Beiträge zur Politikwissenschaft · Band 18

Dona Barirani

An Exploration of The Contingent Necessities of Agricultural

Herbert Utz Verlag · München

Beiträge zur Politikwissenschaft

Band 18

Bibliografische Information der Deutschen Nationalbibliothek: Die Deutsche Nationalbibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im Internet über http://dnb.d-nb.de abrufbar.

ISBN 978-3-8316-4443-8

Printed in EU
Herbert Utz Verlag GmbH, München
089-277791-00 · www.utzverlag.de

Table of contents

An Exploration of the Contingent Necessities of Agricultural Biotechnology

> "*Modernity signifies the transitory, the fugitive, the contingent, the half of art of which the other half is the eternal and the immutable.*"[1]
>
> **Charles Baudelaire**

Technologies have been used and developed by humankind for millennia, but its development has assumed tremendous proportions in the last few centuries. Crucial examples are the capability to split atoms, the applications in aeronautics and the creation of genetically modified organisms (GMOs). Each of these fields is deeply interrelated with political, economic, legal, and social dimensions and can never be understood as a neutral technology that follows objective rules. Like no other technological development, it is modern agri-biotechnology that intervenes in the basic structure of life: the DNA. The genetic constitution of organisms is not arbitrarily transformed, but politicized and economized in various ways. In general, biotechnology should not be mistaken for an autonomous technology with definitely associated branches and disciplines. Rather, it is a collection of scientific tech-niques with a distinct pluralist and fragmented nature of economic and political patterns of interactions. Modern agri-biotechnology is, therefore, related to the application of science and technology to living organisms and parts, products, and models thereof. These are used on living or non-living substances in order to produce knowledge, goods, and services. Unlike traditional and conventional animal and plant breeding techniques, modern agri-biotechnology essentially touches the DNA through the in-vitro recombination of the DNA (rDNA). This allows target-oriented gene-sequencing for the development of transgenic plants and animals. One of the most famous examples is the application of the broad-spectrum herbicide *Roundup* on *Roundup Ready* crops that are genetically engineered (GE) to be resistant to the active ingredient *Glyphosate* that is contained in Roundup. This simple calculation is, however, only valid in theory. Since the first commercial application of GE plants in the 1990s, numerous problem areas have evolved. These range from environmental and health hazards to contestable interdependencies between the industry and the academic sector. Due to the systemic character of modern agri-biotechnology, not only farmers, or certain stakeholders, or even just consumer groups are involved, but life, societies and individuals as a whole. This is true since on the one hand, gene-flows and the environment do not know geographical or manmade national boundaries, and since on the other hand, institutionali-

[1] English translation as quoted in Calinescu (1987) Five Faces of Modernity, p.48. The French original wording: "*La modernité, c'est la transitoire, le fugitive, le contingent, la moitié de l'art, don't l'autre moitié est l'éternel et l'immuable*" (Charles Baudelaire, Oeuvres completes (Paris: Seuil, n.d.l. p. 553).

zation processes take place at the international level more than ever before in human history. In this spirit, the international community of states must challenge fundamental and far-reaching agreements and new legal and political regulations. Since there is no right or wrong in decision-making, but rather ambiguity, tentativeness and uncertainty, this work aims to reconstruct a differentiated image of the broad field of modern agri-biotechnology. The analysis is, however, not referred to the conflict between the so-called northern industrial states and the global south, biodiversity issues or distributional conflicts. Instead, the focus lays on the emergence of modern agri-biotechnology and its contingent necessary conditions and occurrences. The specific spatial dimension is, therefore, applied to industrial societies with developed technologies, namely the US and Europe, paying special attention to Germany. For the analysis, Bob Jessop's concept of contingent necessities (CN) and the corresponding method of articulation are applied. In this regard, occurrences can be viewed as non-necessary interactions of diverse causal chains which become necessary by entering a contingent interaction. In accordance to this, the view on power is relevant: Power is a specific form of causality that produces effects which would not have otherwise occurred under certain other conditions. Keeping these approaches in mind, any kind of reductionism shall be denied. Not one single causal mechanism or the power of one seed company or the narrative of profit maximization define the trajectory of modern agri-biotechnology, but rather a combination of circumstances and social forces which are historically and contextually embedded.

Hence, the hypothesis is that *modern agricultural biotechnology is a contingent necessary occurrence.*

In order to provide an extensive elaboration of the hypothesis, the work is split into a theoretical part and an analytical section. The theoretical part illustrates the conceptual approach and underlying premises. Based on this, the analytical part treats of contingent necessities of modern agri-biotechnology at five levels of abstraction and complexity. Each contains a brief summary at the beginning, except the last chapter, which dwells on specific developments in the US and Europe with a specification on Germany. Due to this structure, there are separate summaries on the US, Germany and the EU.
The first part on the theoretical and conceptual embodiment introduces the concept of contingent necessities and the method of articulation. Thus, occurrences are viewed as necessary products of contingent interactions of differently ordered, causal mechanisms in the past and present. The method of articulation provides the appropriate instrument for the analysis. It is characterized by a dual movement from abstract to concrete, and from simple to complex. This is later applied to the subject of modern agri-biotechnology. Moreover, this section contains theoretical assumptions which constitute a shift from truth claims to plausible reasoning, and imply the Kantian regulative use of transcendental ideas.

The second section contains the analytical work which is subdivided into five chapters. Based on the method of articulation, each chapter operates at different levels of abstraction and complexity. On a highly abstract and simple level, the first sub-chapter introduces in technology as a social process. The societal dimension of technology is examined as well as historical conditions of economic and technological path-developments. Further, dispositions and technology attitudes are considered to be underlying factors, that shape technology trajectories and policies or cause technological controversies. Additionally, the concepts of *context-specific depth of intervention* and *sector-specific adaptability* are demonstrated. At last, this chapter dwells on the relation between technology and law, especially Intellectual Property Law. The main goal of this chapter is to show the interlockings between various dimensions. Technology is, therefore, denied as an inherent objective necessity that follows natural law. Hence, it does not function in an isolated momentum, but is rather endogenized and socially constructed and a contingent item.

The second sub-chapter on modern biotechnology reduces the level of abstraction and raises the analytical complexity. A comprehensive picture of modern biotechnology is provided, including specific features of new technologies. Definitions of biotechnology are demonstrated as well as its pluralist and fragmented nature. Essentially, biotechnology is considered to be a collection of scientific methods with broad application possibilities, rather than an autonomous technology. A fundamental contingent necessity of modern biotechnology, is the close relation between science and industry. This causes a far-reaching commodification of knowledge. Furthermore, institutional structures and actor constellations are shifted and self-perceptions of academics are transformed. Ultimately, systemic risks are explained.

With the third sub-section a great step in specification is realized and complemented by a raised complexity level. The first of four analytical goals is to carve out the specifications of modern agri-biotechnology, particularly genetic engineering. Secondly, the economic dimension is rendered more precise in order to show the correlation between technology development and commercial exploitation interests. This is conducted through the illustration of applied techniques and modification forms. Afterwards, potential risks, that are represented in relation to the use of modern agri-biotechnology, are illuminated. An important distinction in risk assessment has to be made between the principle of substantial equivalence and the precautionary principle. Finally, it is shown, how living organisms are legally regulated and which objections have been raised against the propertization of living material in past times. Legal propertization is conducted with Intellectual Property Rights (IPRs) which signify both patents and Plant Breeders' Rights (PBR).

For the fourth chapter on spatio-temporal modern agri-biotechnology, both the level of analytical specification and of complexity are raised. The spatial dimension implies the global level, or more precisely, the international regulation of

modern agri-biotechnology. Temporality mainly covers developments since the 1970s. In order to outline developments of IPRs, related occurrences are also considered from the first half of the 20th century. The main aspects in this section are first, the industrial structure, including horizontal and vertical concentration processes, product complementarity, strategies and IPRs in the seed industry. In a further step, IPRs are examined in a broader context. This means considering the WIPO treaties, the UPOV as well as the TRIPs agreement. Moreover, difficulties in biopatenting, product protection and economic inefficiency are specified. In a last step, the two contradicting risk assessment approaches, that are explained in the previous chapter, are then related to institutional biosafety regulations, namely the Cartagena Biosafety Protocol.
The fifth and very last chapter of the work once more advances analytical specification and the degree of complexity by itemizing specific political territories and economic spaces. Essentially, this section provides two sub-chapters which show certain historical conditions of economic and technological path-developments in the US and Europe. The main temporal dimension contains the time frame from the very beginning in the first half of the 20th century to current events. In this regard, conjunctures are included and not split into a further chapter. Since the US is the main driver of modern agri-biotechnology, it is analyzed first. In a second step, the focus is laid on Europe. Contingent necessities can be best identified with a genealogical access into the corresponding trajectories. Hence, the part on the US starts with the *Division of Natural Sciences* and academic-industrial relations and continues with the Green Revolution, pre-shaped dispositions in the society, and IPRs. Further, institutional developments are examined. This includes relevant agencies on the one hand and multinational organizations, namely Monsanto, on the other hand. Monsanto is introduced and referred to antitrust cases and farmer trails. Moreover, the sub-part on the US explores struggles over GMO research and attacks on critical scientists. A brief resume of eighteen years GMO planting in the US ultimately sums up the economic benefits and ecologic hazards of its application. Essentially, occurrences of non-necessary interactions have only entered a contingent interaction in the US to become contingent necessary conditions for the development of modern agri-biotechnology. These conditions are dated back to the early 20th century since a proper analysis requires at least a concrete starting point. In this way, legal and financing structures can be explained as well as the transformation of the academic sector. The sub-part on Europe starts with an analysis of the technological and economical structures in Germany. Essentially, the examination of Europe is very complex since national and regional technological trajectories have developed over centuries, whereas the EU is a relatively recent endeavor, that is significantly responsible for the regulation of food products and IPRs. The part on Germany, however, contains the traditional chemicals industry, the role of academics, the industrial system, the way the new technology is tried to be adopted, and finally, the financing system for venture capital. The analysis con-

tinues with the institutional structure in the EU, especially food related legislation and corresponding controversies on the one hand and IPR regulations on the other hand. Analyzing IPR regulations requires accuracy of discrimination at multiple levels: on the specific relation between PBR and biopatents, and the growing importance of patenting living organisms. In a very last step, the EU is examined in relation to the international legislation, namely the WTO rules. Therefore, GMO controversies in the EU are inquired as well as the related Sanitary and Phytosanitary Measures (SPS) and the Agreement on Technical Barriers to Trade (TBT). Both the SPS and the TBT cause legal uncertainties to EU regulations. To complement this, the current situation of GMO controversies in the EU is investigated. All in all, modern agri-biotechnology is broadly opposed in the EU and only little applied by a few states. The motivation behind the comparison between the US and the EU is to show how technology development is interrelated with historical, local, and contextual factors. It is not possible to transfer a technology from one state into another without further ado. Particularly the EU reveals how the negative evaluation of GMO food has ritualized across time and how it complicates possible shifts. This gridlocked situation is the outcome of specific value orientations and dispositions that fundamentally differ from the US.

At the very end of this work all the results are summed up and complemented by a final outlook on main aspects that have to be focused on in the future.

Part I: The Theoretical Background

The first chapter contains the conceptual approach, the applied methodology, and the underlying premises of this work. Namely the concept of contingent necessity by Jessop is represented, which is linked to the method of articulation. Hence, the method of articulation is first described and later applied to agri-biotechnology. The underlying premises mainly refer to Kant's argumentation on the regulative use of transcendental ideas as well as the approach of plausible reasoning by Rescher and von Schomberg. Notably, the illustrated premises shall provide a better understanding of agri-biotechnology and are, therefore, anticipated, but not constantly expatiated on the whole work.

An essential contribution made by the concept of contingent necessity is to broaden the view on research objects, from one dimensional and mono-causal explanation to multi-dimensional and multi-causal argumentation. Contingent necessities are considered to be occurrences of non-necessary interactions of diverse causal chains, which only become necessary by entering a contingent interaction. This interaction is, however, not based on one causal mechanism, but on several interlockings. Significantly, there is not one single theory, that could ascertain contingent trajectories of causal chains. This is because of the openness of structure, including unforeseeable future developments, which may be uncontrollable and apparently paradox. Jessop underlines that *contingency* and

Beiträge zur Politikwissenschaft

Band 18: Dona Barirani: **An Exploration of The Contingent Necessities of Agricultural Biotechnology**
2015 · 168 Seiten · ISBN 978-3-8316-4443-8

Band 17: Anna Elisabet Liebl: **Parteien und Religionspolitik im Kooperationsmodell der Bundesrepublik Deutschland**
2014 · 350 Seiten · ISBN 978-3-8316-4409-4

Band 16: Linda Ludwig-Hoppe: **Demokratie als Pfad** · Normativität und deliberative Entscheidungen in politischen Institutionen
2014 · 244 Seiten · ISBN 978-3-8316-4361-5

Band 15: Christin Beutner: **Klimawandel und Energieversorgung als sicherheitspolitische Herausforderung** · Implikationen für eine europäisch-russische Energiepartnerschaft
2014 · 376 Seiten · ISBN 978-3-8316-4341-7

Band 14: Marko Jakob: **Der Einfluss von Interessenorganisationen auf die Gesetzgebung der ostdeutschen Länder am Beispiel des Sächsischen Landtages**
2013 · 306 Seiten · ISBN 978-3-8316-4248-9

Band 12: Sebastian Erxleben: **Agenten zwischen den Fronten** · Der Bundesnachrichtendienst zwischen Auftrag, Rechtslage und Historie
2015 · 408 Seiten · ISBN 978-3-8316-4177-2

Band 11: Norbertus Jegalus: **Das Verhältnis von Politik, Religion und Zivilreligion untersucht am Beispiel der Pancasila**
2009 · 372 Seiten · ISBN 978-3-8316-0843-0

Band 10: Martin Huber: **Die Bundestagswahlkämpfe der CDU/CSU als Oppositionsparteien 1972, 1976, 1980, 2002**
2008 · 152 Seiten · ISBN 978-3-8316-0767-9

Band 9: Klaus Kornexl: **Das Weltbild der Intellektuellen Rechten in der Bundesrepublik Deutschland** · Dargestellt am Beispiel der Wochenzeitschrift JUNGE FREIHEIT
2008 · 606 Seiten · ISBN 978-3-8316-0761-7

Band 8: Martin Huber: **Der Einfluss der CSU auf die Westpolitik der Bundesrepublik Deutschland von 1954–1969 im Hinblick auf die Beziehungen zu Frankreich und den USA**
2008 · 252 Seiten · ISBN 978-3-8316-0760-0

Band 7: Andreas Bock: **Rawls' »Recht der Völker«** · Menschenrechtsminimalismus statt globaler Gerechtigkeit?
2008 · 170 Seiten · ISBN 978-3-8316-0746-4

Band 6: Chloé Zirnstein: **Zwischen Fakt und Fiktion** · Die politische Utopie im Film
2006 · 230 Seiten · ISBN 978-3-8316-0635-1

Band 5: Axel Woeller: **Die Landfrage und Landreform in Namibia**
2005 · 275 Seiten · ISBN 978-3-8316-0555-2

Band 4: Bernd Mayerhofer: **Die Tugend der Augen** · Beiträge zur politischen Aisthetik
2006 · 368 Seiten · ISBN 978-3-8316-0553-8

Band 3: Robert Staudigl: **Demokratie und/oder Frieden im Nahen Osten?**
2005 · 80 Seiten · ISBN 978-3-8316-0509-5

Band 2: Robert Staudigl: **Die Türkei, Israel und Syrien zwischen Kooperation und Konflikt**
2004 · 387 Seiten · ISBN 978-3-8316-0348-0

Erhältlich im Buchhandel oder direkt beim Verlag:
Herbert Utz Verlag GmbH, München
089-277791-00 · info@utzverlag.de

Gesamtverzeichnis mit mehr als 3000 lieferbaren Titeln: www.utzverlag.de