

CRITICAL REALISM AND COMPLEX CAUSALITY¹:

**On the assumptions you buy in to
when you are making causal claims**

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On the assumptions you buy in to when you are making causal claims, *Roel Rutten*

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I

It is increasingly uncommon for an academic to be in the same place for 25 years. And I think it is even more uncommon for an academic to give a public lecture to celebrate the occasion of being in the same place for 25 years. But then, I am a bit of a contrarian. I like to do things different just because I can. I also think I have something to say that matters.

I would like to talk about something that we do not nearly talk about enough. I want to talk about what causality means. About what we are actually saying when we make a causal statement. And, being a contrarian, I am going to challenge you. Most of you anyway, because you follow what mainstream social science thinks that causality is. I believe the mainstream view is wrong. I have held this belief for pretty much 25 years. I was never swayed by the atomistic, stylized, mathematical reduction of social reality to regression models. But it took me a long time to find the language to voice my reservations and to present a credible alternative. Discovering QCA (Qualitative Comparative Analysis), just over three years ago, was a critical step on that journey. I was immediately captivated by the way in which QCA presented not only a different research method but a completely different approach to causality; the complexity approach. QCA finally gave me a language to talk about causality in the way that I had intuitively always felt about causality. A far more elegant and sophisticated language than I could ever have achieved myself. After reading only the first few pages of the QCA handbook of Schneider and Wagemann, I decided that I wanted to become a QCA expert. And I have.

But there was something missing. Yes, my QCA books and papers gave compelling accounts of complex causality and the need to consider cases holistically. But I was a convert already. The QCA literature does not deliver the knock-out blow that forces its critics to accept it as a completely different logic of causality. A logic that fundamentally challenges the assumptions underlying the mainstream notion of causality, rather than a second-best in case your N is not large enough. But then, last April, I discovered critical realism and I was electrified.

II

Charles Ragin never developed QCA with critical realist philosophy of science in mind. But the Sage handbook of case-based methods, that he co-edited with David Byrne in 2009, embraces critical realism. In fact, QCA is a thoroughly critical realist method. But before I turn to critical realism, let me briefly outline the mainstream position on causality in the social sciences. This position is informed by neo-positivist and empiricist philosophies of science. It relies on a variable-based approach and the use of statistical techniques and it is visualized with conceptual models, i.e. boxes and arrows. I shall call this position, the empiricist approach. I think that this is a fair characterization of the mainstream position, although by no means a completely accurate one. But it serves the purpose of this talk. I shall contrast empiricism with critical realism throughout my talk. The empiricist notion of causality is based on the experimental model of the natural sciences. The aim of empiricism is basically to apply the experimental model in the social sciences in order to make it a 'hard' science, just like the natural sciences. Causality in this approach is based on three conditions:

1. An empirically observed constant conjunction between cause and outcome. That is, empiricism follows a regularity approach that produces if-then statements. In contemporary social sciences, if-then statements are usually expressed probabilistically as statistically significant correlations between independent and dependent variables.
2. A time sequence between cause and outcome. An if-then statement can only ever be a causal statement if the cause precedes the outcome. This is why many journals are increasingly averse to cross-sectional studies.
3. Keeping other factors constant so as to manipulate a single cause only. That is, experiments depend on a 'closed system'. Ideally, a closed system is achieved by having experimental and control groups, but closure may also be achieved probabilistically by using a series of control variables.

This, in a nutshell, is the empiricist notion of causality and it is wrong. It is wrong from a critical realist perspective. So what about critical realism?

III

Critical realism, of the kind inaugurated by British philosopher of science Roy Bhaskar in the 1970s, is a philosophy of science of the social sciences. Critical realists argue that the social world is just as real as the natural world. But it is different in that the social world must be enacted, produced or re-produced by human agents. A rock simply undergoes the process of erosion, it is not an agent in that process. But human agency is always part of social reality. Social reality, as in social structures and social institutions, precedes any round of agency. Human agency is impossible without social structures and institutions. Yet, at the same time, these social structures and institutions only exist because they are enacted, (re-)produced by human agents. That is, there is a symbiotic relationship between social reality and human agency. This means that, fundamentally, social reality is an 'open system', that closure is impossible in social reality. Social structures and institutions, and their consequences are always enacted simultaneously. Importantly, this means that a time-sequence between cause and outcome is not necessary for causality; that the need for a time-sequence is specific for the empiricist notion of causality. For example, in our topic group meetings we sit in a room for about two hours. The outcome is knowledge creation; we walk out of the room knowing a little bit more than when we came in. We create knowledge through interaction and communication. This interaction happens on the basis of very informal social structures and social institutions. But it would be ludicrous to suggest that these social structures and institutions precede our social interaction to cause the knowledge creation. In fact, we enact the social structures and institutions at the same time that we enact knowledge creation and we do so through communication and interaction. That is, over the course of an event, such as the topic group meeting, human agents enact causes and outcomes simultaneously. There is no time sequence.

The simultaneous 'production' of causes and outcomes through social interaction rules out the possibility of a closed system. In a closed system, causes must exist independent of each other, so we can manipulate a single cause, and they must exist independent of the outcome. That is why empiricists call them independent variables. The impossibility of closed systems in social reality rules out the possibility of experiment in the social sciences. There are many artificial settings that social scientists call experiments but they do not achieve closure, neither actually nor probabilistically². Consequently, the social sciences need a different approach to research, and this is a major rift between empiricism and critical realism. Whereas empiricism follows an experimental model, critical realism, given the impossibility of experiments, advocates an interpretivist approach³.

IV

Critical realism is a philosophy of ontology. Ontology is the study of being, the study of the nature of the world. Critical realists argue that you cannot reduce statements about the nature of the world, which is ontology, to statements about our knowledge of the nature of the world, which is epistemology. Doing so is what critical realists call the 'epistemic fallacy'. Statements about our knowledge of the nature of the world (epistemology) are the result of a process of knowledge creation based on observations and measurement. Scientific knowledge is also socially produced. But the social world on whose nature science produces knowledge is ontologically real. It exists independent of measurements and observations and it is not itself the product of socially constructed knowledge on the part of scientists. If that were the case, science would not be possible. Consequently, distinguishing between ontology and epistemology is a necessary condition for the conduct of science. In fact, the notion that the social world is real and independent of our observations and measurements is shared by empiricism (but not by social constructionism). However, empiricism is an exclusively epistemological approach; it does not talk about ontology. Yet, arguing, as empiricism does, that we can know the world (ontology) by observing it (epistemology) leads to logical impossibilities that empiricists call spurious correlations. But the fact that we know these correlations to be

spurious without testing them implies that we have knowledge of underlying causal structures (ontology). Richard Florida (2002) found a good correlation between the proportion of gays in a region and high-tech development in that region. We can never prove or disprove that 'gayness' causes high-tech development through testing and observation. But we know it is not true because being and acting gay has no bearing on technology development. That is, we have ontological knowledge of underlying processes, structures and mechanisms that we use to substantively interpret our empirical findings.

Saying the same thing in a different way: the question, 'what does it mean when somebody is happy', is a very different question than the question, 'how can we know that somebody is happy'. Only in the problem-free, imaginary world of empiricists do meaning and measurement overlap. In the real world that you and I live in, that is not the case. Particularly not regarding the complex and multi-dimensional concepts that social science takes as its objects of study. In response, critical realism stratifies reality into three domains: the domain of the Real, the domain of the Actual and the domain of the Empirical. The domain of the Real is ontology; it pertains to social structures and institutions and to their causal powers. When exercised, these causal powers produce events, which belong to the domain of the Actual. We can experience events, for example through observation, measurement and perception, to produce epistemological knowledge, which belongs to the domain of the Empirical. As an illustration, think of a social network as belonging to the domain of the Real. It is a social entity that exists of individuals, social structures (the positions of these individuals in the network), social institutions (the norms, values, habits, customs, routines of the network) and the causal powers they result in (the things the network is able to do). The social network as a social entity is real, it exists independent of any particular network member and independent of their observations and experiences of the network. The individuals, structures and institutions combine to produce events, that is, things that are actually going on in the networks, such as knowledge creation or delivering health care to patients. These events belong to the domain of the Actual. Finally, network members, patients and researchers may all have experiences, perceptions and observations of and about the network and the events it produces. This is the domain of the Empirical, which is about

epistemological knowledge of the network. It seems to me that social network theory would benefit tremendously from looking at networks along the lines of the three domains of reality, rather than to collapse everything into nodes and ties, which, if anything, merely achieves the epistemic fallacy. A critical-realist theory of social networks would ontologically separate relations from the related individuals and it would explain how related individuals enact the causal powers of the relations. It would further explain how relations that exist independent of the individuals they relate define the boundaries of a network as a social entity.

The need to avoid the epistemic fallacy and, thus, to distinguish between ontology and epistemology, has a very important implication. It means that, for critical realists, the empiricist practice of testing hypotheses is nonsensical. Hypotheses are ontological statements, they say something about the nature of the world. Yet, empiricists accept or reject hypotheses on the basis of empirically observed constant conjunctions between causes and outcomes, on the basis of empirically observed regularities, that is, on the basis of epistemological statements. That is, hypothesis testing collapses ontology and epistemology. But without prior (ontological) knowledge of the nature of technology, there is no reason why an empiricist would not conclude from Richard Florida's correlation that gayness causes high tech-development. We can ridicule the example by arguing that no one would ever make this mistake. Of course not because we have relevant prior ontological knowledge. But we do research because we do not know something. Making causal inferences from empirically observed regularities is uncritical and, therefore, risks making flawed generalizations⁴. That makes testing hypotheses a textbook example of an exercise in committing the epistemic fallacy.

V

Critical realism attributes paramount importance to human agency. And this means that critical realists reject the idea of disassembling social reality into variables. Because once you have accomplished that, you have also dissolved human agency and you will have no choice but to attribute

agency and even causality to variables. For this reason, empiricists bend themselves over backwards and deploy ever more complicated statistical techniques in order to identify the ‘true net-effect’ of an independent variable. As if that somehow identifies the true agency or the true cause. This obsession with statistics I shall call the gospel of empirical rigour. But attributing agency and causality to variables is impossible. Variables do not exist; they are not real. Variables are statistical abstractions. They are not agents; they do not do anything much less cause anything. For critical realists, the idea that a variable can be a cause is utterly absurd. This kind of anthropomorphization of statistical abstractions is something that critical realism firmly rejects. The only sensible answer to the question, ‘what does this variable do?’ is: absolutely nothing.

But let us follow the empiricist logic for a moment. You attribute agency and causality to variables and you treat and discuss variables as if they are real things. In order to ‘identify’ causality you look for constant conjunctions between cause and outcome; you look for statistically significant correlations between independent and dependent variables. Causality then becomes a forcing, as in an independent variable ‘doing something’ to a dependent variable. That is why you want to know the ‘true net-effect’. When identified, you impose this regularity on real agents. That is, the regularity is generative; it is governing. But why should a real agent slavishly adhere to the correlational script that you wrote for them? Agency in the real world is intentional; it is not determined. In fact, the purpose of agency is often times to defeat the very regularities on which empiricists base their causal claims. If you take human agency seriously then causality, far from being a forcing, becomes an enabler. For critical realists, causality is about the condition of possibility. The presence of conditions makes it possible for human agents to act in ways that achieve the outcome. You can only see causality as a forcing if you have a hopelessly deterministic notion of agency. Empiricists do not like it when you accuse them of determinism, because their regularities are probabilistic, they have error margins. But determinism is exactly what you get when you ignore real agents and see causality as a forcing, as an independent variable doing something to a dependent variable.

If causality requires agency, which it does, and if agency is intentional, which it is, then empirical regularities are emergent, they are not generative. Empirical regularities are the consequence of human agency, they do not determine human agency. Empirical regularities are phenomena in need of an explanation and cannot be taken as evidence of causality. It is ridiculous to suggest that higher levels of education cause higher levels of income, no matter how statistically significant the correlation. Having a higher education makes it possible for an individual to accept a more complicated and challenging job but does not determine that they do. In our society, complicated and challenging jobs are generally rewarded with a higher pay and this explains the correlation. In sum, the fact that human agency is intentional⁵ implies that it cannot be determined and that causality is about conditions that make human agency possible.

VI

Seeing causality as an enabler of human agency, as a possibility, implies that outcomes do not have to materialize for causality to be real. Consequently, a constant conjunction between a cause and an outcome is not necessary for causality. For example, an R&D-performing firm has the possibility of developing new products, even when its management chooses to focus exclusively on improving existing products. A Boeing 747 has the ability to fly at 900 kilometres an hour, also when it is stored in a hangar. Causality, thus, is a power, a characteristic, a possibility of a social entity, such as a human agent or a firm. This power is real, irrespective of the agent exercising that power or realizing its potential. That is, causal powers belong to the realm of ontology. Causal powers are real, even when they are not exercised. But when causal powers are not exercised, we cannot observe their effects and implications. This brings us back to the epistemic fallacy because we can only have epistemological knowledge of causal powers in as far as we can observe their implications. To get ontological knowledge of causal powers; that is, to get from a statement about our knowledge of a causal power (epistemology) to a statement about the causal power (ontology), we need to make substantive interpretations. We need to ask ourselves: how and why is this (the observed) outcome possible? What must be

(ontologically) real to make it possible for human agents to act in ways that achieve the outcome?⁶

To make substantive interpretations we need to get beyond our observations and draw from previous research on similar issues, from contextualized knowledge on the object of study, and from experiences⁷. We must draw from all that is available to help us answer the question: how and why is the outcome possible? The need for substantive interpretation to infer causality has an important implication. It means that social science is in the business of detecting causes and not in the business of predicting outcomes⁸.

VII

The emphasis on human agency might suggest that critical realism is after behaviourism, the micro foundations of social mechanisms and methodological individualism. In fact, critical realism rejects such notions and this is easily explained by elaborating an example from Roy Bhaskar himself. The reason why society wants garbage collected is very different from the reason why the bin man gets up in the morning to collect the garbage. Society wants garbage collected for concerns over public health and sanitation. Therefore, society puts in place social structures and institutions that make it possible for the bin man to collect the garbage. It establishes a garbage collecting company, it provides a bin lorry, it puts in place an institution that makes citizens put their bins on the street on particular days of the week, so the bin lorry can drive specific routes, etc. These are the conditions of possibility of society as a social entity. However, the reason why the bin man gets up in the morning to collect the garbage may have nothing to do whatsoever with concerns over public health and sanitation. The bin man may have completely different motives. Yet, his agency is intentional; he gets up in the morning intending to collect the garbage. Moreover, even when he decides not to get up, or to get up and do something other than collecting garbage, and garbage thus remains uncollected; the causal power of society, the condition of possibility to collect garbage, is still there. Therefore, the reason why society wants garbage collected is non-reducible to the motives of the bin men to collect the garbage. And we

cannot from the motives of the bin man infer the reason why society wants garbage collected.

Of course, on the level of individual agents, such as the bin man, different social entities overlap. We need the agency of the bin man to enact the causal powers of the garbage collecting company to collect garbage. And this is where the idea of micro foundations of social mechanisms and methodological individualism comes from. But these notions confuse two things. First, there is upward and downward causation in any social entity. The garbage collecting company affects the bin man, and the bin man affects the company. However, social structures and institutions are durable. They resist attempts by individual agents to change them and they endure beyond individual agents. That is why we call them structures and institutions. Second, as we have seen, the bin man may have motives not to collect the garbage. But there are more individuals in the garbage collecting company than our bin man. This means that the causal powers of the company depend on human agency in general but not on the agency of any one particular bin man. So the causal powers of the garbage collecting company (ontology) are real and independent of the motives and agency of any particular bin man. And that is where the notion of micro foundations and methodological individualism collapses⁹.

It follows that social reality is stratified in social entities that are non-reducible to one another. That all social entities have characteristics and causal powers that are unique to them and that cannot be reduced to their constituent parts. And the characteristics and causal powers of the constituent parts do not simply 'add up' to the characteristics and powers of the social entity. Only when you disassemble the world into variables, can you speak of individual-level variables, company-level variables, etc. and do a multi-level analysis. And only then does it make sense to think in terms of micro foundations. But I have already argued that critical realism rejects the idea of disassembling social reality into variables. Critical realism argues that social entities must be studied holistically, because only then can their causal powers be understood. All social entities are unique, time and place specific 'assemblages' of individuals, resources, social structures and institutions, relations, practices, technologies, etc. But not so unique as to be incomparable. We may

compare, for example, top-management teams of multi-national enterprises because they have similar structures and institutions. That is, they have comparable causal powers. Empiricism denies the uniqueness of social entities by disassembling them in to variables and by de-contextualizing analysis (which is the very purpose of experiments. This makes empiricism an ‘under-socialized’ approach. Social constructionism exaggerates the uniqueness of social entities, denying their comparability. This makes social constructionism and ‘over-socialized’ approach.

VIII

And then we get to the point that I am making in this lecture. Using a particular method means to buy in to the assumptions on which the method is based. Philosophy will help you appreciate the plausibility of those assumptions and, hence, of the plausibility of the method. As a researcher, you cannot just ‘get on’ with your analysis, just ‘get on’ with crunching the numbers and not be bothered with philosophical mumbo jumbo. If you are not actively concerned with assumptions of what social reality is like, then your method will make those assumptions for you. Simply saying, ‘well, that’s just how the method works’, is not good enough. Then you are doing science in much the same way that a bird builds a nest; because it does not know anything else to do. In fact, it really does not know what it is doing. It makes you a mindless empiricist. And no scientists should aspire to be mindless.

IX

I am nearly there. There is one more topic that I want to address and that is complex causality. Critical realists argue that causality in the real world is complex. The notion of complex causality is fully developed in the QCA-literature. However, all elements are already in Roy Bhaskar’s work from the 1970s. Complex causality suggests that causality is configurational rather than additive, equifinal rather than unifinal, and asymmetrical rather than symmetrical. Let us return to the example of

the R&D-performing firm. It is not so that a little bit of R&D-effort causes a little bit of innovation, that a little bit of a bottom-up structure causes another little bit of innovation, that a little bit of higher educated staff causes yet another little bit of innovation, and that all these little bits put together get us to the innovation. Put this way it is obviously ridiculous but that is exactly what additive causality suggests. In reality, the presence of R&D-investments AND the presence of a bottom-up structure AND the presence of higher educated staff makes it possible for the firm to perform innovation. Furthermore, another firm may have none of these characteristics but it may have close connections to research centres AND have a very entrepreneurial staff. And this may make it possible for that firm to produce innovations also, albeit by a very different causal mechanism than the first firm. By implication, while the presence of R&D-investments explains the presence of innovation (Firm 1), the absence of R&D-investments (Firm 2) does not explain the absence of innovation¹⁰.

The point is that the formal language of the empiricist approach is statistics, or linear algebra. But linear algebra is additive, unifinal and symmetrical. This means that the empiricist approach is principally incapable of talking about complex causality. The only formal language that can express complex causality is Boolean algebra. No amount of empirical rigour can make up for the empiricist approach's inability to talk about complex causality.

And there is something else about empirical rigour. It narrows rationality to things we can quantify. But how much of our knowledge, expertise and experiences can we truly express in numbers? And how do you transfer the bit of your knowledge that is not quantifiable? How do you transfer it to your colleagues, your students, your children? Well, you tell stories, you use metaphors, images, symbols and allegories. Whatever merit empirical rigour may have, and it has merit, it is also a form of intellectual laziness and ignorance. By narrowing rationality to what we can quantify, empiricism ignores a vast body of knowledge and expertise. And it is this body of knowledge that we draw on to substantively interpret empirical findings into causal mechanisms. It is this body of knowledge that allows us to get from empirical observations (epistemology) to causal powers and mechanisms (ontology). It is this

body of knowledge that allows us to understand the ontological nature of causality as an enabler, even when we do not observe its consequences. Moreover, decomposing social reality into variables and narrowing rationality to what we can quantify, is profoundly de-humanizing. The social sciences are about people doing stuff. When people and the stuff they do get lost behind variables, distributions and regression models, we lose something essentially social. When social science anthropomorphizes variables and distributions into real things, it misses the point.

X

To draw the argument together, a critical realist approach to doing research takes human agency seriously as a necessary element of causality. It sees causality as an enabler for human agency and it argues that social entities are real and that they have characteristics and causal powers that are non-reducible to the human agents that make up the social entities. From this, it follows that critical realism embraces a holistic, case-based approach to doing research and that empirically observed regularities are emergent. That they are the observable implications of underlying causal powers and that to know these causal powers, we must make substantive interpretations. QCA is a method that systematically delivers on all this. Regression analysis pretty much does the exact opposite. But does this mean that one is wrong and the other is right? Does my celebrating the virtuous of critical realism mean that I flatly reject empiricism? Let me put it like this. I believe that, for the social sciences, critical realism is the only defensible position. I believe that critical realism is the only theory of social reality that allows to do social science in a meaningful way. However, 'I believe' is not the same as 'I know'. And if I turned my belief into a dogma, I would no longer be a scientist. Any pun towards the preachers of the gospel of empirical rigour is fully intended. I passionately believe in critical realism, but I also take a very practical attitude. Whatever your method; if you understand and appreciate the assumptions you are buying in to, if you apply your method rigorously, and if you interpret your findings with those assumptions firmly in mind, you are a good scientist, doing good work and I will take your work seriously. I am a contrarian, not a revolutionary.

CRITICAL REALISM AND COMPLEX CAUSALITY

In sum; it is my position that, as *social* scientists, we must be explicit about the theory of social reality that informs our methodology. We must be explicit about the assumptions that we buy in to when we make causal claims and we cannot let our methodology make these assumptions for us. We cannot do research in the same fashion that a bird builds a nest. And you can trust me to challenge you to explain and defend the assumptions that you buy in to, whatever method you use. That is my ambition for the next 25 years.

Notes

1. This is not the place for a comprehensive discussion of critical realism and complex causality. I have been conscientious but selective in my discussion, allowing room for my own views. I refer readers to the bibliography for the original sources.
2. For methodological reasons (too many control variables deteriorate statistical power), empirical reasons (limits on the ability to collect data) and theoretical reasons (not knowing all potentially relevant causes), the selection of control variables is always arbitrary and never exhaustive. Hence, no probabilistic closure is achieved.
3. The notion of substantive interpretation is developed in QCA. But I use it to refer to retroductive methods of explanation in general. Methods that combine empirical, contextual and theoretical knowledge to explain how and why outcomes occur. Substantive interpretation still follows the experimental idea. It is based on procedures that, if followed, give us very good reason to believe that a putative cause explains the occurrence of the outcome. It is different in that substantive interpretation is a causes-of-effects approach (explanation), while the experimental model follows an effects-of-causes approach (prediction).
4. The empiricist emphasis on empirical rigour effectively mistakes empirical rigour for ontology, i.e. for knowledge of underlying structures and mechanisms. But no amount of empirical rigour can substitute critical thinking. Fundamentally, this is behind the call of Amrhein and colleagues in *Nature* and Wasserstein and colleagues in *The American Statistician*, in the spring of this year, to abandon statistical significance and the p-value.
5. Agency is intentional but not necessarily voluntary. You can put a gun to my head and demand my money. My giving you the money is intentional but not voluntary. I may still intent do something other than giving you the money, if I am prepared to face the consequences. Nor does intentionality imply rationality. Trying to take the gun off you may not be rational but it is still intentional.

6. Herein lies a fundamental difference between empiricism and critical realism. Empiricists aim to identify the *true* cause, the *true* net-effect. Once identified, such empirical regularities assume the status of 'causal laws'. In critical realism, on the other hand, substantive interpretation leads to the best *approximation* of the true nature of the world.
7. Profoundly, this is not a call for an anything goes-methodology. Social science methods have clear rules for what counts as valid knowledge and how to obtain it.
8. 'Prediction' in the empiricist approach means that a researcher has identified a statistically significant correlation between an independent and a dependent variable, on the level of a population, for an event that happened in the past. The correlation coefficient thus obtained is then imposed on real agents in future events. To call that a 'prediction' requires a leap of faith that critical realism prefers not to make. It also makes a mockery out of statistics because a population-level correlation coefficient cannot be interpreted as a case-level probability.
9. Critical realism also defeats the Thomas Theorem that, 'if men perceive situations as real, they are real in their consequences'. In fact, the Thomas Theorem is an attempt at micro foundations and methodological individualism. Obviously, perceptions inform human agency, if that is what is meant by 'consequences'. But human agency is not exclusively informed by perceptions. It also rests on social structures and institutions. Since social structures and institutions, and their causal powers, are ontologically real, they are unaffected by human perception. If they were, social science would not be possible. In fact, because social structures and institutions are ontologically real and thus endure beyond individuals, human agents who misperceive them will be reminded of their causal powers. One may think of oneself as having a central position in one's social network and act accordingly, only to find one's efforts frustrated by the real structure of the network. Moreover, also situations (events, in critical-realist speak) that are not perceived (of which we have no epistemological knowledge) have consequences.

Nor does perceiving situations as real determine that it will have consequences, as human agents may ignore them. Put differently, the Thomas Theorem collapses perception (the domain of the Empirical), situations (the domain of the Actual) and real consequences (the domain of the Real) into a 'unified reality', making it an example of the epistemic fallacy. So the Thomas Theorem states the obvious, that perceptions matter, but fails as an explanation of human agency and social change.

10. Note that causal asymmetry rules out prediction. If the absence of a cause does not explain the absence of the outcome, then no predictions can be made about the (non-)occurrence of the outcome when the cause is absent. In fact, nor does the presence of a cause determine the occurrence of the outcome. Since causality is conjunctive, the causal power of one cause may always be negated by the causal power of another cause, resulting in the non-occurrence of the outcome.

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Another 25th jubilee

The year 2019 not only marks my twenty-fifth jubilee at Tilburg University, it is also twenty-five years ago that I first started working for ERAC (European Regional Affairs Consultants). I quit ERAC after a seven-year tenure in 2001, to take up a full-time position at Tilburg University. However, as of October 2018, I am once again based at ERAC as a senior consultant for one day a week.