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The Malleability of Participation: The Politics of Agricultural Research under Neoliberalism in Bolivia

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ABSTRACT

This article analyses how neoliberal restructuring encouraged the use of participatory methods in agricultural research in Bolivia and how, at a later stage, participatory development initiatives had to be adapted to prevent conflicts with the post-neoliberal views of farmer organizations. The article contributes to the debate on the normalization of participatory methods in agrarian development. Engaging with Foucault's work on governmentality and neoliberalism, our analysis goes beyond interpretations of participation which conceptualize it exclusively as a technology of power to discipline subjects. Drawing on a distinction between a liberal and a neoliberal moment in the restructuring of agricultural research, we study the case of PROINPA (Foundation for the Promotion and Research of Andean Products), a national NGO that was once part of the state system for agricultural research but was then privatized. Although PROINPA employed participation mainly to enhance managerial effectiveness, it also facilitated moments of participation from below. We argue that participation designed by this type of NGO is not just 'technical' as PROINPA professionals would like to perceive it, nor is it simply 'political' as critical views on participation hold. Instead it is malleable in the sense that each actor is involved in finding a new balance between technical, economic and political considerations.

INTRODUCTION

Neoliberal restructuring and the popular protests it gives rise to can have a marked impact on agricultural research and farmers' participation therein. Recent history in Bolivia provides an instructive case. Inspired by popular

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protest against water privatization (Water War) in Cochabamba (Assies, 2003), the coca farmer blockades in Chapare region (Albó, 2003) and the 'Gas War' (Perrault, 2007), peasants under the leadership of Felipe Quispe and the Pachakuti Movement invaded several agricultural research stations (Patacamaya station in August 2002, Kallutaca and Huayrocondo stations in September and October of 2003, and Belén station in 2004; see El Diario, 2003, 2004, 2005). Gene banks of important crops and animals (including the Andean camelids, llamas and alpacas) were attacked and documents and passport databases were lost, making it impossible to continue with any on-station research (Coca, 2010; Quispe, 2005). The resulting material damage came on top of already declining state support for research stations and led to a de facto dismantling and decay of infrastructure, machinery and laboratories. These events left a strong imprint on agricultural researchers. As one interviewed researcher who lamented the destruction of her technically successful experimental station stated:

> After the invasion [my research station] remained a shell. It makes you think that you can do a lot of research, much development, but if you do not address the pertinent social issues there won't be anything. You have first to look at the social issue before [deciding whether] other systems of research or development will bear fruit. (..) This research station was invaded by people from the community because the producers did not see any fruit from the research processes. (..) [This] strengthens the idea that you have to address the needs and demands of farmers, and that they really participate and take decisions about the research. (Interview, 5 October 2010)

The last sentence of this quote refers to the ongoing restructuring of the relationship between applied research and society as a consequence of neoliberal policies which favoured a particular form of farmer participation in agricultural research. What is at stake here is a complex interaction between notions of participation, research design and popular politics. This article discusses how neoliberal restructuring of agricultural research in Bolivia embraced an increased use of participatory methods by research organizations that had once been part of the public system of agricultural research but were now privatized. Our analysis hinges not so much on the heated events of invasions, but on the normalization of participatory methods in agricultural technology innovation and the implications for thinking about technological improvement and politics.[1] The article builds on a case study of PROINPA, once a state institution but later transformed into a national NGO. PROINPA is a forerunner in agricultural research in the Bolivian Andes and has developed significant initiatives in the field of participatory plant breeding.

Participatory development, once the leitmotif of the more progressive part of the development community (Galjart, 1981; Vío Grossi et al., 1981), has

1. Invasions as such had their historical roots in disputes over land tenure, land taken from communities by the state, but were triggered by the national anti-neoliberal protests. The land question falls outside the remit of this article.

become increasingly mainstream and subject to reflexive critique (Hickey and Mohan, 2005). What is now regarded as 'participatory development orthodoxy' has been criticized for too readily assuming that motivations and behaviour in participatory processes are authentic. It is argued that the language of empowerment may mask an underlying concern for managerial effectiveness, and the emphasis on micro-level interventions may obscure broader macro-level inequalities and injustices (Cooke and Kothari, 2001: 14). These critics also argue that participatory development obscures politics by keeping participatory practice within the frame imposed by project interventions (ibid.). Along these same lines, Cornwall (2006: 50) refers to participation as '[an] infinitely malleable term' since it can be used as a vehicle for different kinds of purposes and can be framed to suit almost any situation. Below we will assess if this also applies to the experience of PROINPA during the neoliberal period in Bolivia. We also aim to contribute to the debate on participation. Much of the criticism of participatory development draws upon ideas from Foucault (e.g. Kothari, 2001; Williams, 2004) and particularly on his early work on disciplining and power/knowledge (e.g. Foucault, 1977). According to the critics, 'participatory development can encourage a reassertion of control and power by dominant individuals and groups' (Kothari, 2001: 142). However, using Foucault's later work on governmentality and neoliberalism, one can develop another reading of participatory development than that of the rather unified Machiavellian anti-politics machine of development in which participation only disciplines. Conceptualizing participation as a productive way of governing people rather than as being simply repressive and negative, we will explore how PROINPA has created new forms of linking technological innovation to small farmers and how it has sought ways to 'improve populations' (Li, 2007a).

The discussion on governmentality is useful here in three ways. First, to understand the role of participatory development in neoliberalism we examine not so much how power is constituted in and by the state through 'particular and identifiable individuals' as in sovereign and disciplinary power (Foucault, 1977), but how power circulates through a range of institutions rather than being concentrated in one. This means that elements of the agricultural research system (such as PROINPA) can be seen as sites where micro-technologies of power are constituted. Governing people through science management at micro-levels (Phillips and Ilcan, 2003) is not a way of forcing people but is a versatile, complementary and conflictive equilibrium between techniques of coercion and those of constructing and modifying the self (Lemke, 2001: 5). Below we will focus in particular on how a new researcher is constructed in the course of participatory development. Second, complementing studies that focus on the analysis of micro-technologies of intervention and everyday relations of power (Dean, 1999; Miller and Rose, 1990), we draw upon recent work that reads Foucault as a genealogist of statecraft and examine relationships between micro-technologies and the exercise of macro-power (Jessop, 2006; Lemke, 2007; Tyfield 2012), in our

case the restructuring of agricultural research in the era of neoliberalism. Third, this task requires a clear notion of neoliberalism. For Foucault neoliberalism is a form of government in which power works, not by force, as in more authoritarian regimes, but through the use of freedom to create responsible citizen-subjects (Ferguson, 2010; Foucault, 1991). Below we distinguish a liberal and a neoliberal moment in the recent restructuring of agricultural research (Lemke, 2001) in which the former is mainly concerned with rolling back the state, while the latter is concerned with redefining the boundaries between the state and civil society, and between the state and the economy. Neoliberalism is not so much about getting rid of the state (or publicly funded agricultural research), but about making the market the organizing and regulatory principle underlying both the state and other domains of decision making (ranging from professional agricultural research to the family and the Andean 'community') (Flew, 2012; Lemke, 2001).

The article is structured as follows. The next two sections describe the liberal and neoliberal moments in the recent restructuring of agricultural research in Bolivia (from state-led to more decentralized and demand-driven). Section four reviews the PROINPA case, not simply as an organization implementing a neoliberal plan, but as a form of self-organization within a context of national and international ideas on participation and economic (funding) influences. The final sections discuss the balance between the technical and the political in contrasting views of participatory agricultural research.

Data collection in Bolivia (August–October 2010 and August–December 2011) consisted of (a) content analysis of literature and policy documents, including PROINPA project documents; (b) semi-structured interviews with different types of actor in the agricultural research system in the cities of La Paz, Santa Cruz, Cochabamba and Sucre; and (c) semi-structured interviews and participant observation in Morochata, one of PROINPA's intervention sites. In total, fifty-two interviews were analysed.

BUILDING TECHNOSTATIST AGRICULTURAL RESEARCH AND THE LIBERALIZATION RESPONSE

The agricultural research system pursued in Boliva in the second half of the twentieth century followed a technostatist approach to science policy (Tyfield, 2012). Accordingly, science was seen as an expert system functionally separate from the market and as such to be organized by the state as part of its modernization strategy. As in many other parts of Latin America, external aid played an important steering role. Prior to the 1950s, agricultural research centres in Bolivia were practically non-existent. The report of the US Bohan Mission recommended agricultural modernization to end the country's economic dependence on non-renewable natural resources and to transform Bolivia's indigenous agriculture. It led to a US$26 million loan

from the Export-Import Bank of the United States, crucial for setting up experimental stations in the Andes (Gandarillas, 2001; Godoy et al., 1993).

This 'pipeline' model of knowledge considered agricultural research to be the exclusive domain of scientists. It focused on importing technologies from advanced countries and adopting them after testing for suitability in different local agro-ecosystems. Use of improved varieties and agrochemical inputs as advocated by the Green Revolution approach were important elements. Central to this modernization model was the building of expertise, in particular through the Bolivian Institute of Agricultural Technology (IBTA) created in 1975 by the Ministry of Rural and Agricultural Affairs (MACA)[2] (Gandarillas, 2001; Gandarillas et al., 2007). IBTA researchers were trained abroad with a view to enhancing their capacity to carry out research (World Bank, 1999).[3] On account of its efforts to train new agricultural engineers, IBTA became seen as a relatively solid entity that enjoyed prestige among researchers.

The technostatist approach to agricultural research became subject to reform as part of the liberalization drive that started at the end of eighteen years of dictatorship (1964–1982). In a period of political instability, profound economic crisis and hyperinflation, structural adjustment policies as advocated by the International Monetary Fund were adopted in 1985 (García-Linera, 2008; Kohl et al., 2006). The so-called New Economic Policy aimed to stabilize prices and develop a market economy. It announced a wave of privatization of public companies and imposed severe budget cuts in agricultural research. State funding of agricultural research dropped from US$ 12 million in 1980 (Bebbington and Thiele, 1993: 70) to an average of just US$ 4.5 million between 1985–1990 (Crespo, 2000: 29). The justification for this was provided by an ISNAR/IICA evaluation supported by the World Bank (ISNAR, 1989; Quijandría, 1989). This evaluation argued that IBTA lacked the administrative autonomy to deal with recurrent changes in government and the political instability resulting from a long period of dictatorship. Each change in government was preceded by changes in the composition of national and regional management boards and even of technical staff along party and clientelist lines. ISNAR/IICA (World Bank, 1991) points to a high turnover of professional staff who lacked professional breadth and depth. The institution did not have the personnel to carry out scientific work; only 8 per cent of researchers had a postgraduate degree

2. FAO, the International Service for National Agricultural Research (IICA), Interamerican Development Bank (IDB), World Bank, Swiss Cooperation, and USAID, among others, funded laboratories and basic equipment for the experimental centres and financed the establishment of the country's gene banks, especially for potato, quinoa, forage, cereals and Andean grains (Coca, 2010; Gandarillas, 2001). International cooperation aimed at creating and sustaining a research system that would resist battering from the dictatorship periods and institutional crises.
3. Three PhDs and twenty-four MScs were trained in European and American universities (World Bank, 1999).

(2 per cent had a PhD — one of whom was the director, and 6 per cent had an MSc degree), 20 per cent were fully trained agronomists while 72 per cent were technicians (World Bank, 1991). Crucial in the reform process was a US$ 21 million loan from the World Bank in 1991. This imposed a reduction in both the thematic and geographic coverage of IBTA's research so that in place of researching almost all highland crops, the emphasis shifted to five national programmes: potato, quinoa, cereals (wheat and barley), leguminous plants (beans and peas) and camelids. External funding from international cooperation was restricted to potato and quinoa, both subsistence crops for which the Andes is a centre of origin and biodiversity (Quijandría, 1989). Research on rice, corn and soybeans was delegated to the Centre of Tropical Agricultural Research (CIAT-SCZ),[4] supported by the Santa Cruz provincial government, and the privately funded Centre for Phytogenetic Research of Paurumani in the department of Cochabamba. The remaining research areas either disappeared or only survived when attached to a specific state development project. Restructuring policies abandoned fundamental research projects and only continued to support adaptive or applied research. Thus out of eleven experimental stations, IBTA kept only three, considering that these represented a 'sufficient' agro-ecological coverage. Other stations were handed over to universities or departmental governments (Coca, 2010).[5]

Restructuring policies aimed to make IBTA independent from the Ministry of Agriculture in the recruitment of technical personnel and to raise wage levels to attract well-trained professionals at the start of their careers. The reality, however, was quite different. Although IBTA reduced its personnel by 40 per cent, jobs, especially at managerial level, continued to be the preserve of political sympathizers. And although more than thirty professionals received postgraduate training, there were serious complaints about research conditions. In a letter to the Minister of Finance, one researcher protested against the cut in IBTA's budget as follows:

> The real concern is the consequence of trying to continue at current levels of compensation [from the state]. For example, at current salary levels, we would have to reduce salaries by 35 per cent on average or alternatively reduce the payroll (positions). For operational costs, the required reduction would be around 90 per cent. If it were necessary to take these actions, the current staff would not be able to produce appropriate technology, negatively affecting institutional prestige, as well as our efforts at agricultural extension and decentralization (Posner, 1994).

This letter and researchers' reports on the consequences of budget cuts made no difference. The adjustment policies did little more than create a lack of interest and unwillingness by the state to support agricultural research,

4. This article uses the acronym CIAT-SCZ to distinguish it from CIAT (International Centre for Tropical Agriculture, a CGIAR centre).
5. IBTA selected the following stations: Patacamaya (quinoa), San Benito (cereals, legumes, and the fruit transfer programme) and Toralapa (potato).

implying continued job insecurity, low salaries and growing rather than diminishing political interference in the selection of personnel.

NEOLIBERAL STATE RESTRUCTURINGS AND PARTICIPATION IN AGRICULTURAL RESEARCH IN BOLIVIA

While reducing the role of the state in agricultural research can be seen as part of liberalization and privatization, the neoliberal moment also involved restructuring the relationship between technical expertise and the end user. The World Bank intervention was not only directed at the 'retreat of the state' in agricultural research but also aimed to improve IBTA's technical capacities, increase its autonomy vis-à-vis the central government and create new forms of articulation and communication with its end users. Extension services were cancelled and consequently IBTA's regional extension offices were closed down. The introduction of the notion of 'pre-assistance' (World Bank, 1991) — or no direct assistance to farmers — was instrumental in writing off the model in which technology is transferred from the experimental stations to the regional extension offices and thence to end users. It meant the establishment of new lines of communication with end users of technologies (farmers and rural entrepreneurs) via NGOs and agribusiness, or 'intermediate users'. In the late 1980s, technically-oriented NGOs also received funding from the Fondo Social de Emergencia (Social Emergency Fund) for small projects which aimed to mitigate the social costs and effects of neoliberal economic policies (Kohl et al., 2006) or what Li (2007b: 21) calls 'managing the fallout from capitalism's advance'. IBTA researchers started to instruct trainers within the NGOs. This helped NGOs to develop operational relations with IBTA, although the process of becoming intermediaries between IBTA and the farmers was not always effective (Bebbington and Thiele, 1993). Financial resources were unequally distributed — while NGOs carried out extension and rural development on a total budget of about US$ 10 million per year (Godoy et al., 1993:7), government support to IBTA did not amount to even half of this (Bebbington and Thiele, 1993: 120).

IBTA ceased functioning in 1998 as a result of the administrative decentralization law of 1995 and after the government determined that the institution had not demonstrated sufficient impact on producers. In fact, it meant a complete withdrawal by the state from serious involvement in agricultural research until 2001 when IBTA was replaced by the Bolivian System of Agricultural Technology (SIBTA), a partnership between the ministries of Economic Development, Rural Affairs and Foreign Trade and Investment. SIBTA dispensed with the remaining experimental stations and transferred them to the departmental governments (which had neither the budget nor experience to run them). SIBTA identified a gap between researchers and producers due to the verticality of the research process and the

maladaptation of research to the demands of producers and the market (Gobierno de Bolivia, 2000; Hartwich et al., 2007). It proposed implementing a neoliberal rationale in the agricultural research system, preventing external values and politicization from influencing the efficiency and technical character of research. Management of agricultural research and extension shifted from the state to semi-autonomous regional foundations created in the four eco-regions of the country: highlands, valleys, tropics and Chaco. These private foundations with 'public interest' could administer and manage public, private and international cooperation resources (Gobierno de Bolivia, 2000).

SIBTA's contribution to restructuring the relationship between technical expertise and end-users contained three important elements: invoking the language of innovation systems and participatory development, trusting service providers (mostly NGOs) as the key agents of change, and implementing market mechanisms for the allocation of funds. First, the language of *innovation systems* worked to include private actors (agribusiness firms and consultancy firms) in the research/extension–farmer link, thereby reducing the role of the state to one among many actors in the system. Innovation systems respond to changing contexts and require interaction between multiple actors and sources of knowledge without having a single central conductor (World Bank, 2012). The concept of innovation emerged from evolutionary economics but was adapted by the application of systems theory in agriculture (Jansen et al., 2004; for a critique see Jansen, 2009). Crucial notions in this approach are stakeholder participation, coordination and trust, with the 'end-user' of the pipeline model being redefined as a 'stakeholder'. In development discourse, innovation systems applications draw heavily upon earlier notions of farmer participation (Chambers et al. 1989), farming systems research (Brouwer and Jansen, 1989), and social learning and iterative, adaptive thinking (Ashby, 2003; Leeuwis, 2000). Second, participatory action involved a conceptualization of NGOs as being best placed to carry out research and extension activities due to their attributed independence from the political manoeuvring inside state agencies, their flexibility to choose their working areas, their efficiency, technical profile, transparency and accountability (Gandarillas, 2006). Third, market rationality in terms of competition, tendering, cost-benefit analysis, short-term projects and measurable outputs became central to three new mechanisms for funding research and extension projects. The most important one in our study was the Applied Technology Innovation Project (PITA), which selected and funded technological innovation proposals from producer organizations. The PITA procedure looked primarily at technical feasibility and the potential of integrating producers and their products into the market (chain approach).[6]

6. The other two mechanisms were the National Strategic Innovation Project (PIEN) and the National System of Genetic Resources for Agriculture and Food (SINARGEAA) (Estado Plurinacional de Bolivia, 2009). SINARGEAA consisted of six germplasm banks: High Andean Grains Roots and Tubers, in custody of the PROINPA Foundation; Cereals and

PITAs were based on a competitive market mechanism (bidding) to facilitate farmers' participation. Between 2002 and 2007 SIBTA supported 263 PITAs. To access PITA project funds, producer associations supported by NGOs had to present projects that typically elaborated concrete demands, competitiveness in national and export markets, project ownership by farmers' associations, and adequate counterpart (15 per cent of the project budget). SIBTA selected for funding thirty productive chains or products, which showed potential for the export market. However, potato and corn, fundamental to national food security, were not included within PITAs (in the Andean region only quinoa and camelids were included) (Lema et al., 2006; Ranaboldo, 2002). SIBTA established bureaucratic bidding rules that regulated the participation of farmer associations and their relations with service providers. Farmer associations played an active role as they were responsible for identifying demands and contributing to research. PITA's beneficiaries, who were mainly poor farmers, often contributed in kind or via third-party donors (Hartwich et al., 2007). Service providers were in charge of organizing research and technological services as well as designing the participatory spaces in which technological demands had to be defined. In this way, service providers in partnership with the public sector were crucial in shaping farmers and associations into neoliberal subjects (Lemke, 2001). Training and capacity-building became crucial for ensuring that these subjects had the necessary entrepreneurial and market skills to pursue their proposed innovations. As we will see below, SIBTA's neoliberal model was not simply handed down from above but adapted, engaged with, and even contested by different actors.

FROM STATE TO NGO: PROINPA AND POTATO RESEARCH AND EXTENSION

The national and international significance of the potato, its wide geographical distribution, bio-diversity and economic contribution, gave it special prominence in the neoliberal restructuring process.[7] During the restructuring, public potato research at Toralapa station was reorganized as PROINPA (the Potato Research Program), managed by IBTA, but with strong technical and financial support from the International Potato Centre (CIP) and the Swiss Agency for Development and Cooperation (SDC). To maintain job stability, SDC-funded projects topped up the low salaries of PROINPA's researchers. PROINPA collaborated closely with the National Potato Seed

legumes, in custody of the Patiño Foundation; Valley Fruit, in custody of the Prefecture of Tarija; Camelids, in custody of the Technical University of Oruro; and Forestry, in custody of the University of San Simón (UMSS) in Cochabamba (FAO, 2009).

7. With more than 4,000 native varieties (landraces) Bolivia, together with Peru, is a potato biodiversity hot spot of global importance. Potato is crucial for national food security and 30–40 per cent of farmers grow potatoes (Meinzen-Dick et al., 2009).

Project (PROSEMPA), a Dutch-funded potato seed development project, which was in charge of extension services (Gandarillas et al., 2007).[8] During the 1990s, PROINPA was organized into departments (e.g. nematology, physiology, pathology, etc.) to carry out applied research in selected impact zones. Its social science department helped to identify the main constraints on potato cropping among potential technology users. Furthermore, PROINPA worked on restructuring the Potato National Gene Bank (located in Toralapa) (Gabriel et al., 2006). With IBTA's closure in 1997, potato research was in danger of disappearing. To avoid losing skilled human resources and technological innovation in this key crop, an external evaluation mission of the programme in 1998 led by the Swiss Cooperation recommended turning PROINPA into a private, non-profit foundation with public, donor and self-generated resources (Gandarillas et al., 2007).

The ensuing transformation made PROINPA the largest national NGO dedicated to agricultural research and development in Bolivia. In 1998, PROINPA kept its acronym but became the Foundation for the Promotion and Research of Andean Products (Garandillas et al., 2007). When SIBTA started in 2001, PROINPA became one of its principal suppliers of research and development services. It competed and won various PITA projects due to its accumulated experience and in-house technology developed during the IBTA period. It stood well above other newly established, less experienced NGOs. Most of the principal PROINPA researchers whose careers had begun in the early 1990s and who had attained post-graduate level stayed. SIBTA projects, along with other projects sponsored by international cooperation funding,[9] allowed PROINPA to expand its activities to other Andean crops and geographic areas, increasing its personnel from sixty to around 180 staff. In addition, as part of SINARGEAA, PROINPA received from the state the potato and Andean grains gene banks in Toralapa (Cochabamba) and Quipaquipani (La Paz) experimental stations and the funding for their maintenance (Gandarillas et al., 2007).[10] PROINPA is currently present in thirty-six municipalities (especially concentrated in the Andean region). In 2011, it had 157 workers of whom 46 per cent were researchers, 33 per cent consultants, usually hired to support research and extension projects, and 21 per cent administrative staff.

After becoming an NGO, PROINPA reduced its applied research projects and focused more on so-called 'research for development' (in contrast to top-down research and extension). This implied identifying local problems and using this feedback to design research agendas. PROINPA's success became less dependent on the quality of its research and contribution to national

8. This and the next paragraph draw heavily from Garandillas et al. (2007).
9. International partners were CIP, IPGRI (International Plant Genetic Resources Institute), CIAT (International Center for Tropical Agriculture) and European and US universities.
10. PROINPA had three experimental stations: in Toralapa, El Paso in Cochabamba and The Quipaquipani Center for Research and Training Facilities in the department of La Paz.

research priorities and more on its ability to adapt or 'tune' research proposals to funding sources. PROINPA shifted from simply applying technologies (most of which had been designed or adopted during the IBTA period) to more development-oriented projects that responded to central demands from farmers and the market.

Technologies of the Self: Shaping a New Researcher

The shift in PROINPA from being a state programme, whose researchers were civil servants, to an NGO, whose activities lacked a fixed mandate but responded to international and national funding opportunities, was not simply externally imposed but actively initiated from within. This shift was a form of self-regulation or a 'technology of the self', in Lemke's words (2001: 12). Institutional change became paramount for PROINPA; an internal group made the label of 'change' central and shaped a new PROINPA researcher (Oros et al., 2002). A photo of the 'change group' printed in Oros et al. (2002) shows five relatively young researchers. Interacting with CIP and the New Paradigm programme of ISNAR, PROINPA incorporated the innovation system language in a series of strategic workshops focusing on institutional change.

The following quote expresses this neoliberal form of governing as introduced from above:

> The greater freedom on the part of the Foundation [PROINPA] as an autonomous organization to set its own agenda, and the reliance on competitive funding, triggered institutional innovation. Foundation staff commented in planning meetings that generating research results, publishing scientific articles and relying on intermediary organizations of technology transfer were not enough. Strategic planning led the Foundation management to the conclusion that it was imperative to build credibility with farmers and a broad range of stakeholders. (Gandarillas et al., 2007: 267)

The language of freedom, autonomy, strategic planning, competitive funding and institutional innovation and staff who themselves seek closer contact with 'clients' expresses very well the contemporary shift in research governance. As part of the change process, researchers now had to propose and manage new projects to maintain their research activities and finance their own salaries. A researcher from PROINPA describes this change of governance in the following words:

> Demand is considered the origin of the research process. This was a fairly complicated topic within PROINPA because we went from being employees who always received a monthly payment to not having a guaranteed source of monthly income the following day. We had to really change our 'chip' [mind set] and say 'Well now I have to find it [salary] myself'. For you to find it yourself you have to understand the demands, the work in your environment, and give it what it needs from you. (Interview, 9 December 2011)

The change in the 'chip' suggested in this quote expresses the transition process from a basic research model supported by the state which was seen as

'vertical' and 'discipline-bound' to a trans-disciplinary research model open to the demands of producers, proposals and donors. PROINPA exchanged the laboratory for the peasant community as the new space for action. To win projects, investigators had to go out to different communities, identify partners willing to participate in the research process, and jointly determine their specific demands. To facilitate this process, PROINPA researchers had to acquire new training in the social sciences and rural development. Entomologists and phytopathologists had to 'open' their minds to new disciplines so as to be more 'sensitive' to farmer demands.

Creating Demand

While implementing several projects, PROINPA researchers found that meeting producer and association demands was not as simple as PITA and SIBTA had portrayed (Bentley et al., 2004; Gandarillas et al., 2007). First, while SIBTA assumed that producers were organized in associations and were market oriented, PROINPA researchers found that the vast majority of producers were organized in agrarian unions, which focused more on political and community rights than productive rights. Organizing associations that focused on productive themes involved an extra effort for PROINPA. Second, generating new technology did not fall within SIBTA's time and budget allocation. PITA projects, for example, had a maximum duration of 18 months, making research on perennial crops impossible. PROINPA decided to work basically with already-existing technology and introduced the notions of 'implicit demand' and 'explicit demand' where it assumed that there is a demand for available technology (implicit demand) but that producers generally are unable to make their demand explicit (Bentley et al., 2004). Implicit demand was defined as 'a need for research that people have not requested, but that they recognize if explained or shown in an appropriate form' (Bentley et al., 2004). In this sense, implicit demands do not simply respond to the researchers' interests but are identified by the researcher through analysis and reflection of local problems and are reaffirmed in collaboration with the community or farmers. To identify implicit demands, researchers organized workshops and exhibitions, among other activities, with communities and producer organizations, demonstrating available technology to see if it was of interest to them. Available technology was metaphorically called the slipper that would fit Cinderella.

Malleable Participation: Shifting the Objectives of Farmer Participation in Morochata

Participation as a new technology of governing does not have a fixed meaning. In PROINPA the need for participation and the specific tasks this involved varied from potato technology innovation to market incorporation. The language of participation gained prominence in PROINPA as part of the

IBTA restructurings. It first referred to participatory research in the sense of including farmers and farmers' knowledge in research design and implementation (to various degrees and at various moments). Interactions with CIAT and CIP were crucial. As of the late 1980s, these centres worked on developing participatory methodologies in natural resource management in marginal agro-ecosystems in Latin America. Farmers and scientists collaborated as colleagues in jointly generating knowledge and technology in response to farmer demands, whereby farmers had to diagnose their situation and experiment with and adapt possible solutions. Similar to Green Revolution technology, scientists first developed new participatory methodologies and tested them on pilot sites in Central America and Colombia before transferring them in a user-friendly format to other countries for dissemination (Gottret, 2007). Researchers from national research centres were trained to implement and validate these methodologies in their respective countries.

PROINPA adapted the participatory methodologies termed Local Agricultural Research Committees (CIAL) and Field Farmers School (FFS). A CIAL consists of farmers to whom the community delegates research on the agricultural problem which most concerns them. CIAL members then relay possible research recommendations back to the community. PROINPA received support from CIAT, the Kellogg Foundation and FAO to work with agrarian unions. The FFS is presented as a 'people-centred approach' which helps to develop farmers' 'analytic abilities, critical thinking, and creativity so that they would learn to make better decisions' (Kenmore, 2002). Unlike previous top-down research and extension, CIAL and FFS are seen as bottom-up strategies in which farmers acquire the necessary research and problem-solving skills. Based on the logic of transforming farmers into active and capable investigators, PROINPA initiated Participatory Plant Breeding (PPB) in 1999 whereby farmers and scientists, in a 'knowledge dialogue' between indigenous knowledge and western science, evaluate and select genotypes according to farmers' needs, available resources and market demands (Almekinders et al., 2007; Gabriel et al., 2006).

An important case for PROINPA to apply PPB was that of Morochata. PROINPA had already been working with small farmers of Quechua origin in the municipality of Morochata since 1994, especially in the communities of Piusilla-San Isidro and Compañía Pampa. Morochata, located in the Bolivian inter-Andean valleys seventy kilometres from Cochabamba city, has a population of 34,134 (in 2001) living in communities at altitudes ranging from 2,750 to 4,250 meters above sea level. Agricultural production connects with the markets of Quillacollo and Cochabamba cities. Morochata farmers are organized in agrarian unions, which are a complex amalgam that combines the structure of the Andean *ayllu*[11] and the model of

11. The community of Piusilla-San Isidro still preserves the *aynoqas* indigenous rotary agricultural system.

agrarian unions of the Cochabamba valleys formed during the Agrarian Reform after the 1952 revolution (CENDA, 2005; Van Cott, 2008). PROINPA's participatory research in Morochata focused on finding alternatives to the chemical control of late blight in potatoes (*Phytophthora infestans*) (Thiele et al., 1997; Torrez et al., 1997). Morochata is known at national level for potato production, especially for the native *Waycha* variety, which is much appreciated for its quality and flavour. However, this variety is highly susceptible to late blight, with reported crop losses of up to 100 per cent.[12] In the FFS and CIAL, farmers learned, among other things, that late blight is a fungus with an invisible growth cycle. Farmers observed the fungus growth process through microscopes and learned to recognize the disease as 'a living organism' and identify the best time for chemical control.

One of the activities most highlighted by PROINPA in Morochata has been the work on participatory plant breeding, which during a five-year period (1998–2002) was financed through short-term projects.[13] In monthly meetings with farmers, researchers explained the aims and activities of the PPB methodology and how to carry out research. Farmers received training in breeding principles, flower morphology, botanic seed management, seedling management and crop selection. Subsequent training sessions included hybridization techniques, management and selection of seedlings in household seedbeds and in the field to obtain new varieties. Farmers identified and evaluated clones according to features such as plant height, number of stems, flowering, and tuber characteristics such as shape, culinary qualities, marketability, storability, resistance to late blight and yield. Farmers planned their monitoring and evaluation of genotypes in field activities and gave feedback to their communities through agrarian union assemblies.

Participatory plant breeding in Morochata succeeded in generating enthusiastic participants, at least in the beginning, and in meeting the demand for new varieties, similar to the landrace Waycha, but resistant to late blight. Participating farmers called themselves 'potato breeders' and, paired with 'experienced' researchers, they carried out the breeding process. In interviews some of these farmers enthusiastically related the breeding techniques they had mastered. During five years of participatory research, farmers and researchers generated six new varieties, all of which are clear of virus and four of which have been registered in the formal seed system. PPB participants were also trained in seed production, using protected seedbeds to multiply small amounts of high quality seed.[14] They also shared the results

12. Late blight, the most important potato disease in humid zones in Bolivia, affects approximately 20,000 ha (Torrez et al., 1997).
13. Donors included PREDUZA (Proyecto de Resistencia Duradera en la Zona Andina), PRGA, BMZ, IFAO, Fontangro, CIAT and CIP.
14. Protected seedbeds are boxes built of stone or adobes filled with fresh and clean soil and fertilized with organic manure. They protect against frost and hail storms.

with their communities, explaining the advantages of the new varieties. Participating farmers travelled to places as far as China and Japan to pass on the success story of participatory research. PPB in Morochata also achieved positive gains in encouraging the equal participation of men and women in the PPB events. Some women interviewed still remember this experience as a space that allowed them to gain the skills to interact publicly in community meetings. PPB participatory spaces were considered different from decision making in male-dominated agrarian union assemblies. Participating researchers also called PPB in Morochata a 'unique experiment' (Gabriel et al., 2004).

Although the PPB experience in Morochata is an interesting example of what a 'dialogue of knowledge' between farmers and scientist can achieve, it could not escape the conditions and context of rural life. After the initial enthusiasm, the number of PPB participants dropped from year to year since farmers felt that, apart from the training, there were few concrete results. One researcher interviewed pointed out that initially farmers saw PROINPA as a source of material goods or concrete productive projects to overcome poverty. 'They were expecting to receive, as a gift, fertilizers, seeds and inputs' (Interview, 25 September 2011). Instead, participating in training sessions cost farmers time that could otherwise be dedicated to economic activities. Furthermore, even though the new varieties responded to producer demands and farmers had received training to reproduce them, their spread was limited. Our field data show that only one of the eight farmers who participated actively in the PPB in Compañía Pampa reproduced seed potato of the new varieties; in Piusilla three of the original six new varieties were kept by at least three of the sixteen PPB participants[15] (see also Puente-Rodríguez, 2008). The following interview excerpt illustrates the research leader's struggle and frustration with the reproduction and dissemination of the new varieties:

> I didn't think this would happen, that the farmers would lose the new seeds [obtained during the PPB], but it happened. It also happens with the conventional programmes of plant breeding. The great bottleneck is who takes the challenge of disseminating the varieties to make a massive diffusion. In this sense, what we have tried to do is to construct a process, because we don't have one. We don't have the capacity to do it: we have to join forces with someone, be it the municipality, institutions, NGOs; someone to spread the technology. (Interview, 26 September, 2011)

This PROINPA researcher's comment suggests that both in conventional and participatory breeding, the likelihood of success in spreading new varieties depends on the goodwill not only of farmer but also of other actors. Commercial seed multiplication by poor farmers is more difficult for potatoes than for, for example, grain or pulses, due to the quantities required,

15. A few farmers in Piusilla conserve and multiply the varieties Aurora, *palta chola y puka waycha*, while in Compañía Pampa we found a farmer producing *puyjuni imilla y palta chola* (fieldwork observations).

storage needs and transportation costs (Torrez et al., 1997). Replacing varieties is also slower in these crops since potato seed attracts viruses and other diseases, and its multiplication ratio is low (harvest ratio of 1: 20) (Bentley and Vasques, 1998: 1). The procedures and costs of registering varieties in the formal Bolivian seed system and of the viral clearance required to maintain this register are high and unaffordable for poor farmers. Apart from the Empresa de Producción de Semilla de Papa (SEPA – Company of Potato Seed Production), a semi-private seed enterprise in charge of the sale and dissemination of commercial seeds, there are no public institutions that support the dissemination of new varieties to small farmers. PROINPA approached SEPA, but they were reluctant to multiply these varieties commercially due to uncertainty over their adoption and the economic risks involved. PROINPA then proposed that the municipality of Morochata should allocate local government resources on multiplying these improved varieties, but without success.

Notwithstanding the limited possibilities of turning the PPB experience into a far-reaching economic activity, PROINPA shifted further to working on development-oriented projects. If PROINPA's participatory research projects aimed to develop research skills among farmers, so they could find solutions to their own agronomic problems, its participatory development projects aimed to prepare farmers to cope in a neoliberal environment. Rather than organizing its work around crop-specific knowledge, PROINPA deployed teams that focused on solving problems in so-called 'impact zones' (poverty, disorganization, food supply, etc.) and on implementing institutional and organizational innovations at the level of agro-food chains (Gandarillas et al., 2007). The reasons for PROINPA's shift in focus to development projects are twofold. First, few farmers were able to invest time in research projects without receiving material support. Second, PROINPA, as many other NGOs in Bolivia, was largely dependent on development aid funds and SIBTA. It became more difficult to obtain funding for research alone (even if this included participatory research) as donors prioritized projects directed at poverty reduction.

The new emphasis on poverty reduction projects meant a shift towards productive projects that aimed to integrate smallholders in larger agro-food chains, and the application of two additional types of participatory methodologies — the first oriented to enhancing social control over development projects, and the second to creating access to markets for low-income farmers.

The first type included community-managed participatory monitoring and evaluation (PM&E). It involved farmers in monitoring the progress of externally funded innovations in order to generate a sense of co-responsibility for the implementation and success of the intervention (Polar et al., 2007). Farmer involvement was seen internationally as useful for monitoring the deployment of funds. PM&E was also important for PROINPA in the context of national politics as it contributed to enhancing legitimacy at a time

when PROINPA, like other NGOs, were being heavily criticized by social movements and seen as allies of the economic neoliberal model. PROINPA justified the importance of PM&E as follows:

> In a 'turbulent' period [the civil unrest against neoliberal policies between 2000 and 2005] in which social movements continually put pressure on government structures in search of greater equality, representation, and legitimacy, it is necessary to incorporate *social control tools* that allow technological innovation recipients [farmers] to *freely express and transcend up to* decision-making levels (Polar et al., 2007: 1; emphasis by authors).

According to PROINPA, PM&E helps farmers to use 'social control tools' to channel their demands and express their disagreements with development planning, rather than engaging in violent pressure and protests, which were frequently employed by social movements in Bolivia. However, in PROINPA's projects, farmers' views did not reach very far up the decision-making ladder. The reason for this is because projects had already been designed by PROINPA as a prerequisite for funding, so the flexibility to change activities and resources was restricted. Furthermore, projects were selected as the spaces in which farmers could participate and participation was framed in terms of them being co-responsible for the success of the projects. This limited the potential to link participation to different or larger processes of social transformation.

The Participatory Market Polls (PMP), a second type of participatory method, was also based on tools developed by CIAT and CIP. This method aimed to empower farmers in the market and included a range of activities to analyse different market opportunities, and to develop innovations (Mamani et al., 2007). In Morochata, PROINPA supported the creation of the Asociación de Productores Andinos (Association of Andean Farmers, APRA) and provided training to strengthen market-oriented organization with funds from Fontagro, the *Papa Andina* (Andean Potato) and *Consorcio* projects. With APRA they established a marketing committee that identified new markets for potato products and promoted the consumption of native potatoes in bigger cities.[16] Participatory market polls, implemented between 2005 and 2008, allowed APRA farmers to visit supermarkets and regional markets to determine the primary characteristics of native potatoes that potential buyers required (quantity, quality, frequency of sale, presentation of the product, etc.). APRA began to participate in market fairs and to sell different native varieties of small potatoes called 'gourmet potatoes' or '*morochatitas'*, to the main supermarkets of Cochabamba and La Paz. As the quantities bought by supermarkets were low, weekly orders were rotated between the members of the association. Gourmet potatoes offered an alternative income to association members but one which was not enough for the eighteen APRA members to make a living from.

16. APRA had also collaborated in the reintroduction of native potato varieties.

PARTICIPATION: MAKING AGRICULTURAL RESEARCH SOCIAL WITHOUT POLITICS

In the previous sections we described a subtle, small-scale process of turning the poor farmer into a new improved agent capable of operating successfully in a neoliberal environment: a free individual who can imagine new technologies and productive activities and who can mobilize resources. The participation and innovation thrust gave agricultural research a social slant, moving it from the laboratory to the field, from thence to the farm household and, finally, to the regional economy. Many documents point to the impact of this shift (for example, Fontagro, 2013). However, beyond the level of the individual, the impact on the wider political domain is more difficult to conceptualize and act upon for the interveners. In this particular case, the wider political picture refers not only to advancing neoliberalism but also to its opposing forces. Here, we discuss two interrelated issues: individual progress versus the group, and their implicit positioning in local and national politics.

Preparing poor farmers for market integration may be successful in some cases but not all. A local case is that of Don José,[17] one of the founding members of APRA who has worked in PROINPA interventions since their inception. Don José decided to become independent of the association and to form his own company to market gourmet potatoes. Using the knowledge he had acquired while contacting supermarkets for APRA, he expanded his business to other cities and other products (vegetables and other Andean roots: *ulluco* and *arracacha*). His company, registered as Papas Gourmet®, sells products to the country's largest supermarkets. Thanks to the profits of his company, his sons can go to college and he could buy a house in the city of Quilacollo. Don José's individual entrepreneurship has brought him into conflict with APRA as some members accused him of being disloyal for taking away part of the potential market share of the association. Don José's success is difficult to replicate for other APRA members. While Don José expanded his business, at least four members of APRA were forced to out-migrate temporarily due to their inability to secure a livelihood from agriculture. Don Javier, an outstanding APRA leader who collaborated closely with PROINPA, first emigrated to Argentina and later to Spain where he was for the past six years. In our interview, he told us that his main constraint was lack of land. Temporary migration allowed him to save money and to buy more land in his community. Stories of temporary and permanent out-migration are repeated by many of the producers interviewed. Land has become a valuable resource in Morochata. The community of Piusilla-San

17. Pseudonyms are used for all individuals mentioned in the article.

Isidro is a typical case of Andean *minifundio* (smallholding)[18] and migration. Although individual PROINPA researchers are very familiar with this kind of agrarian problem, the participatory methods do not, and probably cannot, address them — and instead of producing a social benefit, most likely result in individualized capital accumulation.

There are also frictions between PROINPA and political organizations based on large group formations such as the agrarian unions. Unlike PROINPA, agrarian unions in Morochata do not see capacity-building and the promotion of the market and technical solutions as the prime engine of rural development, as providing an effective solution to people's problems. Agrarian unions have focused their demands on state support primarily on the basis of class (Ormachea, 2008; Postero, 2007). During the 1952 revolution, communities in Morochata struggled to expel large landowners and recover their land (CENDA, 2005). During the neoliberal period, and using the tools provided by the law of popular participation of 1994, they petitioned the state around complementary demands such as autonomy, indigenous rights and local political control. In the first years of this century, agrarian unions were key actors in the civil protests against neoliberal economic policies. They expressed their frustration with liberal democracy and the neoliberal economic project for excluding indigenous populations and peasants from its universal promises of participation, consensus and representation in the decision-making process (Cordoba and Jansen, forthcoming; Van Cott, 2008). In the 1990s, agrarian unions combined to form the Movement Towards Socialism (MAS) party, a political instrument that brought Evo Morales to the presidency in 2005. These agrarian unions, as a social movement, pursue a form of radical democracy in the sense given by Mouffe (2005), in which citizenship is seen as part of a political identity and not merely as a legal and entrepreneurial status related to markets as in neoliberal notions of citizenship (Dagnino, 2003: 11). The tensions between the agrarian unions' post-neoliberal vision and PROINPA's vision on rural development are highlighted in the following comment of a PROINPA researcher. According to him, solutions for rural poverty come from 'innovative' leaders and not from 'claimant' leaders (from the agrarian unions). When asked about the differences between these two types of leader he replied:

> An example: Don Villazón is the representative of the political party MAS in Cochabamba (. . .). He developed claimant leadership qualities. Don Villazón says in his speech: 'we farmers need associations; we farmers are against GMOs [genetically modified organisms]; we need plant breeding and better varieties; NGOs clear out [from our communities]'. *But these are political leaders because in the end they do nothing*. Being a claimant leader does not mean they cannot innovate, but they use innovation as a clear attempt to ask the state for

18. The unions, whose membership is related to land, divide members into two classes: those with land, who can have on average two hectares in different agro-ecological zones; and those without, called 'leftovers'.

> things but not to do things. (. . .) Who are the innovation leaders? A concrete example: you must have talked to Don José. Don José is an innovation leader, I don't mean that he doesn't think politically, he does; *but his efforts are innovative, they are a change in technology*. We refer to these as innovation leaders . . . (. . .) the [innovation] leader sees *technological change as an option, one of the primary options*. (Interview, 6 December 2011; emphasis added by the authors).

According to this researcher, farmers need to concentrate on innovation rather than politics, since technological innovation contributes more to poverty reduction. Politics is defined as making demands on the state, while technological innovation is presented as being removed from politics, driven by the farmers' own agency and 'empowerment' (as capacity, without power/politics). Moreover, politics can and should be avoided by farmers in dealing with everyday issues. From the interview data most researchers seem to understand the political as referring to street blockades, demonstrations and actions undertaken by social movements or as a product of political projects manipulated by politicians' personal or party interests. They consider this kind of politics to lead to chaos in society and to be avoided. In contrast, PROINPA's participation without politics is presented as an ideal type of 'public sphere' (Habermas, 1989) in which individuals communicate in a power-free, rational way and exchange opinions so as to resolve problems and produce agricultural improvements through consensus.

Despite the strong emphasis on separating politics from technology and innovation, in practice, innovation developers have had to collaborate at different levels with the political environment around them. Over time, PROINPA and the MAS government have found ways of realigning participatory innovation and new political realities. PROINPA modified its interventions to meet agrarian union demands. It has done this by consulting unions over the relevance of their projects and engaging union leaders in their activities. The introduction of participatory monitoring and evaluation methodologies discussed above was in part a response to the demand for accountability and research relevance from these farmer organizations. PROINPA researchers who were interviewed also stated that they had had to adapt their interventions to fit new government priorities. On the other hand, despite its earlier critique of NGO interventions, the MAS government increasingly relied on PROINPA's technical capacity, for example, to transfer the gene banks to state agencies,[19] since, as INIAF's national director pointed out, PROINPA is 'a source of excellent researchers and we [INIAF] would like to work together with those resources' (Interview, August 2012). Hence, despite disagreements on technology and the role of politics in rural development,

19. In 2008, the MAS government established the National Institute of Agricultural and Forestry Innovation (INIAF), proclaiming the return of the state in agricultural research (INIAF, 2010). PROINPA co-operated with INIAF and transferred the two most important gene banks (potatoes and Andean roots, and Quinoa and highland Andean grains) to INIAF and trained INIAF's staff to maintain these banks.

boundaries were crossed and participatory innovation was remodelled. This illustrates an important aspect of the malleability of participation: depending on the context, it can acquire a more neutral, technologist outlook or a more political outlook.

CONCLUSIONS

In this article we analysed the emergence of participatory research and development methods by PROINPA, an NGO and former state agency. PROINPA employed participatory methods mainly to enhance managerial effectiveness. The methods were seen as effective in developing new technologies (for example, new crop varieties arising from farmer involvement in breeding) or integrating (some) farmers into the market. This type of participation obscures macro-level inequalities and focuses on individual responses to market conditions. As a micro-project, participatory research embraces modes of thinking and action that are congruent with a neoliberal restructuring of agricultural research and extension. As the participatory approach unfolded, it modified the identity and practices of the researchers, turning them into development agents. Researchers only became successful when they linked their research and development intervention to global agendas (Jackson, 2005).

Does this mean that participation in a micro-project is simply an outcome of macro-economic/political restructuring and globalizing international cooperation? Was PROINPA merely an agent of neoliberalism? Our approach differs in that it emphasized PROINPA's self-organization and the coupling of their notions of technical expertise to a changing environment and shifting opportunities. PROINPA effectively managed three key issues. First, participation led not only to research objectives desired by globalizers and developers, but also generated these from below by local demands. Farmers were not misled, they effectively 'participated'. Participation is neither a static nor a one-way process. Secondly, PROINPA had to make room for two different types of politics. Participation or empowerment as capacity building (of technical and economic expertise and skills) versus participation as a national project, or a political party project (in this case the MAS government) had to be, and were, reconciled. Hence, despite the researchers' formal anti-political stance, they had to play politics. Finally, PROINPA kept the technical moment intact. Participation in research and development is not only about social relations and processes. It cannot simply be assessed in terms of power/knowledge but involves reconnecting people and matter (crop varieties, inputs, soils): whether it makes sense to people, researchers and farmers alike, depends on technological success. For this reason the MAS governments, despite blaming NGO interventions of the PROINPA type as neoliberal — and thereby negative — ended up making use of engineering work as carried out by PROINPA.

These three key issues are the reason for adopting the notion of malleability of participation in this article and of expanding its meaning beyond Cornwall's (2006) original use. The term malleable does not just refer to bending participation to fit an actor's objective or to the idea that everyone may perceive participation differently. Our point is that in practice, every form of participation seeks a new balance between reshaped subjects, technical and economic considerations, and political strategies and action (even though one element may be discursively prioritized). As we have shown, this counts for both politicized and managerial or 'technical' views on participation.

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