *unnatural* move against the laws of evolution.

Scientists considered themselves as doctors who were meant to treat their patient's tapeworm. (And a tapeworm is certainly a part of nature) Most scientists working in the field of social science perfectly understood the real problem, that there was a tradeoff between humanism and nature (as Darwin also noted) and their criticism of humanism was not pointed at humanism itself, but to the fact that humanism could backfire.

When people today condemn the Germans for becoming so racist during the late 19th century, they do, as Karl Popper did many times, refer to the work of Hegel. Maybe this is right. Hegel certainly put races in the center of his philosophy. But the seed of racism was in general deeply connected to the questions of science. Germany was in many ways the epicenter of science in the western world.

In 1933, before Hitler came to power, Germany had won more Nobel prizes than the USA and England together(Watson 2011). Germany had the best brains in the whole western world. And as a logical consequence of Darwin, science had no better way, than to try to lift man from the religious, moral, egalitarian codex, and try to create a new artificial codex more in line with the evolutionary theory. Building such a new moral system was one of the main goals among many German sociologists, anthropologists, historians, economists and psychologists (Weikart 1998). The translation of Darwin's book to the German language came out in 1861, and in the following year, thousands of books were published on the subject of the consequences of evolution on mankind and society. Some critics said Germany became obsessed with the theory of evolution. (Weikart 1998, Weikart 2004, Watson 2011)

I do not want to give the reader the impression that I believe Darwinism automatically led to Nazism and the Holocaust. The idea of evolution, does not, in itself, explain very much. Actually, it is very close to becoming a tautology. As Karl Popper put it:

> *"I have come to the conclusion that Darwinism is not a testable scientific theory, but a metaphysical research program—a possible framework for testable scientific theories." (Popper 1973)*[22]

And this was perhaps part of the main driver for the development in Germany! Darwin destroyed our belief in God, but what he gave us instead was a tautology, which leaves us in a vacuum of moral relativism. Everybody could find almost anything in the evolution theory, to underpin, in scientific terms, exactly their view of things. Darwinism could therefore be used as a wheel, smashing the illusion of humanism and optimism without really replacing it with anything at all. In Germany, even the church was under heavy influence of the new scientific times and Darwinism.

In reality all moral breaks were off in Germany long before Hitler took power. And this made Germany so valuable to the chaos of the Weimar Republic (1919-33) because people were so open-minded and ready to try something new. If Germans tried to look to direction from the main center of the western world, the United States, they saw a capitalistic system in very great difficulty — especially evident after the stock market crash on Wall Street in 1929 that destroyed the money supply and thereby created a systemic deflationary pressure. In 1929 the mechanics of the money supply, the money multiplicator, nominal economic growth, and real economic growth, were not yet well understood, so many citizens became extremely worried that Marx was right in his hypothesis that the capitalistic system was based on a flaw in its internal logic, and that a general equilibrium did not even exist. (Friedman 1953, Friedman 1963). Hitler solved the economic problems, not by himself, but by putting the best man to work. Who was the best? His name was Hjalmar Schacht, and he and his team of highly skilled economists put Germany on the right track, which could best be described as an intuitive form of expansionary fiscal policy.

[22]However, Popper changed his mind a few years later. "I have changed my mind about the testability and logical status of the theory of natural selection, and I am glad to have an opportunity to make a recantation. . .p.345 Popper, K. (1978). "Natural selection and the emergence of mind." Dialectica**32**.

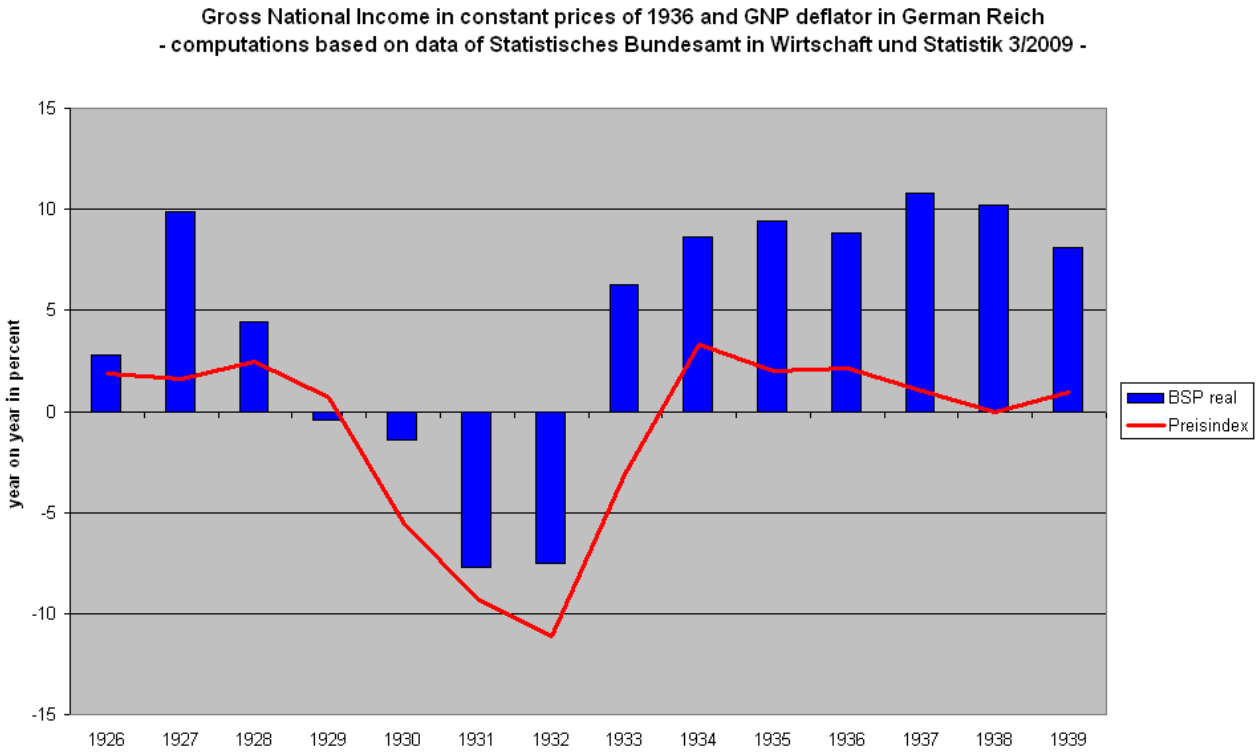


Figure 2: Gross national income in Germany 1926-1939[23]

As showed in the above figure, the economic situation after 1933, from an ordinary person's point of view, must have felt like a kind of magic. Nearly 10 percent economic growth would shut up any skeptic. Unemployment nearly disappeared. Many critics have pointed out that it was all a consequence of the German rearmament, but this is absurd. Even under the assumption of two percent spending on military in 1933, growing to 20 percent in 1939 — the extremely high economic growth rate as implied in the figure — the GDP in use in other sectors of the economy — must have jumped approximately 40 to 50 percent towards 1939. This could easily be verified by making simple calculations backwards. What is also an fact was that in 1937 millions of Germans went on vacations in the Italian Riviera. One-week holiday! The workers of many other European countries could only watch with envy.[24]

If the Germans looked to the east in the period of 1920-30 things were much worse. The Russian revolution in 1917 did bring communism and the *blank slate* to its power.

[23] https://www.destatis.de/DE/Startseite.html?nsc=true&https=1

[24] http://www.academia.edu/4736105/Economic_Policy_in_Nazi_Germany_1933-1945

Communism destroyed the market mechanism, and thereby created chaos in the price signaling, and also in the allocation of labor and capital. (Mises 1957, Mises 1966). An economic disaster was inevitable, and the Soviet Union turned into an indescribably inefficient economic machine, creating a stream of disastrous famine in 1920-32 when at least 20 million people died. Something happens when people starve. They become animals again. In the 20s and 30s, the Soviet Union was a dark, cold, and terrible place to live. How terrible things really were can be found in the black book of communism (Courtois 1999). The middle class in Germany was simply horrified by the situation in the east, and this combined with the fact that Marxism-Leninism in its ideology roots was deeply international and expansionary, created the idea that something had to be done about the threat from communism. Molotov´s policy against the Baltic States and Finland did not help in changing that frightful idea. What was even worse, Russia was a giant. Even if it was poor and economically inefficient, it had more than 130 million people and access to an infinite amount of natural resources. One single factory which produced tanks was able to produce more than half the total German production of tanks per year[25].

A central planned economy is not very good at allocating resources and creating a higher standard of living and consumer goods, but it is very good at centralizing industrial resources in a single point with the aim of war. As many Germans saw the situation, an attack on Russia and expansion in the east (lebensraum) was inevitable.

The nearly tautological claim in the evolutionary theory could also have been used as a wheel for the anti-Semitic forces in Germany and in many other places in Europe. The Germans have traditions for "thinking deeper and coming up muddier," so it was very logical that one tried to push the arguments of inheritance even further. Without doubt, Germany was a very conservative country, and in many parts one could argue it was the center of critique against American internationalism and English "short-sighted bookkeeping mentality"(Watson 2011). For the extreme right wing in Germany, this "disastrous" antinationalistic mentality was deeply connected to the Jews, who according to Hitler in *Mein Kampf*, were a race.

> *"Due to his own original special nature, the Jew cannot possess a religious institution, if for no other reason because he lacks idealism in any form, and hence belief in a*

[25]The Russian historian, Viktor Suvorov, in his book *Icebreaker* had the hypothesis that a Russian attack on Europe was eminent in 1941. This is a view not shared by the majority of historians. But it underscores the idea that there was a huge rearmament taking place in the Soviet Union.

> *hereafter is absolutely foreign to him. And a religion in the Aryan sense cannot be imagined which lacks the conviction of survival after death in some form. …Indeed, the Talmud is not a book to prepare a man for the hereafter, but only for a practical and profitable life in this world."*

Hitler's claims were of course not very scientific[26]. They were merely a consequence of primitive induction and huge generalization. Normally, we should have some inbuilt moral breaks from Christianity, but Hitler was certainly not a Christian. He was a moralist, and this was precisely what made him so dangerous. But his moral view stem from some sort of social Darwinian thinking where *nation* and *race* were considered to be *everything*. Everybody else was simply expendable.

The hostile attitude against the Jews was, however, not just purely irrational and some fantasy of Adolf Hitler. Actually, it was most likely another variation of the confusion between correlation and causality. The conflict between the Jewish population and the local Europeans, had been going on for centuries, and it was not just a simple *cultural conflict*. Today religion plays a smaller role, and people seem to be genetically mixed. But the situation at the beginning of the 20th century was actually somehow different. The Jewish religion is, in its roots and relative to Christianity, non-inclusive. This is especially true for one group of Jews, the Ashkenazi Jews, who have always insisted on being different. And this non-inclusiveness in combination with traditions of white-collar jobs could of course have been seen as some kind of spontaneous eugenics, where certain psychological traits were thereby cultivated. (see.e.g. (Murray 2007, Ostrer 2012, Wade 2014). In the 11th century, only eight percent of the Jewish population was Ashkenazi. But at its peak in the 1930s, Ashkenazi Jews totaled approximately 17 Million and comprised more than 94 percent of the total Jewish population.[27] This cultivation of traits by eugenics could be the reason why the Ashkenazi Jews have the highest average IQs ever recorded for one group (Hernnstein 1994, Murray 2007, Ostrer 2012). One would expect that such a high IQ propelled a lot of success histories and dominant positions in society, and this was exactly the case. In Germany, Ashkenazi Jews comprised only two percent of the population, but they obtained very dominant positions in commercial trade, banking, media, and science (Burleigh 2010). These

[26]Actually, the claim was of course not simply an idea of Hitler. The same view could be found in the anti-Semitic writer, Houston Stewart Chamberlain (1855.1927).

[27]^"The Jewish Population of the World (2010)".*Jewish Virtual Library*., based on *American Jewish Year Book*.American Jewish Committee.

kinds of positions were usually a consequence of free trade and fair competition, but sometimes the solidarity attitude within the Jewish population, as a minority group, could lead to discrimination against the majority. This could have backfired, and as a consequence, created rumors about a Jewish *complot*. Hitler, and with him millions of conservative Germans, hated and disliked the morality of commercial trade, banking, vulgarity at theaters, porn, internationalism, and last but least, Bolshevism. The latter was widely believed to be highly influenced by Jews (Courtois 1999), and therefore, at the center of the disastrous situation in Russia[28].

The prominent Frankfurter School, whose primary work was to create a hybrid between Marxism and Freudianism, was without doubt, trying to destroy traditional western values. Nearly all prominent intellectuals at the Frankfurter School were Jews. On top of this, many of the men, who had given in and made peace in the catastrophic German defeat of the First World War, were Jews (thinking more about money than honor and glory). Hence, the arrow was, as many people saw it, simply pointing at the Jews. Once again, many people, even highly skilled scientists, were confused by the distinction of correlation and causation, so even scientists believed that "Jews were an evil and dangerous race" (Weikart 2004, Watson 2011). This combination of old hatred, induction, and generalization, confusion about correlation, imperfect understanding of causality patterns, and simply envy and despair, turned out to be disastrous and led to the apocalypse.

Hence our lesson from history is that evolutionary theory in biological terms is very dangerous in the hands of politicians. It is a fantastic tool for science, and creates new hypotheses, but evolutionary theory is also very close to being tautological, and this means it could be used to generate very dark hypotheses, which in the hands of politicians, could become disastrous. Adam Sedgwick, Darwin's former mentor in natural science at Cambridge, warned back in 1859, saying that;

[28]As Winston Churchill said in 1920;"*The fact that in many cases Jewish interests and Jewish places of worship are excepted by the Bolsheviks from their universal hostility has tended more and more to associate the Jewish race in Russia with the villainies which are now being perpetrated."*

> *There is a moral or metaphysical part of nature as well as a physical. A man who denies this is deep in the mire of folly. Tis the crown and glory of organic science that it does, thro´ final cause, link material to moral;…You (Darwin) have ignored that link; and, if I do not mistake your meaning, you have done your best in one or two pregnant cases to break it. Were it possible (which thank God, it is not) to break it, humanity in my mind, would suffer a damage that would brutalize it, and sink the human race into lower grade of degradation than any into which it has fallen since its written records tell us of its history*[29].

Today it has been nearly forgotten, maybe promoted by many entertainment movies, that science, much more than evil, was the main force in the disaster and horrific events of World War II. Nazism was in many ways full-blown *natural science*, and therefore, anti humanism, and therefore, also evil. But Nazism was a very deliberate and very rational attempt to create a synchronization of a social system, which was under extreme pressure. Dr. Goebbels actually had a PhD degree. And more than 50 percent of the men, who engineered the *endlosnung* in Wannsee in 1941, also had a PhD degree. See also the fantastic historical tour de force in German scientific history by John Watson (Watson 2011). During the Nuremberg trial in 1947, leading Nazis did take a serious IQ-test. All of them where well over average. Funk – IQ124. Jodl –IQ127. Ribbentrop – IQ129. Keitel – IQ129. Speer - IQ128. Hess - IQ120. Schacht, Seyss-Inquart, Göring and Dönitz were in the genius range, and therefore, more than IQ135[30]. (Higher than 99% of the population in general), Hitler himself was never tested, but all leading Nazis in Nurnberg saw him as a man of extreme intellectual power. Schacht (the architect of the German economic miracle) testified in Nurnberg that he estimated the IQ of Hitler to be more than 150. This kind of frightening superior intellectual power, in combination with the lack of democratic institutions, was of course, one reason, why so much power could be centralized in the hands of Adolf Hitler.

[29]Adam Sedgwick to Charles Darwin, November 24, 1859. In "the Correspondence of Charles Darwin vol. 7 Cambridge 1991".

[30]Gilbert, G. M.: Nuremberg Diary. New York: 1947, p. 34

The development of social science after 1945

Provided I am right, it would certainly make the case that there is a *wound* in the heart of our thinking about social science, because biology and evolution have become such taboo subjects. Hence social science has become biased against sociological determinism or the blank slate because any attempt to criticize the blank slate could be attacked as "a dangerous path to hell." It is, of course, very difficult to prove by history, that I am right on this issue. History has so many interpretations. And economists have a terrible habit of trying to break everything down to a manageable number of variables. But to me, it all seems very logical.

The industrial revolution in the 19th century created a huge gap in income between the West and the rest of the world. We needed a theory that was able to explain this empirical fact. Darwin gave us such a theory, one that included biological variables and differences which were highly speculative and not easy to prove. As a consequence Eugenics, as a science, arose and became highly influential. Science, however, is primarily interested in *what is*, not how things *should be*. This difference is relatively easy to maintain watertight in the natural sciences, but in social science, it is truly problematic to keep the positive and normative apart. From the perspective of a very conscious social scientist, regarding the problem of induction and with high moral values, there really is no further problem discussing and analyzing any hypothesis. But things can easily get out of hand and move into politics, because Darwinism creates moral relativism, and therefore, a situation where all brakes are off. It is evident that Nazism and the holocaust were built on top of Darwinism, so if one destroys the evolutionary theory, one destroys Nazism as well. I believe this was really how J.R.F Tolkien saw things in his epic story, *The Lord of the Rings*, published soon after the war. Today people see *The Lord of the Rings* as an adventure, but I really think it was a harsh critique on German culture and the evolutionary theory[31].

[31] Tolkien always denied that he was affected by Wagner and "das ring des nibelung". But, in some respect, Tolkien could be viewed as the antithesis of Wagner. See e.g. http://www.the-wagnerian.com/2012/10/two-rings-to-rule-them-all-comparative.html

After World War II, any science based on evolutionary theory was simply no longer politically acceptable. On July 18, 1950, UNESCO blew the whistle and declared that human races were a *social construct*[32]. The idea was formulated by people within sociology and cultural anthropology, and it was heavily criticized from the perspectives of natural science and economics. But in light of the holocaust and Nazism, it was impossible to defend the idea of human races. The idea of human races was a concept which could split the spirit of humankind – and we didn´t need that in 1950.

If there is no such thing as differences in psychological traits initiated by heritage between populations, there cannot be any differences inside populations either. Therefore, man as a blank slate — as a first order condition — is the only logical possibility. For this reason, I think Thomas Kuhn was right in claiming that science will sometimes be rocked by some paradigm shift. But in this case, the reason for the paradigm shift was not *adding new knowledge*, rather that certain knowledge was not politically acceptable. I think the long-term consequence of World War II can be felt to the present day as a moral straightjacket to social science, has created a huge bias towards and overestimation of the importance of politics and rationalism, and thereby, also what we really can actually expect from social policies and social engineering.

Criminology, Marxism, and the positivist.

It is my hope that this short overview of history in this introduction gives us, a broader perspective on how to view modern criminology's way of thinking. Criminology is not a new field; one could argue that as a field, it goes back to the Babylon King, Hammurabi (1792–1750B.C.). From Hammurabi we got the famous 282 law-codes centered around the principles of *lex tallionis* (an eye for an eye) (Miller 2005). This symmetric principle extends throughout our entire civilization and has been illustrated by the Lady of Justice who holds in her hands a scale, adjusted in perfect equilibrium.

[32]Full text at: http://unesdoc.unesco.org/images/0012/001282/128291eo.pdf

Over time, as people moved to cities, life became ever more complex, and the probability of being detected when involved in criminal behavior could be substantially lower than 1. (See also my article 4, in this thesis).

For this reason, people could no longer rely on the simple principle – pay for what you have done; "no more, no less, than one pound of flesh," as stated in Shakespeare's *Merchant of Venice*. Because of increasing social costs, it became more and more evident that one also needed to focus on the preferences of the criminals. In this way punishment became no longer just a tool for compensation, but also a tool for pedagogy. This confusion ended in the Middle Ages, in a horrifying spiral of violence that was not truly attacked before rational thinkers like Jeremy Bentham (Bentham 1789). Bentham's suggestion was to focus to expected punishment and then securing that there were no systematic incentives to become a criminal. All punishment, exceeding these principles was to be regarded as *irrational* (Bentham 1931)

Bentham then suggested a peaceful and very rational way of looking at crime and criminals, one that was strictly in line with the classic principle of Lady Justice holding in her hands a scale in perfect balance to symbolize the idea that Justice was a matter of balance between the victims and the offender.

At the overall aggregation level, Bentham suggested that one needs a "price for doing crime" which incorporates the damage done, and ensures there are really no systematic incentives among criminals to commit crimes. However, at a lower aggregate level, no one denies the world would be a better place if we were able to invent a pill to change the preferences of criminals. But this presents a totally different scientific question. To my knowledge, the first person who tried to deal systematically with this question of preferences was Cesera Lombroso and his "criminal man"(Lombroso 1876), who were heavily influenced by the theory of Darwin and the question of evolution and heritage. Such a question of preferences is not really an issue for an economist, but rather one for a psychiatrist, psychologist, or another expert in individual choice. Economists are interested in *the marginal criminal*, not the criminals. Economists are interested in evolution and adaptation. Economists are interested in efficiency, which should be incorporated into "the market prices of bad behavior" which has nothing to do with, at least not directly, hormones, genes, or traumatic childhood experiences.

In my opinion, this distinction between different aggregation levels is rather obvious; however, as a consequence of World War II, nobody want to talk about *adaptation* and *evolution*. The ideas of microeconomics as a foundation for macroeconomic behavior barely survived in the field of economics, so it was therefore inevitable that everything in criminology collapse into the view that man was *a blank slate*. Hence his behavior was entirely determined by social forces. A criminal became something others have created — and in the Marxian view, something the capitalistic society created. That's is whye punishment suddenly becomes immoral and its effectiveness as a tool of changing preferences among the observed criminals was to be evaluated. (Malley 1987)

It would be wrong though to suggest that criminology hasn't changed since the days of Marxism. Some progress has surely been made in our understanding of human preferences; for example, questions of group dynamics and individual psychology. But as noted, this is not really a question for economics. The problem with criminology is, as I have already noted, that you cannot move from observation of individuals to the aggregate level by simply using extrapolation and induction. This cannot create a truly unbiased way of looking at things.

Many criminologists are skeptical about punishment because it doesn't seem to *cure* the criminals. See e.g. (Martinson 1974, Malley 1987, Coleman 1992, DiIulio 1996, Balvig 2011).But punishment as a *price signal of bad behavior* is not simply another form of psychological therapy. We certainly don't want the infinitely high prices for bad behavior that existed in the Middle Ages, and we don't want prices that are too low either. What we want is *the right price*, and this raises the question of whether criminology is better equipped to handle that task than economics is. Many economists believe there is something seriously wrong with criminology (Witte 1980, DiIulio 1996, Nagin 1998, Witte.A 2000, Levitt 2006, Bushway 2007, Nagin 2013). The economist's skepticism regarding criminology was of course also Gary Becker's reason to publish his famous *Crime and Punishment in 1968* article in the first place.(Becker 1968, Becker 1976).I believe J. Gibbs nailed the scientific problem with criminology by simply declaring:

> *"…criminological theories will remain defective until criminologists adopt formal theory construction." (Gibbs 1987)*

Economist contribution to the field of criminology

For the casual observer, it might seem that economics would not have much to contribute to the understanding of crime. Economists are primary concerned with exchange and market based transactions. Furthermore, most criminal acts seem to be the consequence of impulse or emotions, which seems to be in sharp contrast to *rational behavior* which is the backbone of economic theory. This view misses the point. At the ultimate level, economic theory is a theory about the aggregate. Economics is neither concerned with pathological individuals as consumers, nor as criminals. The basic idea behind economic theory is that agents will adapt, consciously or sub-consciously, to the institutions of society. If there is *profit* or extra utility to be made, some people will reap the harvest. Hence, economic theory is concerned with efficiency, not with pathological individuals. Economic theory has little to say about fathers who kill their own children. Such kinds of stories make interesting news, because they are sensational, but this kind of example is not very useful as a general theory of crime.

Professor Steven Levitt, an economist from the University of Chicago, highlighted four economic contributions to and characteristics of the understanding of crime as compared to those from the social sciences (Levitt 2006). These characteristics are:

- an emphasis on the role of incentives in determining the behavior of individuals whether they are criminals, victims, or those responsible for enforcing the law;
- the use of econometric approaches that seek to differentiate correlation from causality in nonexperimental settings;
- a focus on broad public policy implications, rather than evaluation of specific, small-scale interventions; and
- the use of cost-benefit analysis as the metric for evaluating public policies.

It is notable that Levitt does not define economics as a way of analyzing an agent's individual preferences. Economics tells nothing special, what determines single individual preferences. Economics is concerned only with crime as a general theory of social phenomena.

a. Economics' contribution to the theory of deterrence

Economics typically emphasizes incentives as an engine of human action. This arises from the economic idea that man is a "utility maximizing, subject to constraints" creature. This is not to say man is a lightning fast calculator, but merely states man is adaptive to different circumstances. As Becker stated; "*individuals do the best they can with what they have*" (Becker 1968). Becker's view dates back to great philosophers like Montesquieu (1689-1755), Cessara Beccaria[33] (1738-1794), and Jeremy Bentham[34] (1748-1832), who tried to connect the ideas of incentives, deterrence, and crime. The basic view could be formalized in very simple terms.

Suppose an agent can make a choice between doing an action that could lead to some kind of punishment (imprisonment or fines) with probability P. The benefit from the action is τ. If caught, there will be some psychological price to pay by being punished which is denoted γ.

This variable measures the disutility of imprisonment. There is also a direct punishment ω from a fine, or an alternative cost for lost labor income; hence, the expected loss from committing a crime could schematically be stated as:

[33] In 1764, he published *Dei Delitti e DellePene* ("*On Crimes and Punishments*"). Arguing for the need to reform the criminal justice system by referring not to the harm caused to the victim, but to the harm caused to society. In this, heposited that the greatest deterrent was the certainty of detection: the more swift and certain the punishment, the more effective it would be. It would also allow a less serious punishment to be effective if shame and an acknowledgement of wrongdoing was a guaranteed response to society's judgment.

[34] Bentham posited that man is a calculating animal who will weigh potential gains against the pain likely to be imposed. If the pain outweighs the gains, he will be deterred, and this produces maximal social utility. Therefore, in a rational system, the punishment system must be graduated so the punishment more closely matches the crime. Punishment is not retribution or revenge, because that is morally deficient: the hangman is paying the murder the compliment of imitation.

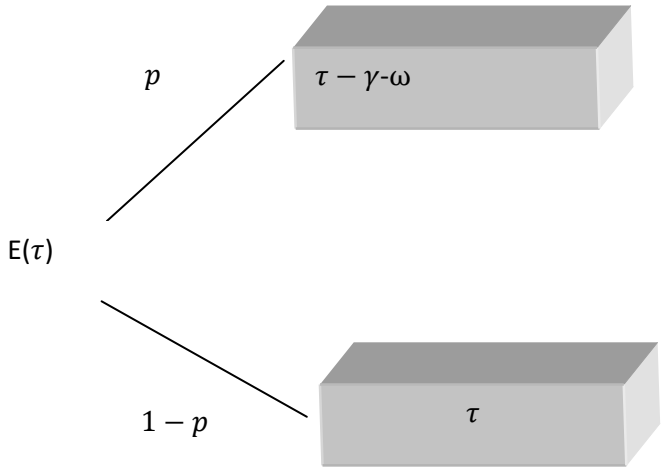


Figure 3: The expected loss from doing crime

The expected benefit from committing a crime could be stated in mathematical terms as:

1. $$E(\tau) = p(\tau - \gamma\text{-}\omega) + (1 - p)\tau$$

Or as:

2. $$E(\tau) = \tau - p\,(\gamma + \omega)$$

(2) says that the net benefit from committing a crime depends on the benefit from the crime action in itself, minus the price of committing a crime $\gamma + \omega$, which only comes with some probability.

In a simple and not very serious case, where a criminal act will be punished with a fine,

$\gamma = 0$, and (2) collapses to:

3. $$E(\tau) = \tau - p\omega$$

This simply says that a person would commit "a crime" if the expected benefit

4. $$E(\tau) > 0 \; or > p\omega.$$

Of course human choices depend on many variables, but as a first-order approximation to reality, this seems reasonable; (3) just says that if the benefit from, for example, illegal parking is higher than the expected value of a fine, then the aggregate agent should do the parking.

In the general case from (2) and, therefore, cases which could be seen as more severe, an agent would commit a crime if;

5. $$\tau > p(\gamma - \omega)$$

This could also be seen as a reciprocal technical version of Bentham´s first law[35]

"The evil of the punishment must be made to exceed the advantage of the offense."

But (5) also captures the idea of *Bentham´s second law* which he stated as:

"the more deficient in certainty a punishment is, the severer it should be."

This follows from the fact, that if p is low, in order to obtain the same expected punishment, a more severe punishment is necessary. In general, the basic tree-structure model above, best known from the theory of finance could be expanded with a lot more variables. This theoretical approach is widely used in the field of deterrence. (see e.g. Nagin 2013) From the perspective of pure criminology, Becker's article influenced many articles in the field of crime and deterrence (see below). As the model above pinpoints, there are different areas of focus depending on the variables at consideration. In general, I believe, there are three deterrence channels that could be considered as candidates for dampening preferences for crime.

[35] *In his Theory of Legislatio*n. New York: Harcourt Brace Co., 1931.

- The first main channel is through the expected punishment.
- The second channel is criminal's alternative cost.
- The third is through the production function. (How high is the profit from doing crime).

Let us consider how the modern literature views those three channels.

Deterrence channel # 1 The expected cost

A lot of interest has been placed in the field of expected cost of doing crime. In general, we have to focus on two variables: 1) the individual's perception of the probability of being caught, and 2) the severity of the punishment, if caught. If punishment imprisonment, time preferences become interesting, because a high time discount factor may dilute the expected punishment.

The first extension of the incentive-based model by Becker was initially developed by Ehrlich (Ehrlich 1973, Ehrlich 1982), and also by Witte (Witte 1980, Witte 2000) which focused on crime-work decisions and the estimation of the elasticity in Becker´s supply and demand function. See also for example Schmidt or Cameron (Schmidt 1984, Cameron 1988) for a survey of these first-generation economic models of crime.

These earlier studies can be criticized for being set in a static framework and also using simple expected utility theory (Dhani 2013). One important aspect of crime is that benefit comes first and the punishment comes (maybe?!) later. The important time discounting problem and the dilution of imprisonment have been addressed by e.g. Polinsky (Polinsky 1997). Mccrary (Mccrary 2009) combined the discounting problem with a job-search model, trying to clarify the problem of imprisonment of *impulsive* juveniles. Gary Becker (Becker 1968), I think, implicitly argued for the same thing: that criminals are *risk seeking*. The main conclusion is that there is not much economist could say if agents are impulsive, and do have a high discount factor, when imprisonment and time are used as weapons of punishment. In this project, I discussed this issue in greater detail.

In my view, main general conclusion, as I see it, from the theory of expected cost, is that we should expect that probability of detection (police) to be more important than the punishment itself, especially because of time dilution, which means the idea of simple expected utility theory comes under question. This is perfectly in line with the best quantitative evidence available. See the section of econometric approaches.

Deterrence channel # 2 The alternative cost

It follows directly from the cost-benefit approach that the risk involved in committing a crime, has to be considered vis-à-vis any alternative. This is especially important if the consequence of that action involves the risk of imprisonment (punishment by time). So, if the economic approach is correct, we should expect a high correlation between human capital, market value, and the tendency to commit crime. Imai (Imai 2004) emphasizes the idea that engaging in crime today may have negative consequences for completion of education and for employment and wages in the future. This is in line with (Becker 1988, Sickles.R 2008, Mccrary 2009). These papers are dynamic in the sense that agents have to take an intemporal choice, which once again, makes the question of the discount factor crucial. But the connection between crime, education, the accumulation of human capital, and market wages, has long been recognized in social science and criminology. Poor wage conditions, according to the economic model, should be expected to create higher incentives to commit crime. But the main problem is to understand how causality moves, because we cannot simply make the assumption that more costly education would dampen crime and create higher legal wages as some underlying biological factors such as IQ could exist. The reason why some people commit crime is not that consequence of too little education. It is because they are not able to benefit very much form education because of low intelligent, that they do crime. Causality problems like these have to be addressed and revealed in science. For a similar view, see for example (Nagin 1998).

Deterrence channel # 3 The benefits of committing a crime

For good reason, it is difficult to observe the benefits of committing a crime. Further, the benefits are not normally a variable the central planner is able to control. From a microeconomic perspective, it seems further reasonable to accept the idea that the benefit of committing a crime is simply a constant. However, at a higher aggregate level, the benefit of committing a crime could be an important variable, because one has to consider the problem of diminishing return.

This problem also demonstrates why crime is nearly impossible to totally defeat: simply because the benefit of committing a crime, at the margin, is infinite. This also asks the questions of if and how crime affects overall macroeconomic variables, the least of which is capital accumulation. This question has been addressed by numerous researchers, but mostly empirically. See. (Detotto 2010).

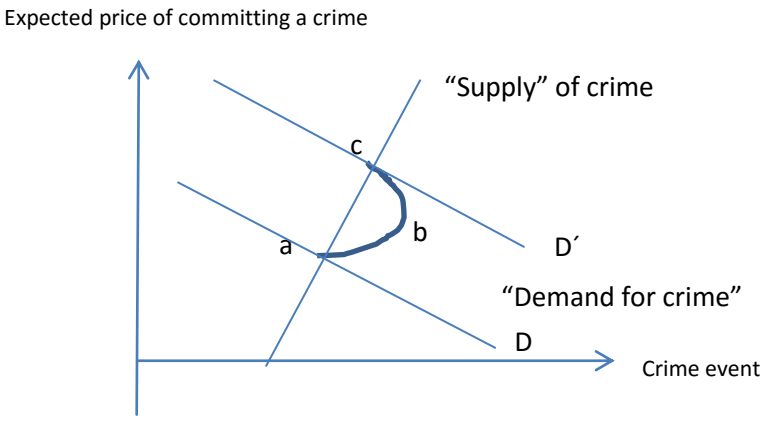
However, most research in the field is primarily an estimation of the cost of crime at the aggregate level. This could simply be viewed as a social cost, but not a cost that dynamically affects economic growth and capital accumulation. Mongrain (Mongrain 2011) tries to set up a model in which crime affects capital accumulation in juristictions A and B, which in turn could mean that lowering crime rates could affect capital accumulation. This would create a nash-equlibrium, which could explain the existence of crime-ladden areas. In this thesis, I have tried to create a model at an even higher aggregate level under the reasonable assumption that the destructive forces from crime could overwhelm the forces due to inadaquate conditions, and thereby create a destructive path to even more crime and negative capital accumulation.

b. The use of econometric approaches

In the second half of the 20th century, one very important argument from the constructivist camp was the idea that “nothing works.” (Martinson 1974). Or, as Bayley expressed the issue, “one of the best kept secrets of modern life is that police do not prevent crime.” *(Bayley*

1994). For further constructivist skeptism against punishment see e.g (Sherman, 1992, Gottfredson & Hirschi, 1990). The dynamo behind these kinds of results was undoubtly the *blank slate*, and the idea that criminals were *victims* of their *milieu* and in general, *irrational*. On top of this, the studies were small-scale individual observations of criminals and/or simple OLS estimation at a higher aggregate level. Theory and empirical *facts* pointed to the idea that criminal response is inelastic to any impulse from deterrence.

The counterattack to this position was led by Nagin and Fisher (1978) who first criticized it in 1978 as part of a National Academy of Sciences report. Their criticisms were very simple from an economist's point of view. Suppose crime is a function of probability of detection and punishment (the expected punishment) and some exogenous variables, say unemployment. Hence, the "demand function for crime" slopes downwards vis-à-vis punishment. Suppose, on the other hand, the supply of detection and punishment from the central planner is a function of crime rates. We then assume that the central planner tries to maximize social welfare, and considers the cost of higher crime and the cost of more police and imprisonment. This means that higher crime rates lead to a response from the central planner. Hence, the "supply of crime" slopes upwards. Let's consider the following figure:



(Figure4 – the simultaneity problem)

Let's suppose we are in equilibrium at point a; then, the unemployment rate in general moves up, moving the "demand for crime" for some particular type, say robbery, to the right. The central planner responds to the problem by raising the cost of committing robberies, for example allocating more police to the particular crime. Depending on the response from

demand and supply, we have, in the transition period, perhaps b. After some time, we end up in a new equilibrium, namely c, where punishment and crime rates are higher. (Assuming a constant "supply [policy response] of crime")

The first generation of crime and expected punishment consisted of cross-sectional studies that compared policing and crime rates across jurisdictions, typically cities and states, at a point in time (!). But it is evident this does not tell us enough. As social scientists, we are interested in the elasticity at the margin (The marginal criminal). As we can see in figure 4, I have purposely protracted the demand for crime as highly elastic. But using simple econometric techniques such as OLS, just measuring a and c in the dataset would tell us there is nearly no correlation between crime and punishment. This problem is standard in econometrics and is called *the simultaneous bias problem* or *a specification problem*, because we cannot be sure if we actually are at a single demand function or have moved to a new one.

The first study that tried to adjust for the bias problem was a very important one from Marvell and Moody see e.g (Marvell 1994, Marvell 1996). In this paper they summarized 36 studies that regress crime on police levels or police levels on crime. None of these studies mitigate the specific problem!

Moody and Marvell led a new type of research in the 1990s; they were the first to employ the larger and richer datasets. Rather than investigate a single year, they examined multiple years of data, a technique that is called *repeated cross-sectional analysis*, and allows the researchers to find patterns across time. Second researchers explicitly recognized the simultaneous problem. From the literature of econometrics we know there are two ways to deal with simultaneous bias. The first approach is 2-SLS, which requires an *instrument*. An instrument helps the econometrician determine the specification problem. However, there is a very big obstacle to finding such an instrument regarding crime. Steven Levitt (Levitt 1997) proposed that the timing of mayoral and gubernatorial elections was a valid instrument variable. Election among politicians was effectively a natural experiment that induced movement in the size of the police force, but was otherwise exogenous to crime rates. Applying this method, Levitt estimated that an increase of 10 percent in the police force led to a 5 to 10 percent reduction in crime rates. These estimates are very similar to those of Marvell and Moody.

The second approach to dealing with the problem of simultaneous bias is *Granger Causality*, which refers to a temporal relationship between variables rather than actual causation. Coman(Coman 2000), using nearly 30 years of monthly data from New York City, found evidence that offending rates led to higher police presence within six months. Using this information, they further estimated that a 10 percent increase in police, led to a 10 percent drop in crime rates.

To my knowledge, there is no adequate estimation of the deterrence effect of imprisonment on crime. This should be of no surprise if one considers the dilution factor of time. (Davis.M 1988, Frederick S 2002, Shamos N 2008) There is, however, evidence that imprisonment reduces crime, but simply because those in prisoner cannot commit crimes. For a comprehensive overview, see (Marvell 1994, Marvell 1996, Levitt 2006, Durlauf 2011).

In a very recent overview, Daniel S. Nagin, one of the leading criminologists in the world today, and Steven N. Durlauf (Nagin, Durlauf 2011) offered three main conclusions from the present state of empirical deterrence research in criminology. First; there is little evidence that an increase in the length of already long prison sentences yields general deterrent effects that can justify their social and economic cost. (As I have stated in other places in this thesis, this is exactly what we should expect because of time dilution – however, Nagin and Durlauf does not mention this in their essay) Second, there is little evidence that criminals *learn to behave* or are deterred by the experience of imprisonment (This cannot be a surprise either, if one argues that preferences are roughly a constant and therefore not easy to change at the individual level).

Third; there is substantial evidence that the visibility of police can deter crime. So, the certainty of punishment seems to be a very important factor (Nagin 2013). (Again, from a theoretical point of view, if criminals have a high discount factor, this seems very likely.). So, there seems to be quite good evidence that Beccaria was right when he observed that *"one of the greatest curbs on crime is not the cruelty of punishment, but their infallibility. . . . .The certainty of punishment even if moderate will always make a stronger impression" (Beccaria 1764)*

c. A short note on numbers and facts in Denmark

It seems to me that American analysts have access to much better datasets than those available in Europe. As earlier noted, very good datasets are extremely important before one can hope to claim any non-biased parametric value. Even then the problems are really complex — especially in a field like criminology, that seems to include so many unobserved, relevant, psychological variables. Good criminology therefore, hinges hugely on the idea of *ceteris paribus*, good theory anchored in logic, and smaller scale empirical and historical evidence. For example, in September 1944, German soldiers occupying Denmark arrested the entire police force. According to an account by Andenaes (Andenaes 1974), crime rates increased immediately, and in many circumstances, rose sharply. This was especially true for street crimes like robbery. Such a piece of evidence is very compelling even if we do not have access to high quality data, because in the case of Denmark, there was a total collapse in the presence of police. So, such a *controlled* experiment is a very strong piece of evidence that police indeed do matter (And if police do matter, a criminal has to be somehow adaptive to circumstances, which means the economic model of crime does matter). High-scale estimation by econometric methods that deal with endogeneity is, as I see it, not possible in Europe in any meaningful sense. Anyway, I did run a primitive cross-country OLS-estimation between European nations and got the following (appendix 1):

Dep. Var.	n	R^2	Std. Error	*F*	*p-value*	Prison	p-value	Policeofficers	p-value
all-crime	42	0,296	2494,712	8,20	,0011	-3,5673	,2369	-12,0122	,0006
burglary	37	0,115	225,768	2,21	,0125	-0,2956	,4005	-0,4721	,1242
theft	39	0,293	903,793	7,48	,0019	0,0131	,9904	-5,1547	,0005
Robbery	37	0,045	67,262	0,79	,4600	0,1178	,3181	0,0410	,6851
Sex violence	39	0,202	32,971	4,56	,0172	-0,0434	,4659	-0,1250	,0219
Violence	37	0,046	67,202	0,83	,4464	0,1158	,3246	0,0472	0,0989

Tabel 1: Cross-country, simple OLS; data from Euro stat 2013 – crime and criminal justice section.

In this simple cross-country analysis, I have used the number of prison population and police officers per 100,000 inhabitants as independent variables. In most cases, the sign seems to be as expected, which seems to at least confirm what we theoretically should expect; namely, that countries with a high expected price of crime (large prison population and many police officers) tend to have low crime. Because of the problems with endogeneity, this estimate cannot be trusted. The technique of fixed effect — where one allows the constant term to vary across countries and uses the specific data for each country over time — is not very helpful in this case. The reason is very simple; namely, there is not much variation over time in the specific dataset for a given country. This is, of course, not very surprising. The law is rather conservative.

A more *primitive* way to confirm the economic model of crime (that incentives do matter) is to simply compare different countries over time. For example, the USA and UK in recent years definitely increased the level of punishment when compared to the Nordic countries.

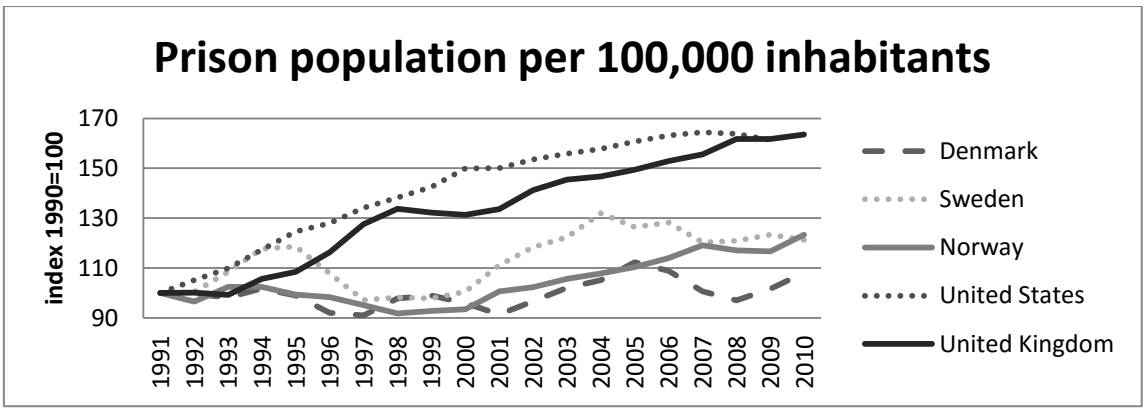


Figure 5: Prison population Source: Eurostat, crime and criminal justice 2013. Own index calculation.

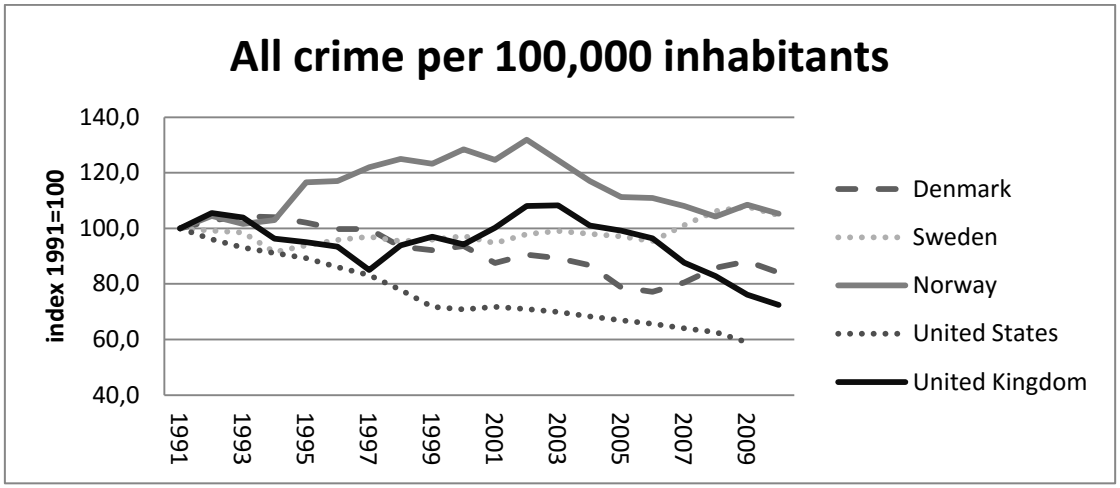


Figure 6: All crimes Source: Eurostat, crime and criminal justice 2013. Own index calculation.

The figures above are simply a calculation of index numbers. 1991=100. Once again, the numbers are as should be expected. High growth in prison inmates in the USA seems to have had a high impact on the number of crimes. This can be analyzed for a large variety of criminal acts, but really is only a small piece of evidence. We need to consider many other variables. For example, Donohue and Levitt (Donohue 2001) argue that abortion plays a huge role in the reduction of criminal acts in United States. While their analyses are not backed by first-order economic principles, there does seem to be a correlation. Another quantitative piece of evidence could be obtained by trying to calculate the expected price of committing popular crimes in Denmark. If the price is very low, it could be one way to explain the high number of crimes. Because most crimes must be paid for by imprisonment, I have set an artificial payment per year close to compensation payment in case of innocence w=700.000dkk, and an artificially low payment of w=200.000dkk. It is clear that if w is the opportunity cost, then based on economic theory, we should expect it to create incentives for people with low opportunity cost who also commit the most crimes.

Table 2: Expected loss from committing a crime in Denmark 2011 (1dkk=1/6 $)

2011 Art of crime, total	Probability of detection	Average months Imprisonment..	E(loss) w=700.000 kr.	E(loss) w=200.000 kr.
Rape	10,00%	21,7	kr. 126.583	27.125
Simple assault	17,32%	3	kr. 30.311	6.495
Severe assault	40,57%	7,2	kr. 170.391	36.512
Threats	9,22%	4,3	kr. 23.138	4.958
Burglary, companies	1,74%	5,2	kr. 5.269	1.129
Burglary, residential	1,32%	5,8	kr. 4.460	956
Burglary non-residential	0,34%	5	kr. 984	211
Burglary, car, boat	0,25%	3,6	kr. 525	113
Shoplifting	1,95%	2,3	kr. 2.618	561
Other thefts	0,42%	3,6	kr. 886	190
Thefts, car	2,69%	3,3	kr. 5.178	1.110
Thefts, motorbike	0,10%	1,4	kr. 81*	17*
Theft, bicycle	0,02%	2,2	kr. 29*	6 *
Theft, other	0,27%	2,8	kr. 434	93
Fraud	1,59%	6,4	kr. 5.922	1.269
Receiving stolen	14,41%	4,2	kr. 35.300	7.564
Robbery	20,80%	16,2	kr. 196.523	42.112
Vandalism	0,26%	2,2	kr. 327	70
Drugs, sale		24,4	kr. -	
Drugs, smugling		28,5	kr. -	

Source: Own calculations. Numbers are from Danmarks statistik, straf 10,11,40,44

These numbers, once again, say nothing of efficiency and social optimum in the case of Denmark. But they certainly allow us to come up with a rational discussion about, say, the expected price of stealing a bike in Denmark, which is close to being lower than taking the bus. However, it is not my mission in this thesis to dig deeper into this kind of empirical problem.

d. Focus on broad, public policy implications and cost-benefit, rather than evaluation of specific, small-scale interventions

Economists use a very different approach to social science than do most sociologists. In the field of criminology, there is a huge interest in the evaluation of small-scale intervention programs. As noted many times, this kind of evaluation of micro intervention is very problematic as a means of arriving at a conclusion at the aggregate level. One cannot say, as (Gottfredson 1990) did, that impulsivity observed at the micro level among some criminals is a general theory of crime. (See also my article in this thesis on the subject). This is simply a confusion of the level of aggregation.

We cannot learn much at the aggregate level by observing people who have already revealed their preferences! If we do, we are simply picking our own data.(Levitt 2005, Polinsky 2006).It would also be rather non-productive if an economist were to simply reject all the evidence from small-scale intervention programs. Criminologists know the system from the inside, and from economic theory it logically follows that any costly public project should be viewed in light of the marginal benefit compared to the marginal cost (Becker 1968, Bushway 2007). If small-scale intervention programs are able to change individualistic preferences, they should also be considered; however, this would need to be put into the larger macroeconomic framework because of its impact on deterrence of the marginal criminal.

In my opinion, one very important aspect of the economic contribution to the field of crime is the willingness to apply cost-benefit analysis to the evaluation of public policies. The idea and the acceptance of normative analysis is closely connected to economics, and was also the main idea in Becker's path-breaking work from 1968 (Becker 1968, Becker 1976). Becker's

main conclusion was the well-known economic idea that the marginal social cost of combating crime should be equalized by the marginal benefit of doing so. (Polinsky 2006). In recent years, there has been a lack of interest in the idea of normative and welfare analysis, I believe mostly because the focus has changed to an empirical evaluation in parametric values. Important papers in this field are Shavell's who investigates the question of optimal incapacitation (Shavell 1987) and Polinsky who investigates the optimal fines when wealth varies across individuals (Polinsky 1991). An overview of the work of Polinsky and Shavell can be found in (Polinsky 2006).

The main idea in Becker's article could be formalized in the following way. Suppose a central planner wants to maximize social welfare, Z, so:

$$Max\ Z\ (\mathrm{P}, \delta, \mathrm{C}(\mathrm{P}, \delta))$$

Where C is the supply of criminal acts as a function of P (the level of police force which produces probability for detection) and δ (the severity of punishment).

Because crime is a social problem, we are able to conclude that $\frac{\partial \mathrm{z}}{\partial \mathrm{c}} < 0$. It seems reasonable to make the following assumption: $\frac{\partial \mathrm{z}}{\partial \delta} < 0$and $\frac{\partial \mathrm{z}}{\partial \mathrm{p}} < 0$, because a high degree of punishment gives the criminal a welfare loss and because imprisonment is costly for society[36] It is also reasonable to argue that a high P is costly because of high expenses to police.

If we believe that criminals, at least at the aggregate level, respond to parameters such as (P, δ), we should expect that $\frac{\partial \mathrm{c}}{\partial \delta} < 0$ og $\frac{\partial \mathrm{c}}{\partial \mathrm{p}} < 0$.

Hence, there is a simple trade-off for the central planner. On one hand, we are able to reduce crime by more police and higher levels of punishment, but on the other hand, it is also very costly for society. If we accept the idea that more resources for the police and a higher level of punishment would create a lower marginal production, then it seems reasonable to conclude

[36] In Denmark, the cost of a 1-year imprisonment is approximately $100,000, Source www.kriminalforsorgen.dk

that $\frac{\partial^2 c}{\partial^2 p} < 0$ og $\frac{\partial^2 c}{\partial^2 \delta} < 0$. If Z also is not too convex with respect to crime, then the function $Z(p, \delta)$ surely is concave in p and δ, and there should be a maximum, which could be illustrated as:

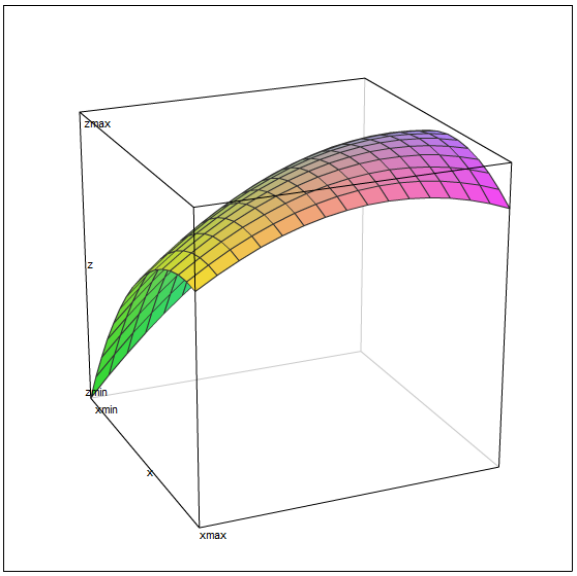


Figure 7a: a strict concave function in two variables

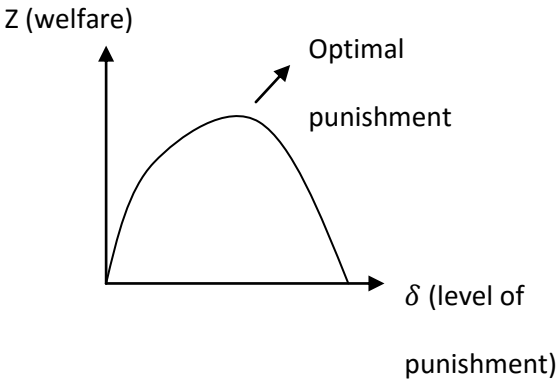


Figure 7b: Z(δ) is a concave function. Here illustrated for one variable

For any strict concave function, it follows that we find optimum as **MR=MC.** Hence, the marginal benefit of combating crime should be set so as to equalize the marginal cost of crime. This should be viewed in a philosophical sense, because there could be many externalities under consideration. For example, maybe it would be cheaper to lower the price of crime x, because nearly all people committing crime x are very impulsive, but this could send a signal to all other members of society, thereby lowering the expected cost, and creating higher crimes in other areas. Hence, the calculation of marginal cost and marginal benefit is not simple, and has to be understood broadly. (See my article on this issue)

From the above, we are now able to see one of the great mysteries in crime and economics. This is called the Becker Proposition.

Suppose the central planner wants to implement Bentham's law so that

$$f = \frac{H}{\rho}$$

Where f is the punishment (monetary and non-monetary), H is harm done by the offender, or the social loss from crime, and ρ is the probability of detection and conviction. We will assume that $f \wedge H \in [0; \infty[$ and $\rho \in [0,1]$.

As noted by Becker in 1968[37], there seems to be a trade-off between ρ and f, because $\tilde{H} = f\rho$, which means that if f could be chosen freely, we could lower ρ to an arbitrary low level. If, as seems perfectly plausible, the cost of producing detection ρ, has the property that $c'(\rho) > 0$ and $c''(\rho) > 0$, meaning that the cost of detection is very costly at the margin, then a central planner should choose an arbitrary large f, because f could be produced with a very small cost. Formally, this gives the Becker Proposition:

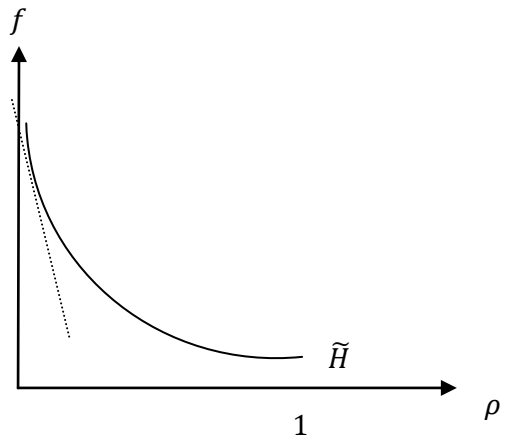
Proposition (the Becker Proposition)

Suppose f is the monetary equivalent of all punishment and f could be chosen freely so that $f \in [0; \infty[$. Suppose further $c(f) = kf$, so the cost of producing f is a constant. Let the cost of producing the probability of detection be $c(\rho)$ and let $c'(\rho) > 0$ and $c''(\rho) > 0$. If $H = f\rho$ and the central planner wants to minimize social cost for a certain $\tilde{H}$, the solution is $c'(\rho) = k$. If k is arbitrary close to zero, then $f \to \infty$, as $\rho \to 0$

Proof (the Becker Proposition)

If a central planner wants to minimize total cost $c(f, \rho) = kf + c(\rho)$ s.t. $\tilde{H} = f\rho$, then the Lagrange function becomes $\mathcal{L} = kf + c(\rho) - \lambda(f\rho)$. The solution for this problem is $c'(\rho) = k$

[37] If the supply of the offenses depended only on pf – offenders were risk-neutral – a reduction in p "compensated" by an equal percentage increase in f would leave unchanged….the loss would be minimized; therefore, by lowering p arbitrarily close to zero and raising f sufficiently high so that the product pf would induce the optimal number of offenses. (Becker 1968)



(Figure 8: The Becker Proposition: high fınes are cheaper to implement than costly detection)

The Becker Proposition contains a clear-cut problem for the classical criminologist. If the same deterrence (Harm done to the offender) could be obtained either by f or by ρ, any central planner should choose the cheapest solution, meaning that you should observe a very harsh fine and a very low probability of being detected. Or, as Kolm memorably phrased this: "hang the offenders with probability zero" (Kolm 1973, Dhami 2006) This, however, is not consistent with the data observed.

Many economists have pointed out reasons the Becker Proposition could fail. Becker himself explained that criminals could be risk-seeking (Becker, 1968). Another problem could be the type 2 error: falsely convicting an innocent person (Polinsky 1979, Andreoni 1991, Polinsky 2000, Feess 2009) Norms in society could explain why people would not accept severe punishment, which is sometimes required by the Becker Proposition (Polinsky 2006).

Risk-averse criminals whose utility enters the social welfare function would be severely hit by very high fines in the event they are caught, lowering social welfare (Kaplow 1990). Pathological criminals are not deterred by high fines anyway (Colman 1995). And in a recent paper, (Dhani 2013) argues that the Becker Proposition rests on the assumption of expected utility theory and argues instead of other utility functions. However, if one should argue against expected utility theory, and instead implement prospect theory a la Kahneman and Tversky ((Kahneman 1984, Kahneman 2003), which seems to be backed up by empirical behavioral evidence, the paradox would be even greater. Most people would prefer to accept a game where they could only lose $100 with a probability of 0.1 instead of losing $10000 with

a probability of 0.001. So the question is problematic. However, the most straightforward answer is that the first best solution is a fine, but as we lower probability, there is an offsetting probability for bankruptcy among the criminals. ((Becker 1968, Polinsky 1991) If a criminal goes bankrupt, they are not able to compensate victims with more than a maximum fine. See e.g.(Garoupa 2000). In my own article I argue for the possibility of some psychological traits transported by our genes, because "punishment should fit the crime" in the small hunting-gathering society.

Conclusion:

In the Introduction, I started to argue that social science is about what really could be described as *evolutionary forces*. Evolution creates society via two tracks: cultural evolution and biological evolution. Therefore, objective knowledge does exist in the sense that an order among men is the result of human action, but not human design. I also argue that this insight is not only highly abstract, but the *laws* that determine history cannot be stated in a simple way. I also find it dubious that social science is able to find quantitative parametric values. However, I do not reject that this investigation can be very fruitful. But from my point of view, the primary concern in social science is building small synthetic (mathematical) models that allow us to analyze the causal chains eventually supplied with quantitative evidence. Social science without some logic foundation hugely underestimates the true degree of complexity, the level of abstraction, and cannot confront the main problem in social science, the problem of induction.

Unfortunately, social science not only tries to confront a huge degree of complexity, it also has to confront difficulties with normative, positive, and moral issues. This was especially true after World War II, because Nazism was largely correlated with the evolution theory, which again was heavily correlated with the ideas of scientific racism. I claim this has had a devastating effect on our perception of how much we really can expect from social science. Without the concept of evolution, the whole idea of objective knowledge broke down, and was instead at least partly replaced by a new philosophy, constructivism, which argues only

for sociological variables and sometimes hugely underestimates complexity, and in the opposite direction, overestimates the possibility of social engineering.

From this first order principle, it is clear that history becomes irrelevant, because there is no such thing as an *historical law*. It also follows as a logical consequence of constructivism that *the constructivist* simply does not understand that economics have developed techniques, especially microeconomics, which is a way of trying to overcome some of the great problems in extracting knowledge about the social order. I certainly don't believe that microeconomics is the only way to do social science, especially if the main concern is a low aggregation level, as with single individuals. But building good models is a very good starting point if one wants to learn something about casual chains and at the same time maintain the overall point that people do adapt to changes in the institutional framework.

In the end, I do argue that criminology is under heavy influence from constructivism. Criminology starts with the idea that we are able to identify and quantify the relevant variables, which are determined by people's choices; then, by using the methods of induction, it will become more efficient regarding policy recommendations. But the reason why this hope exists is closely related to the blindness of adaptions at the aggregate level and the effect of any policy recommendations on the marginal criminal. If this is taken into consideration, it should be clear that we need abstract models, or at least very good models, before we are able to make any trustworthy claims about causality and creating policy recommendations.

To conclude, I briefly touch on some of the empirical issues from a Danish perspective. This thesis is not about empirical issues, but I showed there is no reason to believe the model of economics should fail to work because of the argument that there is no such thing as a *rational criminal* in the microeconomic sense. So, let me end this discussion with a citation from Gary Becker from his Nobel Prize speech in 1992 p.41, which clearly shows the variety of problems the economic model has to face;

> *…Rationality did not necessarily imply narrow materialism. It recognized that many people are constrained by moral and ethical considerations, and did not commit crimes even when they were profitable and there was no danger of detection. However, police and jails would be unnecessary if such attitudes always prevail. Rationality implies that some individuals become criminals because of the financial rewards from crime compared to legal work, taking account of the likelihood of apprehensions and convictions, and the severity of punishment. The amount of crime*

is determined not only by the rationality and preference of would-be criminals, but also by the economic and social environment created by public policies, including expenditures on police, punishment for different crimes, and opportunities for employment, schooling, and training programs.

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