

# **The Recent Turn of Analytical Sociology:**

**The Dismissal of General Theories, of  
Mental States, and of Critical Rationalism**

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Presentation at the Conference on Analytical Sociology, Venice 2022




# Introduction

The occasion for this presentation is a recent „Research Handbook of Analytical Sociology“ (AS – see Manzo 2021). This is an update of a program that was launched in 1998 (Hedström and Swedberg 1998).

Compared to the earlier version of AS there have recently been **major changes** of the program. In particular, Hedström (one of the major advocates of AS) makes the following claims (see his Coda in the Handbook of 2021: 490-505):

- 
- The **application of general theories** is rejected.
  - One should give up **explanations with mental states** („intentional explanations“).
    - One should **apply “sometimes-true” theories**. Such a theory “should not be evaluated in terms of whether it is true or false in general but whether it applies to the specific situation at hand” (ibid.: 493). Thus: don’t test theories (and, thus, ignore their validity) but apply them to specific situations.
  - The earlier methodological foundation of AS – **analytic philosophy (including critical rationalism)** is discarded.

In what follows I will discuss the **encircled** claims and argue that they are untenable.



There are – as in every scientific orientation – different positions. Regarding AS it seems that there is one group around Peter Hedström: one could speak of the **Swedish School**. Brüderl (2022 – review of the Handbook, edited by Manzo 2021, forthcoming in the review journal „Soziologische Revue“) calls it the „**narrow school**“ because of some restrictive assumptions.

Another orientation has developed around the yearly **Venice conferences** and the **Akademie für Soziologie**. This orientation is also widely shared by members of the **European Academy of Sociology** and by the authors of a **Handbook of Sociological Science** (2022, edited by Gërkhani, De Graaf, and Raub). Brüderl calls this the “**wide school**” because certain restrictive claims are not made. Perhaps one could speak of the **Venice School**.

Whatever the differences are, **I will discuss only** claims of the Swedish School that were mentioned before.



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Accordingly, the **contents of the presentation** are:

- The role of **general theories in explanations of social phenomena** – and why they should not be eliminated.
- Problems of **discarding mental states** in explanations.
- Problems of **only applying theories and not testing them.**
- Some notes on **methodological foundations of analytical sociology.**



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## Incidentally:

There has been already a book on „Analytical Sociology“ in 1994 which is largely unknown and was not influential in sociology:

Pearce, Joseph R. 1994. *Analytical Sociology: Its Logical Foundations and Relevance to Theory and Empirical Research*. Lanham: University Press of America.

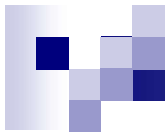


# The Role of Theories in Explanations of Social Phenomena: A Reminder of Some Basics

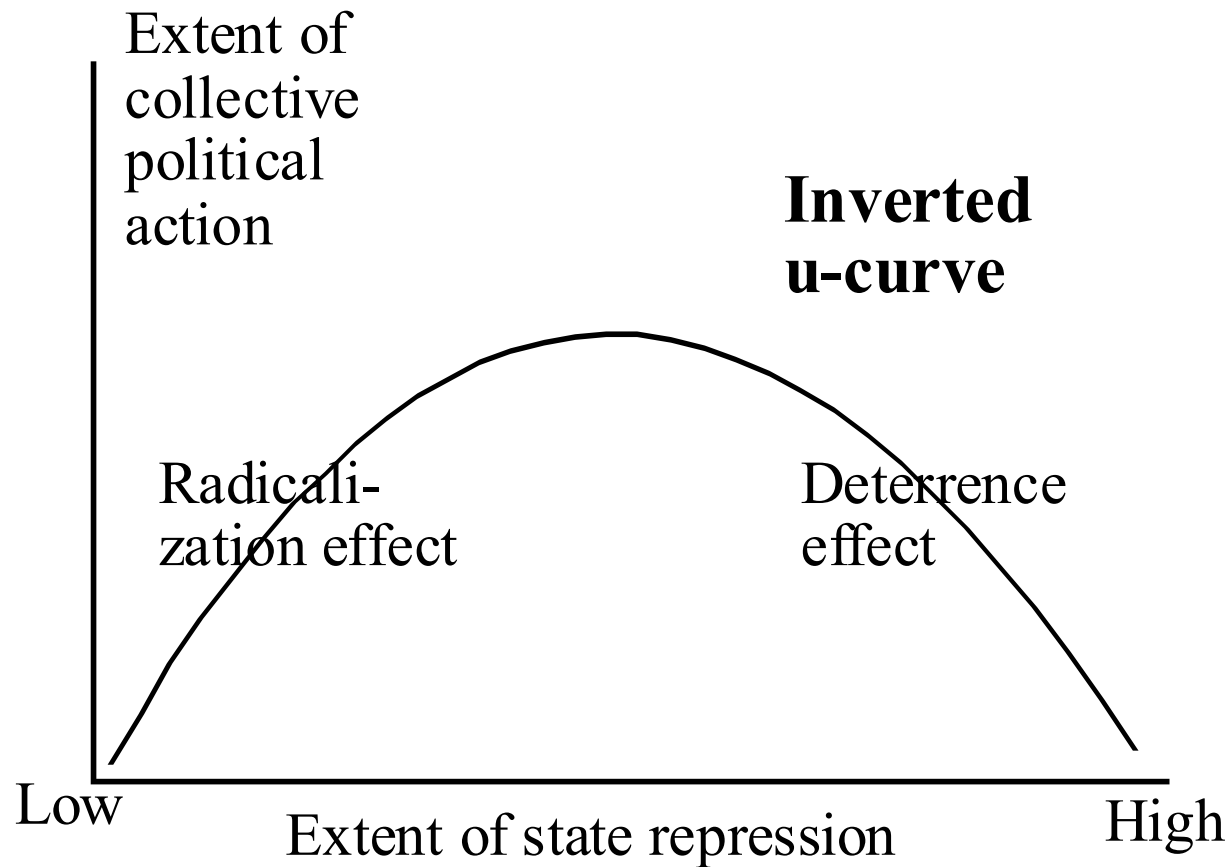
Sociology aims at explaining macro phenomena. Proponents of AS accept **methodological individualism** (i.e. micro-macro modeling). The assumption is that explanations of macro phenomena should refer in a specific way to the micro level.

Here is an illustration:

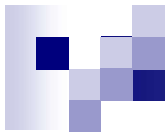
Assume that there are **protests** against a government decision. The government uses **repression** to crush the protests. Which effect does continued repression have on the **change of protests**?



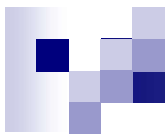
**The inverted u-curve proposition answers this question.** (See Francisco 1995; Mesquita and Shadmehr 2022; Opp 1994; see the summary in Opp 2022: ch. 2.2).



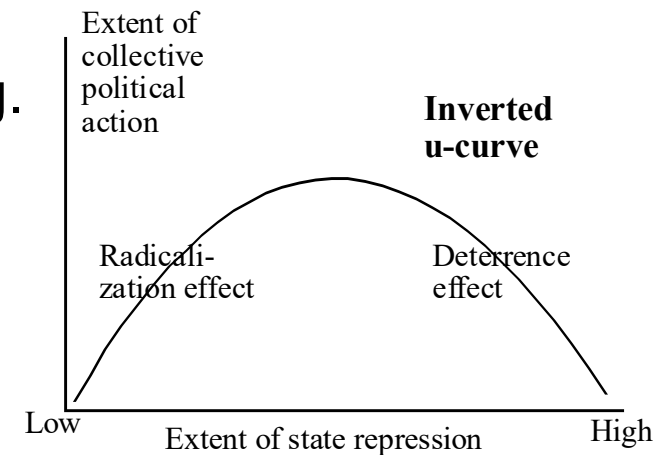




The curve refers to **expected values**. **The scattering** of the points around the curve refers to collective action of individual actors for different degrees of repression.



The curve holds true if **at the beginning positive incentives to protest** increase (e.g. perceived personal influence, activation of protest norms and social encouragement of protests). This leads to a **radicalization effect** (an increase of protest). If then the **costs** of protests become so high that protest does not „pay“ anymore, a **deterrence effect** prevails: protest decreases.



The curve thus holds under certain conditions that follow from a **cost-benefit model**.

# *'They Have Nothing to Lose': Why Young Iranians Are Rising Up Once Again*

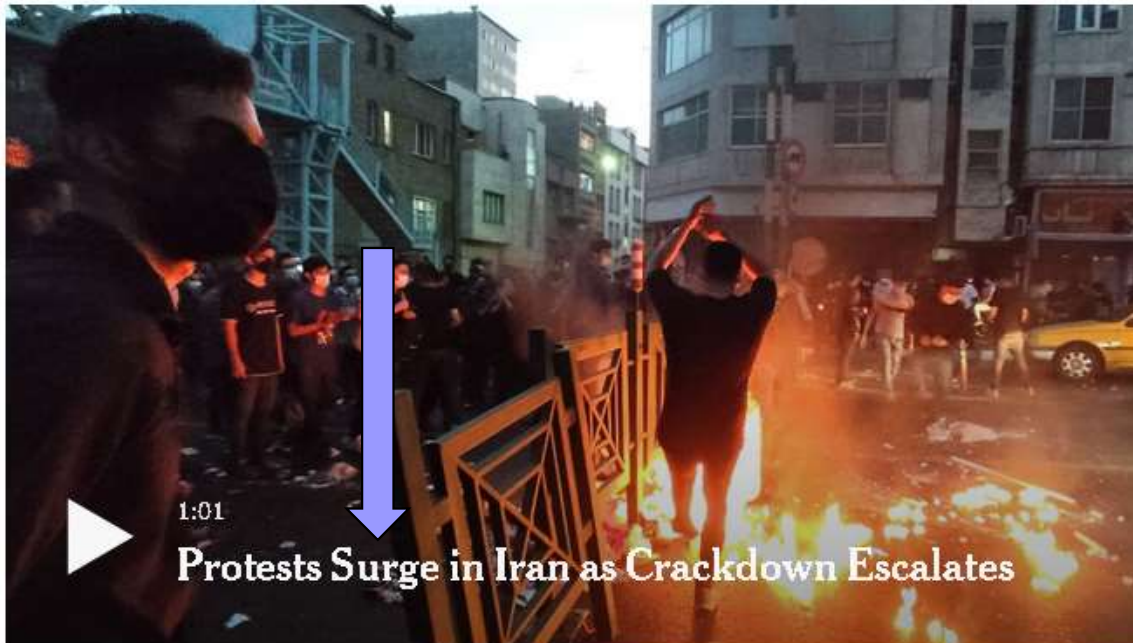
New York Times  
from 25 Sept. 2022

Amid growing repression, a sickly economy and bleak prospects, the death of one young woman was all it took.

 Give this article

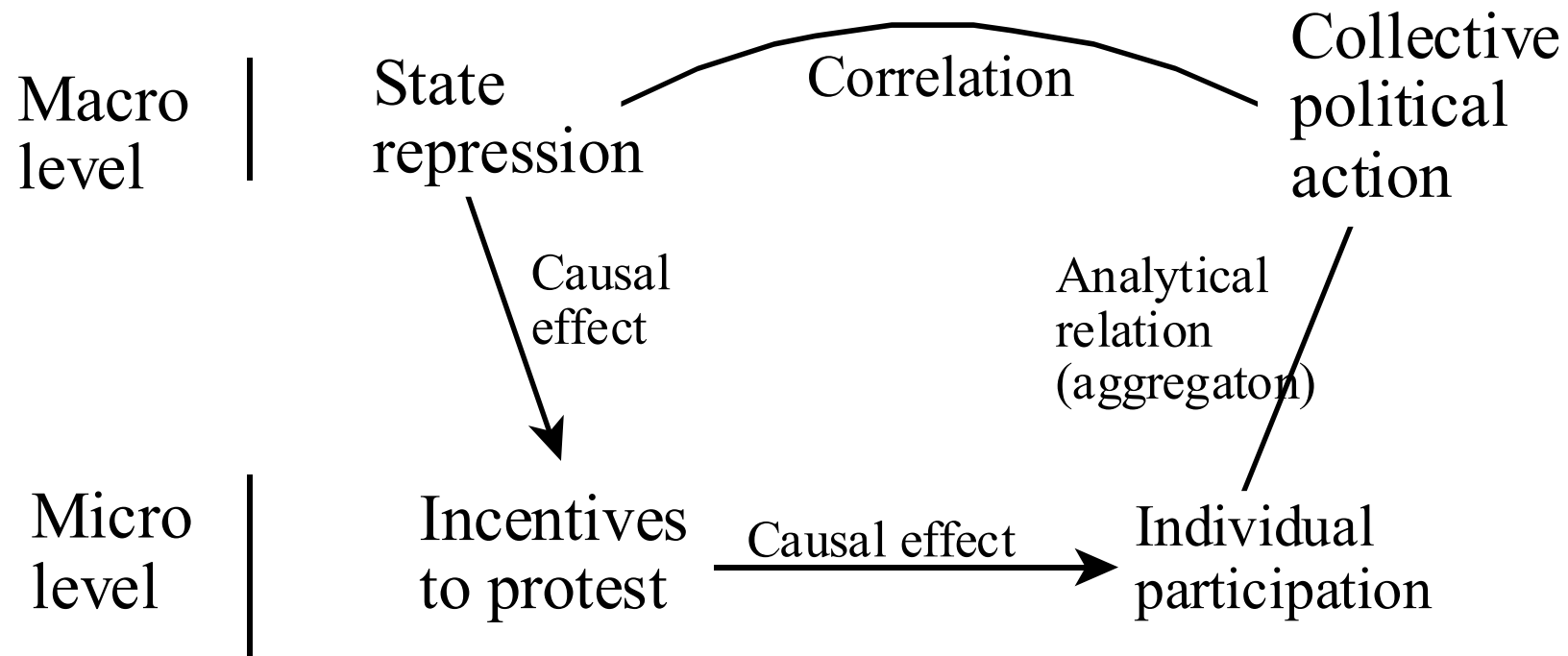


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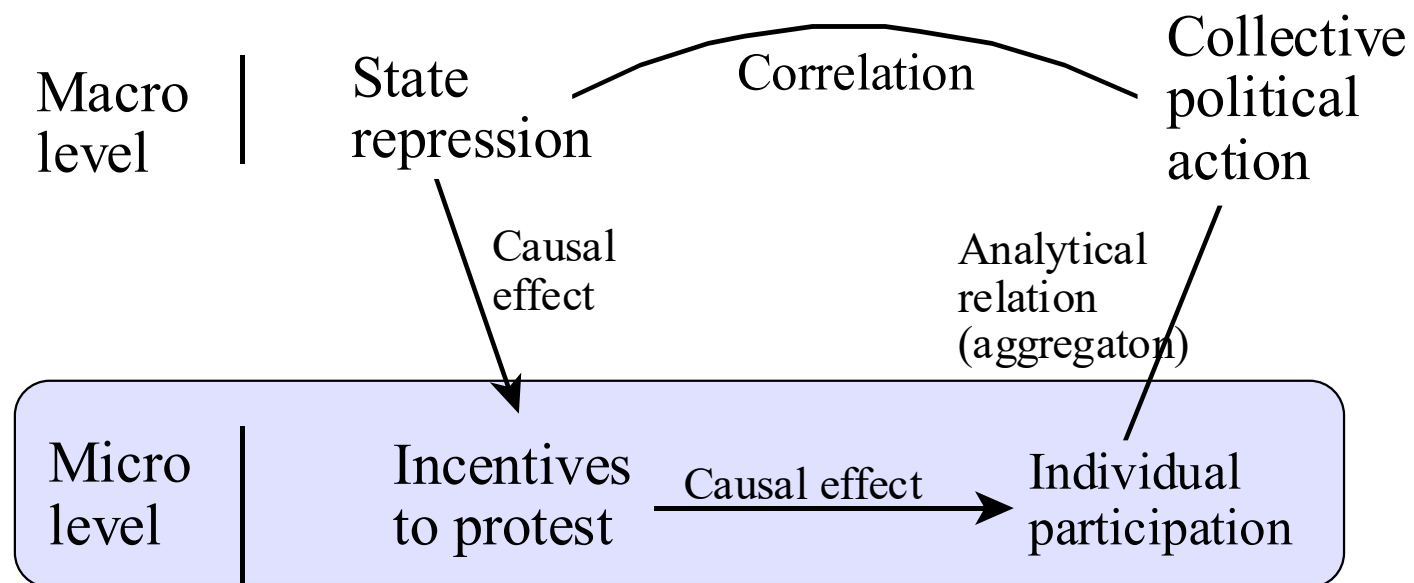


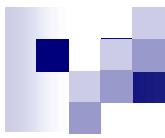
Dozens have reportedly been killed by security forces as demonstrations continue to spread across Iran. Protests began after Mahsa Amini died in the custody of the morality police. Agence France-Presse — Getty Images

## This explanation is a micro-macro model:



## Let us look at the micro proposition:





How do we know **which factors** lead to participation?

I have applied a theory – rational choice theory (RCT). It assumes:

- **preferences** (goals) – e.g. to stop repression – and
- **beliefs** – e.g. the belief that one's action could stop repression (i.e. perceived personal influence) –

**determine behavior.**

The factors that explain the rise and decline of protest are **kinds** of preferences and beliefs (i.e., **incentives**). RCT thus helps to **select** the relevant explanatory factors.

Without applying this or another theory the selection of factors is open to the **arbitrary intuitions of scientists** – we have thus to rely on advocates of conspiracy theories, Creationism and on Corona deniers.

## Why is RCT dismissed recently in AS?

There has been a surprising turn:

Hedström and Swedberg **1996**: 127-128 (emphasis added):

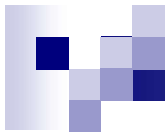
“Rational choice theory provides an action theory that is useful in many branches of sociology and, perhaps even more importantly, **rational choice theory represents a type of theorizing that deserves to be emulated more widely in sociology.**

This type of theorizing is analytical; it is founded upon the principle of methodological individualism; and it seeks to provide causal cum intentional explanations of observed phenomena.”

Hedström and Ylikoski **2014**: 67 (emphasis added – and 2021) :

Rational choice explanations are "unacceptable, as they are built upon implausible psychological and sociological assumptions.

**Empirically false assumptions** about human motivation, cognitive processes, access to information, or social relations **cannot bear the explanatory burden in a mechanism-based explanation.**”



Why this change? The authors do not provide any detailed arguments for this turn.

A possibility is that the authors have in mind **different versions** of RCT.





## Narrow version (based on neoclassical economics):

- only one motive matters: egoism,
- beliefs are correct,
- full information,
- objective utility maximization,
- social relations are not systematically addressed.

This is the version the authors refer to: „**Empirically false assumptions ...**“ of RCT.

## Wide („bounded rationality“) version:

- all kinds of motives matter (e.g. benefit others, follow accepted norms),
- beliefs may be wrong,
- limited information,
- subjective utility maximization,
- social embeddedness assumed.

This version is now widely accepted in the social sciences.

**Most critics of RCT never distinguish between these different version of the theory!**



# Why Rational Choice Theory Should Not Be Given Up

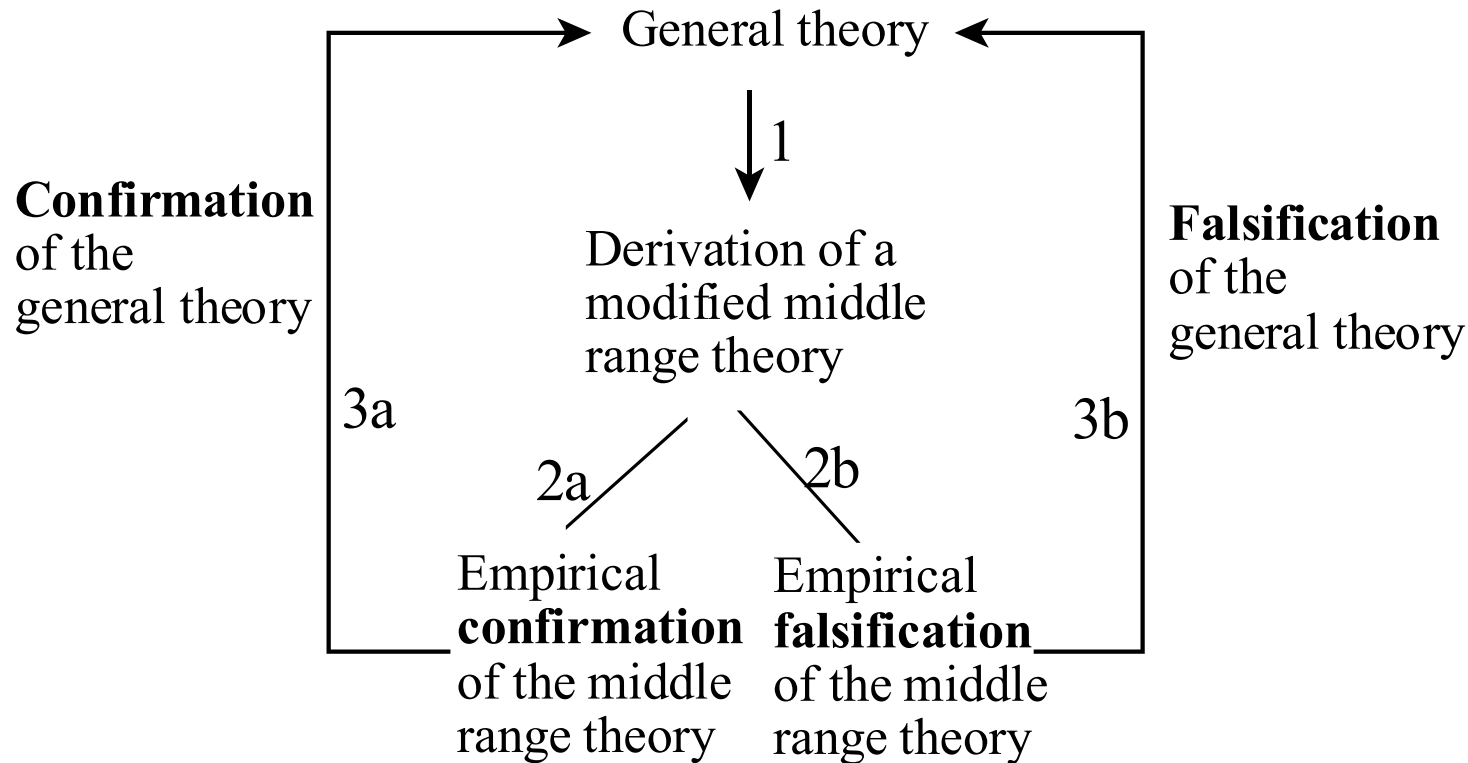
## The Major Argument

Even if it is accepted that RCT could be applied: why should we apply RCT? Why should we not be content with applying theories of the middle range (TMR) – e.g. theories about protest? The argument is:

**Research has shown that general behavioral theories such as RCT correct theories of the middle range: RCT specifies the conditions for the validity of TMR, and the general theory will be tested as well.**


This has been shown already by Homans (1967) and Malewski (1962, 1967). For the natural sciences see Popper 1957.

The **procedure** for comparative testing of theories of the middle range and general theories:

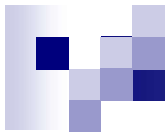


This provides an **integration** of theories by exploring their relations.

**All this is completely ignored by the Swedish School.**



**In general**, comparative theory testing is compatible with an insight from the philosophy of science: a theory might be confirmed by **isolated** tests, but might be falsified in a **comparison** with other theories.



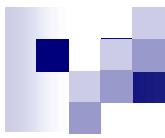
## Example from criminology: Self-control theory

The theory was first suggested by Gottfredson and Hirschi in 1990. It is **confirmed by numerous empirical studies** (e.g. Britt and Gottfredson 2003; Goode 2008; Gottfredson 2017: 2; 2018: 353-355; see also the meta-analyses by Pratt and Cullen 2000; Vazsonyi et al. 2017; see the discussion in Opp 2020).

The theory reads:

**If there is low self-control, criminal behavior is likely.**

A comparative test has been conducted by Tibbetts and Myers (1999). They compared **self-control theory and rational choice theory**.

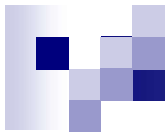


A **dependent variable** was “caught for cheating on previous exams.”

Low **self-control was measured** with a scale in a survey. **Variables from a wide version of RCT were measured** such as anticipated shame, perceived pleasure of a behavior, morals, and perceived formal and informal sanctions. Five **control variables** were included.

In a regression analysis **low self-control alone had a significant beta of .32**. In a **multivariate analysis** with low self-control and the other variables **self-control becomes insignificant** with a beta of .008 and a t-value of .64. The  $R^2$  was .56.

This example illustrates the importance of comparative theory tests that include general theories.



In a new test of self-control theory the study mentioned is not cited, and RCT as an alternative explanation is not mentioned. See Chintakrindi and Gupta 2022.

**TABLE 4**  
**Results of Multivariate Regression Analysis**  
**Predicting Cheating Intentions (N = 330)**

Variable	<i>b</i>	SE	B	<i>t</i>
Low self-control	.008	.013	.025	.644
Gender	.445	.231	.077	1.931*
Morals	-.273	.013	-.205	-4.595*
Shame	-.017	.004	-.199	-4.030*
Pleasure	.133	.042	.141	3.142*
Sanctions	.037	.125	.010	.293
Past year	.226	.034	.283	6.670*
Year in school	.061	.110	.026	.553
Caught	.073	.188	.063	.390
GPA	-.035	.107	-.011	-.325
High school	.490	.266	.074	1.846*
Friends' cheating	.166	.044	.166	3.782*

NOTE:  $R^2 = .56$  and  $F = 34.03$ ,  $p < .001$ .

\*  $p < .05$ ; one-tailed.





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The **conclusion** is that applying RCT leads to **scientific progress**: we learn about the strengths and weaknesses of middle range theories **AND OF** the general theory – RCT might prove problematic in the comparative test.

**Only** focusing on middle range theories or **only** focusing on general theories means to **give up an opportunity for correcting our knowledge**. In fact renouncing comparative theory tests is an **immunization** of both kinds of theory.

This and many other applications of RCT that correct TMR suggest that comparative theory testing should be a component of AS. It is not clear why this claim is not at the center of AS.



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## Two Old Misplaced Objections Against Rational Choice Theory

It seems that Manzo's „pluralistic claim“ (Manzo 2021) is similar to Hedström's „Coda.“ Manzo mentions two alleged weaknesses of RCT that speak against its usefulness and he suggests :

- The alleged **instrumentalism of RCT** (already asserted by Hedström 2005: 61, 65-66).
- „Bounded rationality“ versions of RCT „ raise the problem of opening the way to **ad hoc and post hoc explanations**“ (2021: 32).



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**Instrumentalism.** The charge of instrumentalism of RCT means that not the truth of a theory is important but its predictive power. Hedström (2005: 62) mentions as a classical version of the predictability argument Milton Friedman (1953): assume there is an axiomatic system with some axioms and theorems (derived statements). „Instrumentalism“ means that the system is judged according to the validity of the theorems and not of the axioms. An **example** is:

**Premise 1:** Green men from Mars have selected an increasing number of humans and told them to stop smoking.

**Premise 2:** Humans always follow the commands of the green men.

**Conclusion 1:** The number of humans who smoke decreased since 2010.

The instrumentalism claim (see, in general, Caldwell 1980; Nagel 1961: 129-140, 1963, Sen 1980) is clearly mistaken for the following reasons.



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- RCT is a substantive empirical theory that has been **tested** in numerous situations. Thus, the content and, thus, the truth of the propositions matters.
- In **applications** (e.g. for crime prevention) the causal relevance for costs and benefits is determined directly, there is no exclusive focus on the theorems.
- The truth of the premises matters for the truth of the derivations. According to formal logic, **if one wants to avoid false predictions (false theorems) one needs true axioms**. Because true premises always imply true theorems the content and, thus, validity of the axioms is relevant for the validity of predictions.
- Even if there might be rational choice theorists who employ instrumentalist practices this is to be **criticized**.



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„ ... **ad hoc and post hoc explanations** by the „bounded rationality“ versions of RCT (Manzo 2021: 32). This charge is mistaken as well.

- A rule of the scientific procedure is that the explanatory variables – costs and benefits – have to be **ascertained empirically**.
- It may be meant that explanations are ad hoc in the sense that the **selection of costs and benefits for explaining a behavior is arbitrary** (i.e., ad hoc – see also Hedström and Ylikoski 2014: 6; Kroneberg and Kalter 2012: 82). Again, this charge is clearly mistaken (see Opp 2020a: 47-48). RCT asserts that for explaining a behavior the goals and beliefs are relevant that are instrumental for the behavior. This is a clear rule for selecting the kind of costs and benefits for a behavior.
- It is awkward that the **fate of Hedström’s DBO theory** (desires, beliefs, opportunities – see for a critique Opp 2013) is not mentioned. Do the previous charges apply to this theory as well?



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## Applying Theories Instead of Testing Them

Very briefly: If a wrong theory is applied to explain social phenomena we get an invalid explanation. We thus need valid theories – i.e. theories that are tested and confirmed – to get correct explanations.



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More specifically:

**Argument** (as said before): one should apply and not test theories.

**Example:** Let us apply the inverted u-curve to explain the protests in Iran. The procedure is as follows:

**Theory:** Change of incentives → change of protests

**Initial conditions:** In Iran: change of incentives occurred.

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**Explanandum:** In Iran: Inverted u-curve of protests occurred.

We thus **apply** the theory. Is a **test** of this theory not necessary?



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Assume that the theory is **wrong**: not incentives but an **inborn protest gene** is relevant for the protests, and this gene is elicited in certain situations, but not in Iran. Application of the theory leads to a wrong explanation:

**Theory**: Change of incentives → change of protests

**Initial conditions**: In Iran: change of incentives occurred.

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**Explanandum**: In Iran: **There is no inverted u-Curve.**





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The **conclusion** is: applying a theory to arrive at a valid explanation presupposes that the theory is valid. Whether a theory is valid can only be determined by testing the theory.

If one wants valid explanations, a valid – and this means a tested – theory is necessary.



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## Applying Theories „on a case-by-case“ Basis

The pluralistic claim is: there is a „variety of logics of action“ (Manzo 2021 – in Handbook: 32). Which „logic“ is chosen „should be assessed on a case-by-case basis“ (see already Manzo 2014: 21–27).

What is the procedure to choose the relevant theory?

Take the previous example: assume the crime rate of a country increases. Which theory to we choose: self-control theory, the theory of differential association, anomie theory?

If one wants a valid explanation one will choose the theory that is best confirmed, and this is the theory that has undergone and passed the most serious tests. There is thus no way to avoid comparative empirical theory tests!



## Why Mental States Should NOT Be Dismissed as Explanatory – and as Explaining – Variables

It is common in sociology and other social sciences to include mental states as explanatory variables. An illustration is the work of Max Weber (e.g., on the Protestant ethics).

Hedström **demands**:

“...we should avoid intentional explanations in all but the rare cases **where we have access to reliable information** on the mental states of the acting individuals. Instead we should **concentrate** our explanatory efforts **on interaction structures** and the macro patterns they give rise to” (2021: 490 – emphasis added).



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The argument thus implies:

- (1) explanations without mental states provide valid explanations;
- (2) mental states can normally not be measured reliably;
- (3) the alternative to explanations with mental states is to deal with “interaction structures and the macro patterns they give rise to.”

Are these convincing arguments?



## Mental states can be neglected if they are intervening variables:

**S → M → A**

This is the model in [Hedström 2021: 497](#).

**S = situation** (“various observable social characteristics of the individual and the individual’s social environment likely to affect the individual’s mental states and actions”),

**M = mental states** (“relevant ... the time of acting”),

**A = action** of an individual.

This model is implied when Hedström suggests to look at the effects of interaction structures (i.e. S) and macro effects (aggregations of individual A).

If this is correct, the correct implication is:

**S → A**

Explanations with S as independent factors are valid.



But „ $S \rightarrow A$ “ is invalid.

It is generally accepted that a given situation leads to quite different individual behaviors, **depending on** the pre-existing mental states.

This is illustrated with the **example of the inverted u-curve**: the pre-existing preferences (such as the extent of discontent) and given beliefs (perceived personal political influence) determine the impact of repression.

This means that there is an **interaction effect** of S and M (= ●) on A.  
This is the valid model:

**$(S \bullet M) \rightarrow A$**

**and not:**

**$S \rightarrow M \rightarrow A$**

**Conclusion: omitting M leads to invalid explanations.**



## Are measurement problems arguments for abandoning theories?

Nobody denies that there are problems of measuring mental states. But there is a large inventory of diverse methods – including unobtrusive methods – to measure psychic variables. The **contention that in general we cannot measure psychic states reliably is not acceptable.**

There is an **extensive literature** about the measurement of psychic phenomena. One **example** is the **measurement of sensitive phenomena** (in general see Tourangeau and Yan 2007). These are phenomena for which one will suspect that invalid answers are likely. An examples is how to ascertain past sexual victimization experiences (for a recent example see Leitgöb and Leitgöb-Guzy 2022). Another example is the possibility to get valid answers in online surveys (Höglinger et al. 2016). See also **implicit measurements** of psychic phenomena such as priming (e.g. Fazio and Olson 2003).



But **assume** the measurement argument is correct: psychic variables cannot be measured reliably.

The goal is to formulate **valid** theories. This suggests that we **should retain plausible theories and not reject them if there are measurement problems**.

Would you accept a completely wrong theory only because the variables can be measured reliably? (Perhaps we should use only demographic variables?)

If there are measurement problems of plausible theories we should invest resources to improve our measurements – which actually happens in social research – and **not give up theories**.





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The fruitfulness of making assumptions of mental states is confirmed in one of the first statements of AS (Hedström and Swedberg 1998: 13):

“... the social sciences routinely postulate the existence of unobserved explanatory mechanisms. Assumptions of intentions, discounting, and preferences have proven to be extremely useful analytical devices even though they never have been observed.”

This implies that theories with mental states are fruitful and should not be given up.



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## The Focus on “interaction structures and the macro patterns they give rise to”

The alternative to explanations with mental states is the focus on macro processes.

Macro processes and macro structures should be explananda. They should become **components of micro-macro models**. But there is no reason to stop on the macro level.



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## **Mental States as Dependent Variables**

So far the major explananda of AS are actions. However, questions that refer to the explanation of beliefs and preferences (such as the internalization of norms) are important explananda as well.

A consequence of abolishing mental states implies that there is no longer theory and research on explaining preferences and beliefs.



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## **Mechanism Explanations without Theories? The Longstanding Unsolved Problem**

An assumption of AS is that a covering-law explanations and mechanism explanations are different. The latter are not „wedded to the idea that an explanation is a deductive argument” (Hedström & Ylikoski, 2010: 55). This implies that mechanism explanations do not need theories

Earlier Hedström (2005: 13-14) he distinguishes between statistical, mechanism and covering-law explanations. See also my discussion in Opp 2013.

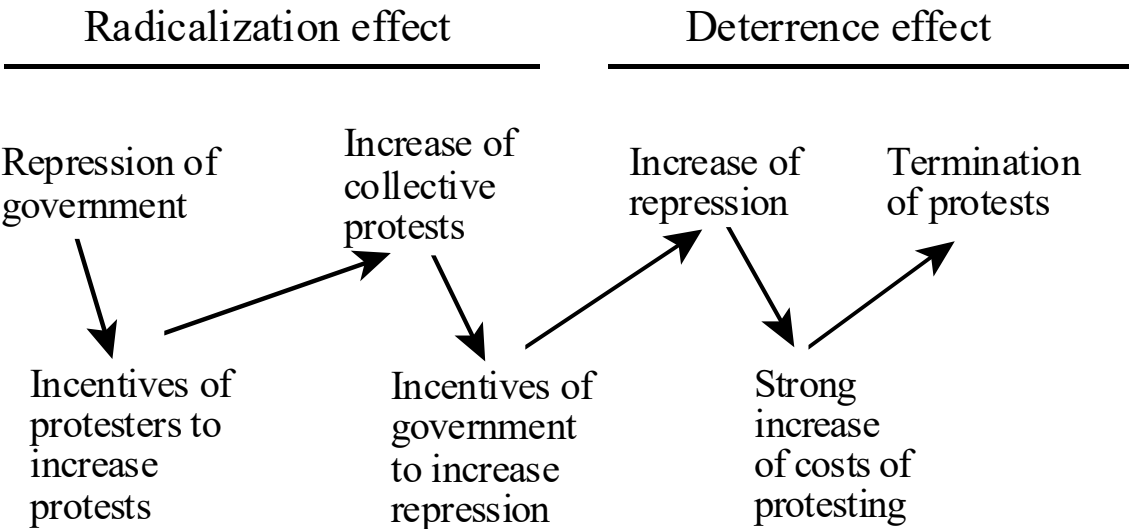
Mechanisms are, by definition, social processes and in particular micro-macro processes.

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I will illustrate the argument that a good mechanism explanation is a deductive-nomological explanation with an example.

An example of a protest cycle: from backlash to defeat

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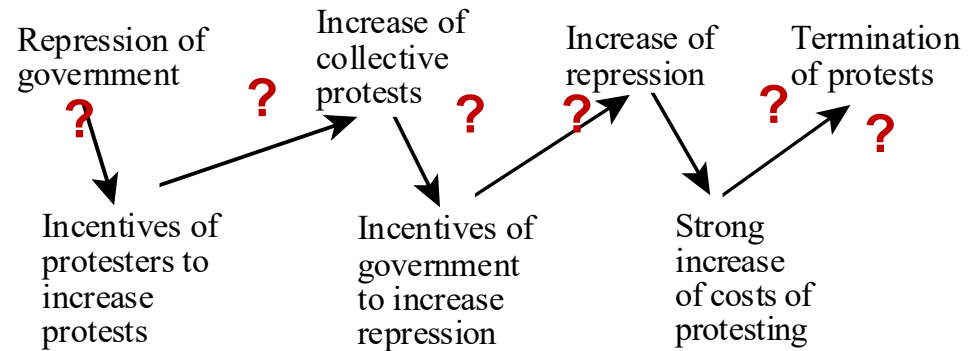


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Real life examples: Hongkong, Belarus, Myanmar

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Do we need theoretical propositions for explaining the protest cycle?



There is a **selection problem** of the variables.

- How do we know that repression caused incentives (such as moral indignation)?
- How do we know that incentives lead to action?
- How do we know that the government increased repression and did not resign?
- There is no answer to how the selection problem is solved (see the argument before: one must rely on the intuitions of conspiracy theorists etc.)



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The **conclusion** is that mechanisms explanations are arbitrary without good theories.

Although this argument is old it is still not discussed. In the new Research Handbook nothing is said about the requirement that a good mechanism explanation requires good theories.

Rejecting the use of theories is an obstacle for valid mechanism explanations.




# The Abandonment of Critical Rationalism in Analytical Sociology

Critical rationalism and, in general, analytic philosophy, seem to be particularly very **well suited** as the methodological basis for AS. Proponents of analytic philosophy „share a commitment to the values of conceptual clarity, argumentative rigor and analytical precision” (Little 2021: 64, see also 75; see further his outline of the assumptions of analytic philosophy on pp. 65-69. This is exactly the unifying commitment of adherents of AS.

This is exactly the methodological orientation of AS.

It is thus not surprising that in a programmatic contribution to AS Hedström (2005: 1) writes that **analytical sociology** „uses explanatory strategies more often found in analytical philosophy and behavioural economics. It is an approach that seeks precise, abstract, realistic and action-based explanations for various social phenomena.” Already in 1996 Hedström and Swedberg (p. 127) mention “important ideas of Karl Popper” that are part of their approach.





This orientation is **largely abandoned**. In the Research Handbook on Analytical Sociology (Manzo 2021) „critical rationalism“ is only mentioned by one of the contributing social scientists, namely in Werner Raub’s contribution. In Hedström’s Coda (Hedström 2021) the earlier advocacy of analytic philosophy is gone. Hedström seems to favor **pragmatism** when he writes (2021: 495): „I am **open to the possibility** that pragmatist ideas may produce important additions to our theoretical toolbox.” He adds, however, that this has yet to be shown.

One would like to know **what the arguments are** for giving up critical rationalism and analytic philosophy. As long as detailed arguments are missing we should not abandon the methodology of critical rationalism in AS.



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Two contributions by philosophers address **analytic philosophy** Little (2021) and Di Iorio and León-Medina (2021). The latter is based on analytic philosophy and is a devastating critique of basic claims of critical realism.

Little – as Hedström in his Coda – **favours pragmatism** and not critical rationalism: “the current prominence of the philosophy of pragmatism within analytic philosophy has important links to analytical sociology in that it provides intellectual resources for arriving at more fully developed theories of the actor” (2021: 76).



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Is critical rationalism really replaced by other methodologies in the writings of AS? Often scholars may **not explicitly advocate** critical rationalism but may **implicitly apply it**.

It would be an interesting task to perform a **meta-analysis** of the methodological orientations of single contributions in the handbook (and in the papers who received the Robert K. Merton Award from the International Network of Analytical Sociology – see Manzo 2021: 8). Questions could be how often theories are applied (i.e. the Hempel-Opppenheim model of explanation), how often the „constant conjunction“ of causality is subscribed to and how often there is empirical theory comparison.

Such a meta-analysis should not only look at the explicit references to analytic philosophy but to the actually applied methodology.



# General Conclusion

- It is unacceptable
  - to abandon the application of **general behavioral theories and the empirical comparison** of general theories and competing middle range theories (in Manzo's reformulation of basic postulates of AS theories are not even mentioned (Manzo 2021: 5).
  - to eliminate models with **mental states**, and
  - to **reject critical rationalism**.
- The major **problem of this turn** is that detailed arguments for the new claims are missing. (Is this compatible with a rigorous sociology?)

My **recommendation**: For the time being: forget the new turn! Wait for the arguments of the Swedish School!



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## References **INCOMPLETE**

- Britt, Chester L., and Michael R. Gottfredson (Eds.). 2003. *Control Theories of Crime and Delinquency*. New Brunswick and London: Transaction Publishers.
- Goode, Erich (Ed.). 2008. *Out of Control: Assessing the General Theory of Crime*. *Assessing the General Theory of Crime*. Stanford: Stanford University Press.
- Gottfredson, Michael R. 2017 (online publication). "Self-Control Theory and Crime." *Oxford Research Encyclopedia of Criminology*:1-25.
- . 2018. "General Theory and Global Criminology: Childhood Environments, Problem Behaviors, and a Focus on Prevention." *Asian journal of Criminology* 13(4):347-65.
- Hedström, Peter. 2021. "Coda—The Past and Future of Analytical Sociology." Pp. 490-505 in *Research Handbook on Analytical Sociology* edited by Gianluca Manzo. Cheltenham: Edward Elgar.
- Hedström, Peter, and Richard Swedberg. 1996. "Rational Choice, Empirical Research, and the Sociological Tradition." *European Sociological Review* 12(2):127-46.
- (Eds.). 1998. *Social Mechanisms. An Analytical Approach to Social Theory*. Cambridge: Cambridge University Press.



## Skipped due to time constraints

- Homans, George C. 1967. *The Nature of Social Science*. New York: Harcourt, Brace & World.
- Malewski, Andrzej. 1962. "Two Models of Sociology." *The Polish Sociological Bulletin* (3/4):17-27.
- . 1967. *Verhalten und Interaktion. Die Theorie des Verhaltens und das Problem der sozialwissenschaftlichen Integration*. Tübingen: Mohr.
- Opp, Karl-Dieter. 2020. *Analytical Criminology. Integrating Explanations of Crime and Deviant Behavior*. London and New York: Routledge.
- Popper, Karl R. 1957. "The Aim of Science." *Ratio* 1(1):24-35.
- Pratt, Travis C., and Francis T. Cullen. 2000. "The Empirical Status of Gottfredson and Hirschi's General Theory of Crime: A Meta-Analysis." *Criminology* 38(3):931-64.
- Tibbetts, Stephen G., and David L. Myers. 1999. "Low Self-Control, Rational Choice, and Student Test Cheating." *American Journal of Criminal Justice* 23(2):179-200.
- Vazsonyi, Alexander T., Jakub Mikuška, and Erin L. Kelley. 2017. "It's Time: A Meta-Analysis on the Self-Control-Deviance Link." *Journal of Criminal Justice* 48(1):48-63.

Thanks  
for  
listening!

