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Material Power and Normative Conflict in Global and Local Agrifood

Governance: The Lessons of ‘Golden Rice’ in India¹

Doris Fuchs and Katharina Glaab

Abstract:

Sustainability aspects of the agrifood system play a pivotal role in today’s global governance at all levels of decision-making. Questions of food security and food safety, biodiversity or the fate of local practices and values reflect some of the sources of potential conflict between states, as well as between business, state, and civil society actors. This special section aims to investigate the interaction of global and local forces in shaping the sustainability of the agrifood system. The section chooses India as the setting in which to investigate the interaction between global and local forces due to the crucial role the food demand and supply of this rising power plays in today’s agrifood system. This article provides the special sections’ analytical framework, which uses the interplay of material and ideational dimensions of power as a focal lens. In addition, the article applies this framework to an empirical study of the political conflict around GMO foods in India, specifically the case of ‘Golden Rice’.

¹ Under Review at *Food Policy*.

I. Introduction

One of the major problems in the global agrifood system is its lack of sustainability. Global food security and safety are still distant goals. In 2009, 1020 million people were suffering from hunger and 6 million people were likely to have died from malnourishment according to FAO (FAO 2009). At the same time, even those who have enough to eat face health threats from unsafe food production methods, and today's agricultural practices are associated with biodiversity loss, greenhouse gas emissions, and soil erosion and degradation to name just a few of the relevant environmental problems.

Yet, the sustainability of today's global agrifood system is shaped by a complex web of forces. The liberalization and globalization of agriculture and food-chains have influenced the organizational structure of the system, actor constellations and interaction within. The resulting picture is an intricate and multifaceted power play, where global and local forces interact and state as well as non-state actors are both able to take agency. At the same time, a variety of norms such as sustainability, efficiency and modernity play a pivotal role in agrifood governance. Importantly, the influence and ability of different global and local forces to exercise power may differ considerably according to the sources of their power as well as structural constraints. Not surprisingly then, a systematic analysis of the interaction of global and local forces, their sources of power, and their impact on the sustainability of the agrifood system is still lacking. Yet, we urgently need to identify the most powerful determinants of the sustainability characteristics of global agrifood production and consumption. In particular, we must ask how global and local forces interact and exert influence on agrifood sustainability.

Various actors situated along global supply chains determine the opportunities and constraints for a sustainability transformation of the system, today (Oosterveer 2007). The ability of public actors to govern the food system has decreased in the course of globalization, while private actors are taking an increasingly powerful position. Still, both actors play a pivotal role in agrifood governance. While governments have the capacity to determine trade rules, agricultural subsidies or market access, private actors influence this public regulation in their interest or create self-set rules and standards (Clapp and Fuchs 2009; Fulponi 2006). Partly as a response, new social movements concerned about the environmental and social implications of the agrifood system have emerged and try to influence governance towards a sustainable system. The interplay between these various types of actors results in an opaqueness of today's agrifood system, which is further enhanced by the simultaneous existence of governance activities at various levels. Importantly, the different levels of governance cannot be assigned individually to

different types of actors. While one tends to think of agrifood corporations as global actors and civil society actors as representing the local level, reality is much more complex. This can be more easily observed in the case of civil society actors, where NGOs such as Greenpeace or Oxfam are known to pursue their goals and ideas across borders and at all levels of governance. Large business actors, however, can also come to play the role of 'local actors'. In India, for instance, global retail chains have found it extremely difficult to get market access and Indian retail chains dominate the market. Even if the latter do not represent 'local' forces, as one would associate them with the village level, the role of such national or even regional (sub-national) retail chains needs to be examined in the interplay of local and global forces. Consequently, any analysis of the forces shaping the sustainability of the agrifood system needs to pay attention to the intricacies of the interaction of different global and local forces.

When aiming to understand these forces, most importantly, we need to understand their sources of power. This framework article and special section argue that both material and ideational sources of power and their interaction are crucial determinants of actors' capabilities in shaping agrifood sustainability. Specifically, we postulate that actors can draw on actor-specific and structural material sources of power as well as activate and shape ideational sources of power in the form of knowledge and legitimacy in pursuit of their interests in agrifood governance. Earlier studies have focused on actors' ability to exercise power according to their material resources such as the distribution of economic or technological resources, largely emphasizing the role of corporate concentration (Lang 2003; MacMillan 2005). Other scholars have emphasized the ideational dimension of power such as legitimacy or cultural embeddedness as relevant for the shaping of the agrifood system, so as in marketing strategies (Fennell 2009), discursive power (Holzscheiter 2005) or indigenous knowledge (Shiva 2001). Only few studies have looked at the connection of material and ideational sources of power in empirical research on the global agrifood system so far, however (Clapp and Fuchs 2009). Furthermore, only few case studies with a structured assessment of the power play between global and local forces in agrifood governance exist that could help us broaden our knowledge on the interaction of these forces.

Empirically, the special section focuses on the case of India. India's role in the agrifood system is a particularly interesting one and it is not surprising, that India has inspired case study research on agrifood issues (Krishna and Qaim 2007; Neilson and Pritchard 2007). As a large producer and consumer of food products, and with a significant share of its own population facing a precarious food situation, India is fascinating from different perspectives of analysis. Sustainability is an issue with regard to food security and safety, as well as environmental and

social well-being. In addition, the interaction between different types of actors and various levels of governance is particularly pronounced in India. The interaction of global and local forces seems to be especially vibrant in the Indian case and promises fascinating insights on its impact on agrifood governance. Analyses with a common analytical approach have been rare, so a structured case-study research will deliver further knowledge on India's agrifood system.

In sum, this special section devotes itself to a systematic study of material and ideational sources of power and their shaping of agrifood governance, specifically the sustainability of agrifood governance in India. Sharing a common analytical framework, all articles in the special section analyze crucial aspects of food governance and power with respect to different cases of food governance in India. Thereby, we hope to provide new insights that will move the debates on power in the global agrifood system and its sustainability transformation ahead.

This article lays out the analytical framework for the section. It identifies different material and ideational sources of power and their interaction as important determinants of the ability of global and local forces to influence agrifood governance and thereby shape agrifood sustainability. In a second step, the article applies this framework to the empirical case of 'Golden Rice' as an example of contests around GM food in India. The article concludes with an outlook for the special section.

II. Analytical Framework

An analytical framework for analyzing power relations and the role of global and local forces in the global agrifood system is faced by the problem that the existing theoretical approaches either have tended to focus on the exercise of power by actors or the power of structures. Numerous scholars have criticized the theoretical limitations inherent in this agent-structure differentiation and called for an integrative framework that looks at the interaction and relation of different types of power. In this respect, Barnett and Duvall (2006) remind us of the frequently made distinction between the two possible ways power can be exercised: 'Power over' refers to actions, where actors are able to exercise control over others, while 'power to' points to social relations of constitution that define actors as well as their capacities and resources. This conceptual distinction is especially useful when looking at the diverse composition of the global agrifood system, where a sole focus on actors' power hides the structural forces that influence an actor's role and choice set. Simultaneously, a focus on the influences of structures would neglect the agency exercised by actors in shaping the system and its structures. The mutual constitution of social structures and actors in the global agrifood system, then, points to the benefits of a

framework that distinguishes and integrates different dimensions of power. Such a perspective enables the analysis to include the relevant plethora of (in)visible forces and their interactions, as well as their sources of power. Accordingly, we develop a framework that emphasizes the impact of material and ideational, actor-specific and structural sources of power and their interaction on the ability of actors to influence agrifood governance.

Material Sources of Power

According to some scholars, material dimensions of power are considered to be the foundation of most political activities. When we consider state and non-state actors, we find material power to be made up of capabilities grounded in the economic realm such as finance, information, and technology. These material capabilities, then, influence actors' strategic options both on the input and output side of political processes (Fuchs 2007).

Material sources of power can be of an actor-specific or of a structural nature. They entail the financial means actors have at their disposal, as well as the structural power they can exercise by foreclosing certain political options of other actors. The actor specific dimension of material power can be approached via an assessment of resources, which may be transformed into influence. Financial means are frequently considered an important material source of power, as they are highly fungible and can be easily converted into political activities. Financial means not only can allow political influence via direct campaign or party donations, but also allow actors to hire professional lobbyists and PR consultants or to be present at multiple sites and levels of governance simultaneously, for instance. The increasing dependence of political decision makers on funding as well as external expertise has improved interest groups' access to politicians and bureaucrats and enhanced the prominence of this aspect of actors' material power (ibid.). There is a huge gap between different non-state actors with regard to the financial means, on which these political activities rely, however. While many corporate actors have been able to draw on large financial resources in pursuit of their political interests, most civil society actors tend not to have the same capacities at disposal.

Taking the structural material sources of power into account means to pay attention to the influence of production and consumption processes on the power of actors. Specifically, market power is an important source of structural material power. In the narrow sense, such market control reflects economic power. This economic power is translated into political power, however, as soon as market control is paired with agenda-setting activities affecting the wider public. Thus, structural material power is reflected in the ability of transnational corporations

(TNCs) to shape political agendas, due to the dependence of political elites on the provision of jobs and investments by the private sector. It shows up in the corporate ability to predetermine the behavioural options of political decision makers by excluding certain issues from the political agenda (Cox 1981; Fuchs 2007, 58).

In the agrifood sector, structural material power arising from monopolistic and oligopolistic market settings is omnipotent. More than 80 percent of the global markets in wheat, corn, coffee, cocoa or tea are each controlled by just three corporations (Deutscher Bundestag 2002). Similarly, the GMO sector is notorious for its level of capital concentration and the market share of one corporation in particular. Similarly, capital concentration has significantly increased in food retailing, thereby bringing oligopolistic structures to this section of the supply chain as well (Burch and Lawrence 2007; Reardon and Berdegué 2006). This last development shows that power contests may well exist between different corporate actors at different places in the supply chain, of course, and not just between corporate actors and governments or civil society.

At the same time, consumers have structural material power in the form of market power as well. After all, consumer demand (especially from industrialized countries) can shape global economic flows and the associated allocation of value in the global agrifood system. This structural power of consumers should not be overestimated, however, as it only exists to a notable degree on occasions, in which a very large number of consumers share preferences and/or act in a similar manner. Only under such conditions may consumers challenge the market power of business actors. Moreover, information asymmetries in a global economy based on the distancing of production and consumption, as pointed out above, constrain consumer power dramatically.

Importantly, material structures do not only provide actors with agenda-setting power (i.e., the ability to bring about or prevent decisions by others), they may also place them in the position to make decisions themselves (i.e. replace those holding the formal decision making power). In today's globalized world, economic and institutional structures, processes, and interdependencies mean that actors in control of pivotal networks and resources have the capacity to adopt, implement, and enforce rules with an obligatory quality and distributional consequences for other actors as well. Thus, the traditional notion of structural power needs to be extended. Rather than merely providing indirect agenda-setting power, structural contexts may also endow actors with direct rule-setting power.² This acquisition of rule-setting power by non-state actors, in particular corporations, is reflected in private governance initiatives, in which *de jure* voluntary

² Note, however, that an overlap between agenda-setting power and rule-setting power exists in so far as agendas are about rules.

standards set by agrifood corporations become de facto mandatory for suppliers due to the corporations' market control (Fuchs 2007).

Ideational Sources of Power

Material resources only have limited explanatory power as long as the political process and the translation of these resources into political influence are not considered. It is important to keep in mind that it is not the mere size of material resources, but the ability to successfully convert them into advocacy tools, which determine actor-specific material power (ibid., 82). Thus, actors with relatively less material resources may be able to exert more power due to the pairing of material and ideational power, for instance. Next to material sources, then, ideational sources of power need to be investigated. Looking at ideational sources of power highlights that actors can draw on the symbolic meaning of social practices and institutions in their exercise of power, thereby enabling and constraining behaviour and action. A focus on ideational sources of power stresses the normative dimension as a nonmaterial power resource and identifies an actor's ability to influence the framing of political issues as a crucial asset. This "third face of power" (Lukes 2005) points to the discursive power an actor can exercise on the definition of policies, actors, and norms and procedures.. This perspective highlights that via the exercise of discursive power, actors can organize "some definitions of issues [...] into politics while other definitions are organized out" (Hajer 1995, 42).

It is difficult to assess the characteristics of this subtle form of power, however. Koller traces its exercise through norms, ideas and societal institutions and maps it in culture, discourse, and communicative practices (Koller 1991). But since any communication includes both intentional and unintentional messages, the recognition and assessment of intent and agency becomes particularly difficult. After all, actors are objects as well as subjects in discourse (Fuchs 2005). Thus, while (some) norms can be manipulated by actors, others structure social relations so deeply that they may shape actors' identities, perceptions, and behavioural options more than the actors are able to shape them.

When analyzing ideational power, one of the crucial aspects to consider is authority. Following Arendt, we define authority as legitimate force.³ The ability of actors to influence discourses is closely linked to perceptions of their legitimacy, as it requires trust in the potential validity of messages. Public actors obtain political legitimacy through formal electoral processes, while

³ Along the same lines, Cutler, Haufler and Porter conceptualize private authority as "decision-making power over an issue area that is generally regarded as legitimate by participants" (Cutler et al. 1999, 362).

non-state actors' legitimacy tends to derive from public trust in actor's expertise and/or willingness to represent the public interest (Fuchs and Kalfagianni 2010). The authority and legitimacy of NGOs, in particular, originates in ideal-type assumptions on their non-profit-oriented and non-violent aims (Holzscheiter 2005, 726). But even business actors' political authority has benefited from a public change in attitudes toward market actors and increasing public confidence in their problem-solving ability since the rise of neoliberalism (Fuchs 2007). In addition, business has also actively tried to improve on its moral sources of legitimacy with 'corporate social responsibility' (CSR) activities. At the same time, non-state actors such as NGOs use discursive strategies in the form of 'naming', 'framing', and 'shaming' to create pressure and negative publicity in order to delegitimize business or public authority (Arts 2003; Holzscheiter 2005).

The legitimacy of actors and ideas is embedded in social structures, in turn. As pointed out above, the political legitimacy of private actors has varied with changes in the *Zeitgeist* as well as efforts by actors to shape their public image. Likewise, the legitimacy of particular policy options is linked to their fit with dominant societal norms and may be enhanced or reduced through the framing of a given policy option in terms of such norms. In the agrifood system, the norms of food security or food safety represent potentially powerful norms (Phillips and Wolfe 2001). Similarly, we can identify democratic ideals and market logic as two normative approaches contesting each other in global agrifood governance:

“The history of food governance can usefully be understood as a long struggle between two conflicting forces: 'food democracy' and 'food control': the latter suggests relatively few people exerting power to shape the food supply; the policy framework is *dirigiste*; decisions are 'top-down' [...] 'Food democracy', on the other hand, gives scope for a more inclusive approach to food policy. Its ethos is 'bottom-up', considering the diversity of views and interests in the mass of the population and food supply chain [...].” (Lang and Heasman 2004, 279)

Norms are always contested, then. Yet, the activation of attractive norms can provide an important source of power to actors in pursuit of their political strategies.

Another important dimension of ideational power is knowledge, which refers to the processing of information. Paying attention to the social construction of knowledge means recognizing that what is perceived as objective knowledge, as fact and truth, is actually formed and shaped by different actors' communications and the strategic issuance of information. Today, the complexity of political decisions increasingly requires highly specialized knowledge, “and those who control this knowledge have considerable power” (Nelkin 1975, 37). Policymakers increasingly rely on non-state actors' specialized knowledge and information, which gives them an incentive to involve especially business actors and NGOs in the policy making process.

Next to economic and technological information, scientifically based knowledge seems to have a strong power of interpretation in the public debate, which results from a generally positive perception of scientific expertise and objectivity. The readiness to accept expert knowledge and award scientific knowledge extensive authority is comparatively high among public and private actors. However, one may well want to question whether matters concerning science and technology in the decision-making process can in fact be apolitical and simply rely on an ‘objective’ specialized knowledge of experts, of course. Still, it is an important source of power, on which actors can draw.

The Interaction between Material and Ideational Sources of Power

Material and ideational power do not exist independent of each other, but reveal a high grade of interaction. Two pivotal modes of interaction exist: access and reconstitution. Access as a mode of interaction manifests itself firstly in organizational terms and highlights the ability to gain access to political decision-making bodies. The extent to which actors gain access to material structures of governance depends on their resources as well as the perceived political legitimacy of these actors and their resources. Secondly, access to knowledge emphasises that material sources allow actors to fund research, or pay for conferences and publications. Thereby, they greatly facilitate both the gathering and the communication of knowledge. As knowledge is not an objective item, as pointed out above, the ability to determine which questions are being asked and which results are being communicated (and how), certainly adds to an actor’s power in today’s world.

As a related matter, the issue of reconstitution also stresses that the success of narratives and storylines can be influenced by the repetitiveness, with which corresponding messages are sent. In the era of mediatised politics, then, financial resources can be used to strengthen one’s preferred ideas and norms or weaken competing ones. Costly PR strategies and media campaigns advantage actors with large financial resources relative to those without (Fuchs 2005). Noelle-Neumann (1996) speaks of the existence of a *Schweigespirale* in the presence of communicative asymmetry and studies show that even the new telecommunication technologies and channels worldwide are used primarily for private economic interests (Reljić 2001). In this context, one has to ask how public the public debate really is.

In other words, neither the material nor the ideational sources of power should be considered just by themselves. There is always an interaction between them. These interaction processes may be particularly difficult to analyze. Nevertheless, the reinforcement and reconstitution of each other are too important for the shaping of power relations to ignore them. Consequently, this framework proposes to analyze power relations according to the material and ideational

dimensions of actors’ power and their interaction on the local and global levels of governance (see table 1). The explanatory power of this framework will be illustrated in a next step with the help of the example of GMO politics and more precisely ‘Golden Rice’ in India.

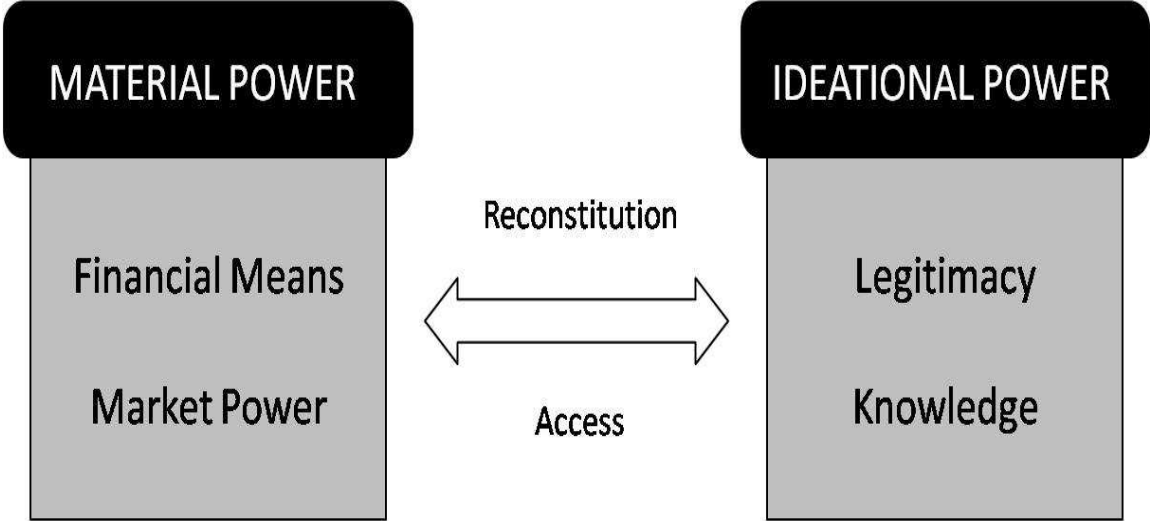


Table 1: Material and ideational determinants of power

III. ‘Golden Rice’ and contests around GM-food in India

The protracted introduction and heated discussions about the costs and benefits of ‘Golden Rice’ in India provide an excellent example of political contests around the introduction and diffusion of biotechnology in the agricultural sector, in which a range of actors and norms clash. ‘Golden Rice’ was invented in 1999 with the expressed aim of combating malnutrition and especially vitamin A-deficiency (VAD) and got its name from yellow coloured rice grains that resulted out of the production of beta-carotene. As we show below, the case of ‘Golden Rice’ reveals the crucial role ideational dimensions of power play in agrifood governance. This does not mean that ideational power generally is more important than material power. Rather, the case does show that under certain conditions material power by itself is not sufficient.

‘Golden Rice’ provides a particularly interesting example of GMO politics. First, the large corporations in control of the global market appear to have no direct economic interest in introducing this product. Companies that owned a large share of the Intellectual Property Rights (IPR), which were relevant for the development of ‘Golden Rice’, have donated their patents to the Golden Rice Humanitarian Project to allow a ‘freedom-to-operate’ for humanitarian purposes

in developing countries. Thus, the main proponents of 'Golden Rice' have been public actors and scientists.

Secondly, 'Golden Rice' has proven to be highly controversial in its introduction. India as a rice-based society with a large agricultural sector, which already produces GMOs, could be expected to be interested in this new rice technology. Indeed, India's state owned research labs have been conducting substantial research on 'Golden Rice'. But more than a decade after its initial intervention, the bio-engineered rice is still not available, despite the corporate donations of the IPRs. This raises the question, why the introduction of 'Golden Rice' has been protracted in India and how this development can be explained along a material and ideational power framework.

Typically, a discussion of the material dimension of power in GMO governance will point out that the global market for GMOs is characterized by an oligopolistic if not monopolistic market structure. Large biotech corporations do not only command huge financial resources, they also own most of the technology and information needed to conduct GMO research. Such an analysis would then highlight that the 'other side' of GMO politics is made up of millions of small farmers with little individual power and control. For India specifically, one would also point out that the comparatively weak financial situation of these millions of farmers is worsened by the fact that the rural poor have little access to credit.

However, the discrepant distribution of material power between corporations and other actors in the agribiotech sector appears to be less important in this case. Initial development of 'Golden Rice' was not founded in the private agribiotech sector that dominates the market.⁴ Rather it has been promoted by public actors, including governmental actors, supranational organizations, civil society actors such as large foundations, and scientists. Especially public funding bodies and private foundations were involved in sponsoring the 'Golden Rice' project. Clearly, material resources by public or civil society actors can also represent material power in the political process. Thus, they could be juxtaposed to the material power resources of the farmers just as corporate ones. In the case of 'Golden Rice', however, these material sources are not sufficient for explaining the protraction in its adoption. After all, the material power scale is highly tilted in favour of the actors promoting the development and introduction of the crop.

⁴ Note that Potrykus, the original inventor, initially approached Nestlé, the world's biggest food company, for funding, who were not interested in the project. Later, Potrykus stated that this rejection was "fortunate" since it allowed public funding for the Golden Rice project (Potrykus 2001).

Indeed, the governance of 'Golden Rice' probably can best be comprehended in terms of its ideational power contests. In the discourse on 'Golden Rice', norms emphasizing traditional values and knowledge such as community control and shared knowledge have prevailed over ideas of technological progress and specialised knowledge. Opponents of 'Golden Rice' have even successfully used 'anti-corporate' shaming strategies, although corporate interests were present in the political contests only indirectly.

In an abstract field such as biotechnology, laymen tend to put considerable trust in scientific expertise. Especially in India, "the concept of science [...] is that of the ultimate key to all problems facing the country, [...] scientists can lay claims to the charisma which in some other political cultures belongs exclusively to god-king" (Nandy 1990, 8). This furthers the strategic usage of scientific arguments by actors involved in GMO politics: "MNCs, Indian corporates, industry lobbyists, governments, international agencies, non-governmental organisations (NGOs) and farmers movements all claim [...] 'science' to be on their side" (Seshia and Scoones 2003, 2). In the case of 'Golden Rice', however, opponents have also questioned the use of 'science'. While proponents have declared 'Golden Rice' a rational and scientifically based technical solution to food security, critics have argued that it is a 'technological fix', which ignores existing conventional solutions to vitamin A deficiency (Greenpeace 2005; Shiva 2000).

Next to scientific expertise, actors in the political contest have tried to gain legitimacy for their perspective by relating it to religious or national ideas and symbols. Thus, proponents have tried to link the project to religious actors and symbols, such as the inventor's meeting with the pope or bible citations in a pro-'Golden Rice' conference report (The Bertebos Foundation 2008). However, critics have successfully challenged this presentation of the technology by defining GMO politics as a threat to Indian identity and the national interest (Assadi 2008). Based on a Gandhian anti-colonialist perspective, for instance, Indian critics have used 'shaming' and 'naming' activities to keep up a threat of Western corporate control over seeds. Although the IPRs of 'Golden Rice' have been donated, the framing of GMO politics as a case of postcolonial dependency has still been able to strongly influence the contest and challenge the legitimacy of Western foundations and religious actors.

Agricultural biotechnology is based on highly specialized knowledge. In the political contests on 'Golden Rice', this technological knowledge has been contrasted with traditional and indigenous knowledge about agricultural practices, for instance (Shiva 2000). Importantly, the traditional free exchange of seeds among farmers reflects valuations of certain types of

knowledge related to culture and heritage and is an essential component of Indian people's livelihoods in rural areas (Gold 2003; Shiva 2000).

When it comes to the interaction between material and ideational sources of power, we can identify the role of access and reconstitution in the contest on 'Golden Rice' as well. Importantly, ideational sources of power have played a powerful role even in this interaction due to the characteristics of the contest. Access, for instance, has been strongly driven not just by money, but by the Indian tradition of a strong civil society, rural practices of shared knowledge, and high suspicion of corporate control. Likewise, the role of reconstitution has to be evaluated against the background of the tight networks existing in this society, especially in rural areas.

Access to knowledge tends to play a core role in agricultural biotechnology since the protection of technological knowledge by patents on living organisms restricts access. Today, five major groups of large agribiotech companies control access to most of the technology that is needed to do commercial research on GM crops (Nuffield Council on Bioethics 2004, 86). As pointed out above, however 'Golden Rice' poses an unusual example in agricultural biotechnology development in so far as the original inventors of 'Golden Rice', transferred all rights to Syngenta (formerly AstraZeneca), who donated all legal rights to the Golden Rice Humanitarian Board to allow a 'freedom-to-operate' in developing countries (Al-Babili and Beyer 2005, 569).⁵ According to the partnership, Syngenta retains all the rights for the commercialization of Golden Rice (in the developed world), but seeds are made freely available to farmers and traders that earn below US\$ 10,000 a year (Nuffield Council on Bioethics 2004, 37). Moreover, 'Golden Rice' was further developed at a public research institute, as pointed out above.⁶ Yet, the concept of patenting and restrictions in access to knowledge does present an important link between material and ideational dimensions of power even in this case. Indeed, some even call the 'Golden Rice' project a strategy of the private sector to enhance its legitimacy and the legitimacy of agricultural biotechnology as such. In a foreword to the seminal *Science* article on 'Golden Rice', Guerinot stated that "[o]ne can only hope that this application of plant genetic engineering to ameliorate human misery without regard to short-term profit will restore this technology to political acceptability" (Guerinot 2000, 243). Once this legitimacy is achieved

⁵ 'Golden Rice' may also have been an easy choice for corporate actors in this respect, as its commercial value is questionable. Syngenta itself states that it "has no commercial interest in the use of Golden Rice in developing countries and does not foresee a commercial market for Golden Rice in developed countries" (Syngenta Homepage 2010).

⁶ Nevertheless, there were some 70 IPRs belonging to 32 different companies and universities that needed to be licensed (Kryder et al. 2000; Potrykus 2001, 8).

through positive publicity and public acceptance, access to the market may be more easily gained (Bisserbe 2008).

The interaction between material and ideational power when it comes to access to knowledge, furthermore, does not only provide a potential source of power but also can serve to raise the legitimacy challenges faced by GMO technology. Shiva, for instance, has emphasised the threat of the marginalization of indigenous knowledge structures such as the tradition of sharing seeds (Shiva 2001, 14), which stands in direct conflict with IPR protected rice varieties. Even if 'Golden Rice' itself is supposed to become freely available and knowledge of the technology can be exchanged, the question remains if an IPR based technology can be easily introduced into a context, where local seed cultivation and access to this knowledge has a long tradition.

As pointed out above, access, as a result of the interaction between material and ideational sources of power, also has a second important form: access to institutions and the 'official' political debate. This access, in turn, is not just a function of material resources but also of the legitimacy of the actors involved as well as their resources. In the case of 'Golden Rice', one of the particular strengths of its opponents has been their perceived legitimacy. First, India has a strong civil society tradition, where the voice of the public just cannot be ignored easily. Secondly, some very prominent representatives of this civil society were at the forefront of the political contest and their perceived legitimacy as political voices makes it difficult to bar them from the political debate.

The second important interaction between material and ideational sources of power, reconstitution, can be witnessed in the discursive battle for the hearts and minds of the Indian public and especially farmers. Again, however, material sources of power have not been able to determine this contest. Economically strong actors have invested in PR strategies to enhance their legitimacy as well as the legitimacy of the technology. Thus, the promoters of 'Golden Rice' have pursued far-reaching media campaigns that enabled them to disseminate a legitimizing discourse of humanitarian necessity, and to advocate it as a rational scientific solution to a global problem. While NGOs and Indian activist networks have not had the same financial means as corporations or governments, however, their tight and far reaching networks in Indian civil society combined with their perceived legitimacy have helped them gain and maintain a strong voice in the public and political debate. Together with GM-critically scientists, they thereby have been able to challenge the proposed benefits of 'Golden Rice' and introduce a strong critical account of it.

In sum, the long battle over the adoption of ‘Golden Rice’ in India can best be understood on the basis of the ideational contests associated with it. To date, the framing as a scientific necessity and moral obligation has not been able to overcome traditional societal values and knowledge structures and a specific Indian postcolonial perspective. The analysis clearly delineates the limits to the influence of material sources of power in the context of issues associated with high levels of conflict over legitimacy claims.

IV. Outlook

The special section aims to fill a significant gap in the study of power in the agrifood system and its implications for governance and sustainability. It pursues a systematic analysis of the role of global and local actors in the agrifood system, highlighting the important interaction of material and ideational dimensions of power. The contribution of the articles to the state of knowledge is multifaceted. They address issues of the globalization of agriculture and food, with a specific focus on the role of global and local actors in shaping the agriculture and food sector. The articles particularly investigate the linkage between power plays in agrifood governance and sustainability, thereby relating to questions of well-being, food safety and food security in the agriculture and food sector, in a variety of settings and levels. The articles also further our understanding of the agrifood system in India, which is of particular concern due to its important role in the global agrifood system as a major producer and consumer of agrifood products and a country which combines characteristics of rapid economic growth and wealthy sectors of the population with a continued struggle to feed its population.

While this article has laid out the analytical framework and applied it to a first empirical case of agrifood governance in India, the following articles add pieces to the mosaic by analysing a diverse set of additional cases. The article by Aarti Gupta focuses on the different political and discursive conflicts that impact risk governance in India, while Tilman Altenburg evaluates different patterns of value chain governance of biodiesel according to interests, ideas and power relations of stakeholders. The article by Dominic Glover, then, examines the System of Rice Intensification (SRI) and the relationship between formal scientific expertise and informal, practical know-how. Finally, Markus Lederer returns to the theoretical questions and provides a closing commentary on the role of global and local forces in agrifood governance.

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