



Uzbekistan – A Region of World Society (?)

Variants of Differentiation in Agricultural Resources Governance

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Zusammenfassung

Der vorgelegte Artikel untersucht die geschichtete Koexistenz sich gegenseitig beeinflussender Formen von Differenzierung (funktional, segmentär, hierarchisch) im regionalen Kontext des ländlichen Uzbekistans, einer Region der Weltgesellschaft, die seit 1991 massive sozio-ökonomische Transformationsprozesse durchläuft. Genauer untersuchen wir gesellschaftliche Muster zur Bewältigung (und gleichzeitigen Verstärkung) zunehmender Komplexitäten im Bereich landwirtschaftlicher Ressourcen Governance, und hier insbesondere von Land, Wasser und landwirtschaftlichen Dienstleistungen (Wissen & Beratung). Der Artikel bezieht sich auf Rudolf Stichwehs Überlegungen zu den strukturellen Mustern der Weltgesellschaft, ihren ‚Eigenstrukturen‘, sowie Niklas Luhmanns Konzept der Weltgesellschaft-eigenen autopoietisch geschlossenen Funktionssysteme. Basierend auf ethnographisch-empirischer Forschung argumentieren wir, dass Patron-Klient Beziehungen, ein komplexes System einfordernder Gegenseitigkeit sowie eine Trilogie formaler, strategischer und diskursiver Praktiken allgemein mobilisierte Formen sozialer Interaktion darstellen, über die die Koexistenz einer unvollständigen Schicht funktionaler Differenzierung und verstärkt auflebende Schicht sozialer Stratifikation und Fragmentierung ausgeglichen wird. Folglich führt die abnehmende funktionale Differenzierung zu einer sukzessiven Zunahme der institutionellen Undurchsichtigkeit und organisatorischen Komplexität, worüber mögliche lang-jährige Entwicklung unter Einbezug globaler Kommunikationskomplexe zunehmend behindert wird.

Abstract

This article studies the layered coexistence and mutual shaping of three forms of differentiation (functional, segmentary, hierarchical) in rural Uzbekistan, a region of world society that, since 1991, is undergoing tremendous processes of socio-economic transformation and change. More precisely, we analyse the evolving governance of land, water and agricultural support services (knowledge & advice) in the Uzbek province of Khorezm, where currently three types of farms utilise various social practices to navigate a complex and partly opaque environment marked by various forms of differentiation, each posing different opportunities, threats and coordination mechanisms (institutions). In doing so, the article builds on Rudolf Stichweh's considerations of world society's structural patterns, its 'Eigenstructures' as well as Niklas Luhmann's conceptualisation of world society's autopoietically closed function systems. Based on ethnographic research, we argue that the mobilisation of patron-client relationships, a complex system of coercive reciprocity and a trilogy of formal, strategic and discursive practices are widely employed to cope with the coexistence of an undermined layer of functional differentiation and reaffirmed/ reinvented segmentary and hierarchical identities. We argue that the skilful navigation by local actors between these different differentiation forms and their demands, embodies a short-term adaptation strategy that is likely to hamper a (re-) crystallisation of autonomous functional domains. Hampering functional differentiation jeopardises long-term change adaptation.

1. Introduction

Since its independence in 1991, Uzbekistan is undergoing tremendous socio-economic transformation processes. The coexistence of various forms of structural differentiation nurtured complex patterns of change. Forms of functional differentiation introduced in the Soviet era appear to be continuously challenged. Despite attempts to create a democratically organised market economy, the political system de facto colonised the legal, economic, scientific and education systems. Function systems are coupled in such a way that autopoietic closure is rarely possible, partly as a result of Soviet de-differentiation, and partly stemming from de-differentiations produced in the 'transition' days. Despite fragmentary and episodic appearances of functional differentiation, diversity in forms of differentiation has increased.

We focus on the evolution of agriculture in Khorezm, a western province of Uzbekistan. In Khorezm, functional, hierarchical and segmentary differentiations coexist, and we are especially interested in their co-evolution and the interactions between them. Land, water and knowledge we consider the prime resources in Khorezmian agriculture, and our sites of observation for the transformation of agriculture are organisations that are supposed to coordinate access to these resources. It will be argued that an observed revival and reinvention of segmentary and hierarchical forms of differentiation amounts to an erosion of functional differentiation, and an increasing reliance on informality.

We consider forms of differentiation to be locally mediated by specific social patterns. Formal, strategic and discursive practices aim to cope (for the short-term) with the effects of change (Hornidge et al. 2011b; Oberkircher et al. 2010). While formal practices follow formal rules and means of governance, strategic practices often follow informal rules, as they offer better rewards in a situation where formality is known to be selectively used and enforced. These acts of deviation from the formal sphere are often compensated through discursive practices, rhetorical references to the formal rules that can discursively strengthen them. Discursive practices in the Uzbek case prevent the (open) contestation of rules, laws and plans of formal institutions, understandably, since these formalities are useful to many actors even if they are selectively used, and since frontal attack or total neglect are perceived as too risky (Hornidge et al. forthcoming). This situation of facade formalities and institutional opacity makes the strengthening of functional differentiation less likely: boundaries of the functional domains can be easily reinforced or undermined by fleeting configurations of formal and informal institutions.

This initial presentation of the Uzbek case suggests following Rudolf Stichweh in his emphasis on discontinuities, just as much as continuities, in the emergence of world society (2006; 2007). Turning against works on world society as (a) a unifying force (i.e. McDonaldisation) as well as (b) a system preserving pre-existing diversity (i.e. 'multiple modernities'), Stichweh suggests to study the structural patterns inherent to world society, world society's 'Eigenstructures'. He states (2005, 3-4): "Eigenstructures reproduce pre-existent cultural diversity and push it back at the same time, creating new social and cultural patterns of their own." We aim to shed light on this (layered) coexistence and mutual shaping of various forms of structural differentiation within the context of rural Uzbekistan, here regarded as one region of world society.

Empirically our portrayal of the Uzbek situation rests on three years (2008-2011) of qualitative and quantitative research on water and land management, which took place within a ten year, interdisciplinary research project on land and water use in Khorezm province. Extensive qualitative, semi-structured interview rounds and field observations were conducted in a Water User Association (WUA), one machine tractor park (MTP), one bio-lab and one regional fertilizer company in Khorezm. In WUA Ashirmat, in 2008, 50 farm leaders were interviewed. In 2009, after farm land had been consolidated, all remaining 21 cotton and wheat farmers of Ashirmat and two other WUAs were surveyed. In 2010, 20 interviews in Ashirmat, 30 interviews with officials and experts in Urgench and 20 interviews with farmers, officials and experts in other WUA's further deepened the assessment.

Interviews took place in Russian and Uzbek, in most cases without a translator, in some cases with a translator. For reasons of anonymity, we will not mention names and use only a few direct quotes.⁴

The paper comprises five parts. After a brief description of the study area and relevant policy reforms, part 3 turns to the theory of differentiation espoused in this article. Part 4 further introduces the reader to land, water and agricultural knowledge governance in Khorezm and points to the linkages between resource competition and competing forms of differentiation. The continuously negotiated coexistence of hierarchical, segmentary and functional forms of differentiation is further assessed in part 5, here by focusing on social practices. The paper concludes with a discussion of the effects of interactions between differentiation forms on the defining pillar of world society: functional differentiation.

⁴ The difficulties and challenges faced by social science research in Uzbekistan are well documented by Wall and Mollinga (2008), Wall and Overton (2006) and Oberkircher (2011a).

2. 'Uzbekistan' – A Region in Change

Khorezm province is situated in North-western Uzbekistan, in the irrigated lowlands of the Amu Darya river. It encompasses an area of 5,060 km² and was inhabited by 1,517,500 people as of 2008 (UzStat 2009).



Figure 1. Location of Khorezm Province

Source: ZEF/UNESCO-Project GIS Lab.

The majority of the Khorezmian population live in villages and work in agriculture, either as 'private' farmers ('farmers', leasing, not owning, large tracts of land), peasants (dehqons) operating on a smaller scale, workers on private farms, or a combination of the latter two (Veldwisch and Spoor, 2008). Unemployment rates are high, and about 28% of the population lives below the poverty line (1 US\$ per day) (Mueller, 2006).

Uzbekistan, the most populous country in the region, and largely depending on agricultural production, has actively restructured its agricultural sector. As part of this, **agricultural land** was first widely distributed and thus scattered, and later reconsolidated. State farms (sovkhozes) were turned into collective farms (kolkhozes), then into joint-stock companies (shirkats, literally 'associations'), and, in the early 2000s, were completely dismantled and divided into farms (private farms) (Veldwisch 2008). In Khorezm province, in the early years these subdivided and 'privatised' production units generally ranged between 10-25 ha in size (Veldwisch 2008; Trevisani 2008; Lerman 2008). Yet, in November/December 2008 and January/February 2009, followed by a second wave in January/February 2011 farm land was reconsolidated, creating cotton-wheat farms of 75-150 ha (Djanibekov et al. 2012).

Similarly to the changes in land governance, the system of **irrigation water** governance has been restructured. Here, the formerly separate ministries, the Ministry of Agriculture and the Ministry of Melioration and Water Management of Uzbekistan were, by the end of 1996, merged into a single,

centralised organisation, the Ministry of Agriculture and Water Resources (MAWR) (Yalcin and Mollinga 2007; Wegerich 2005). For regional and district level presence, 13 regional (viloyat) and 163 district (tuman) departments were created. Additionally, and from 2000 onwards, water management on the local level became the responsibility of newly established Water User Associations (Veldwisch 2008, 2010; Abdullayev et al. 2008). In July 2003, water management was re-organised along lines of basins, i.e. based on hydrological boundaries. Basin management authorities replaced the regional departments (viloyat) of MAWR and are instead directly responsible to the water resources department of MAWR in Tashkent (Yalcin and Mollinga 2007). In 2009, Water User Associations were renamed into Water Consumer Associations (Law of Republic of Uzbekistan, Article 18-2).

In the sphere of *agricultural knowledge*, the agricultural service organisations originally established during Soviet times and often as part of the state collective farms, have been (semi-) privatised from 1994 onwards, but mainly since 2000. In 2004, clients (the new farms) and providers (the new service organisations) alike were made financially autonomous (i.e. accountable): they were expected to be financially self-supporting yet jointly responsible for attaining cotton and wheat production targets (Van Assche et al. forthcoming; Djanibekov et al 2012).

3. 'Eigenstructures' of World Society – Functional Differentiation or Single-Man Rule?

Niklas Luhmann portrays modern society as functionally differentiated, as constituted by autopoietically closed, self-referential social systems (subsystems of society), (Luhmann 1990; 1992; 1994; 1997). Since social systems in a functionally differentiated society are – according to Luhmann – operationally closed, they cannot instruct but merely irritate each other. The concept of 'structural coupling' describes "highly selective connections" between autopoietic systems that act as environments to each other (Luhmann 1992, 1432). Structural couplings are generalised expectations of conduct that are incorporated by the coupled systems through continuous communication (Luhmann 1994, 195/196).

Functional systems in society therefore, do not operate without relations to each other, but instead are irritated by other systems and environments through structural coupling: judiciary and politics are structurally coupled by the form of the respective constitution, science and education by the form university, judiciary and economy via ownership and contract as well as education and economy through the form of occupation (Luhmann 1990; Kurtz 2001, 144).⁵ Besides improved functional system performance, Luhmann emphasises the crucial role of couplings for further system development, learning and structural transformation. He states: "Structural couplings provide a continuous influx of disorder against which the system maintains or changes its structure" (1992, 1433).

⁵ Lange mentions the German Wissenschaftsrat as an example of a consolidated channel of structural coupling between the political and the scientific subsystem in Germany (Lange/Braun 2000, 60).

The internal dynamics of function systems, as well as the geographically unbound character of communication oriented towards the respective function system's universally valid binary code, led Luhmann to argue for the existence of 'world society', the only societal system presently existing on earth (Luhmann 1997; Stichweh 2000). With communication forming the constitutive element of each function system, universally oriented along the function system's binary code, spatially defined nation states play a negligible role in Luhmann's theory. Regional differences with regard to forms and degrees of differentiation and forms of modernity in world society nevertheless are acknowledged. Provokingly Stichweh answers world society critics pointing to a lack of homogeneity and high levels of inequality by demanding: "Why should one perceive society as a homogeneous system?" (Stichweh 2000, 3). Instead Stichweh seeks to identify the 'Eigenstructures', the structural patterns inherent to world society, reproducing pre-existing forms of societal organisation and differentiation while at the same time overlaying them with new forms of differentiation, together forming locally diverging amalgams of 'new & old'. Stichweh underlines the interplay of discontinuities, continuities and 'the new' leading to plural levels of structure formation in world society.

In Uzbekistan, challenged by dramatic socio-economic transformations, Luhmann's thought on functional differentiation encounters a region and society caught in the dilemma of transition. A region in which existing forms of functional differentiation seem increasingly hampered by the revival/ reinvention of *hierarchical and segmentary differentiation* along the lines of ethnicity, age, sex, family, clan as well as ties to local/ regional power elites.

4. Agriculture, Agricultural Resources Governance and Social Differentiation

Uzbekistan's political system is strongly involved in agriculture. With regard to cotton and wheat production, which make up the largest share of agricultural production, area- and production-based state quotas exist, with compulsory sale to the state at fixed prices, preferential credits for input supply and agricultural norms regulate cropping patterns and agricultural practices. Additionally, farmers engage in rice, fruit and vegetable production for commercial purposes, as well as for home consumption. Consequently three types of agriculture can be identified: (a) (large-scale) state-planned agriculture (i.e. cotton and wheat); (b) (small to medium scale) commercial agriculture (i.e. rice, sunflowers, vegetables), as well as (c) (small-scale) subsistence agriculture (i.e. fruits and vegetables).

The defining differences between the three types of agricultural practices under study are their respective forms of inclusion into, and exclusion from, the economic and political function systems on different regional and global scales and thus their binary codes focusing and structuring their boundary constituting communication. Stichweh (2005, 7) summarises these binary distinctions as "universal mechanisms of information processing by which nearly everything in the world can be classified according to a specific functional point of view". Binary codes thus form the defining element of whether a certain communication/operation contributes to the further strengthening of one function system (i.e. science, binary code truth/falsity) or another (i.e. judiciary, binary code

legal/illegal). Their relevance is not spatially or territorially restricted, but instead can only be constrained in their significance by the relevance of another binary code (also see Luhmann 1986). In the context of the agricultural practices studied here, for subsistence production, state ordered and commercial production, the following binary distinctions can be identified: fulfillment of state plan/nonfulfillment of state plan (state-planned agriculture), market access and paying customers/no market access and no paying customers (commercial agriculture), a meal for my family/no meal for my family (subsistence agriculture). State-planned agriculture acts as subsystem of the regional political system (here on the level of the nation state), as the binary code of state-planned agriculture processes information by distinguishing between fulfilling or failing the state plan. As a state plan on a large-scale, cash crop oriented agriculture, comparable to the one in Uzbekistan, hardly exists in other regions of world society. The binary code of this particular subsystem of the political function system, and thus also the existence of this sub-system itself, is not of universal relevance. Nevertheless, in the region assessed here of world society the state is present in the large-scale and cash crop focused agriculture to a degree that we cannot regard this state-planned agriculture as autopoietically closed. Instead, the above mentioned binary code of this subsystem (fulfilment/non-fulfilment of the state plan) can also be translated into building / not building social capital within a patron-client relationship (with the state being the patron). Additionally, but less practised, commercial agriculture links with the regional, i.e. provincial and national, economic function system. Here the determinant of any information processing is whether the produce finds paying customers on provincial and national level markets. Lastly, subsistence agriculture processes any information by distinguishing between, 'does it provide a meal to my family tonight or in the coming winter, or doesn't it?' Thus the binary code of the world economy (payment / non-payment), in the sub-system subsistence agriculture is substantially more personal (and local) in character. Despite this, agricultural practices directed towards direct need fulfilment and home consumption (subsistence agriculture) have to be regarded as a subsystem of the function system of the world economy as dehqon farmers in our study region largely use seeds sold on markets (originally produced in the Netherlands, Russia or China) rather than being self-produced. Whereas the Soviet collective farms were combining the functions of local government (politics), production for payments (and profit in the longer term) (economics) and were also deeply embedded in the Soviet system of agricultural knowledge development (science), none of the current three farm types can be considered a business in the western sense, or an autonomous economic organisation, nor do they significantly participate in local government, while the embedding in science is weakened (Van Assche and Djanibekov 2012). Nevertheless, farms of different types, as organisations, are sometimes in a position to make decisions based on the distinctions payment/non-payment and profit/loss, and they have not completely forgotten the knowledge and expertise that made agriculture possible in this harsh landscape. Looking again at access to the main resources needed, one can study the different functional embedding of the three farm types, and interestingly, for our present purposes, the different impacts of remaining functional differentiation per se.

As supply of **water** is a key factor for the fulfilment of production quotas within state-planned, large-scale agriculture, the quota for cotton and wheat are major determinants for the irrigation water management process in Khorezm. However, the actual physical delivery of water is severely hampered by an inadequate human, financial, and technical infrastructure (Veldwisch 2010; Veldwisch and Spoor 2008; Wegerich 2010). This has resulted in poor functioning of the irrigation

and drainage infrastructure on the main and sub-canal as well as on farm level (Manschadi et al. 2010; Tischbein et al. 2011) and paves the way for water (just as land and agricultural knowledge) being an increasingly contested resource on the level of the individual.⁶

These limitations to effective water management are further exacerbated by a high degree of uncertainty regarding *land* use rights. Land is state property leased to farmers for up to 50 years (Trevisani 2008). Despite these contracts, leases remain subject to sudden and unexpected interference by the state as illustrated by the reconsolidation of farm land in 2008/09 and 2011. The combination of a reliable state plan and unreliable land lease contracts weakens the farmers' potential to independently plan, invest or innovate. For water management on farm and field level, this means that water-saving techniques which come with investments, are little practised (Oberkircher 2011b; Oberkircher and Hornidge 2011). This form of governance approach, top down and unpredictable, predefines the limited space for public participation, accountability and transparency upwards (Hornidge et al. 2011b).

Nevertheless, farmers in Khorezm have shown to be active experimenters, developing local knowledge to improve their cotton and wheat yields. Wall states that "within these conditions there is a surprising level of innovation and experimentation". This knowledge creation and implementation takes place within the space of manoeuvring granted by the politically restrictive system. Innovations that require or imply open opposition to agricultural state norms (i.e. large scale crop rotation) nevertheless do not occur (Wall 2008, 122-123).

The authoritarian system of state control over *knowledge* production that can be assessed in the realm of high-level research commissioned by the government (Selim 2009, 80ff; Wall 2008, 141ff), also leads in the realm of local, agricultural knowledge production to high levels of self-censorship and very selective sharing of knowledge (Hornidge et al. 2011a). Wall (2008, 85ff) identifies five characteristics of the local knowledge system of Khorezm. First, local 'masters' ('wise men') with specialised knowledge, embedded in the patriarchal and hierarchical Khorezmian culture, are central to the system and often hold positions of political and economic power. Second, in terms of knowledge dissemination, family based modes of knowledge reproduction and transfer are common. Access to external knowledge and its reproduction in the local knowledge system exists, but to a lesser extent. Third, in sectors of immediate importance to the state agricultural production system indigenous, local knowledge lies at the interface with formal, university taught knowledge. Wall (2008, 110ff) here assesses a linear, top-down approach to knowledge diffusion with little mutual exchange of ideas that was further documented by others (Ul-Hassan et al. 2011; Hornidge et al. 2011a). This interlinks with Wall's fourth point: 'collective knowledge' which is rather unitary in nature, prevails in the Khorezmian agricultural knowledge system, leaving little space for creativity-fostering diversity. Fifth, this unitary nature of knowledge is further exacerbated by on going 'knowledge loss' with Soviet-times' knowledge being increasingly outdated while not updated in post-Soviet Khorezm (Wall 2008, 123ff; Evers and Wall 2006). We would add a sixth feature: the

⁶ Additional comprehensive assessments of water as a contested resource on the national and transboundary level in Central Asia can be found in Giese/Sehring (2007) as well as Sehring/Giese (2009).

tumultuous transformation process, combined with the continued need for knowledge in Khorezmian irrigation agriculture and the top down steering, leads to a situation where useful remains of Soviet scientific knowledge and local knowledge can be found with people in the most unexpected places; people forced back into their old roles on an ad hoc basis. Development of specialised roles and organisations is thus further impeded.

With regard to the governance of all three agricultural resources, water, land and agricultural knowledge, forms of hierarchical and segmentary differentiation can be observed, defining access to varying forms of capital (financial, social, cultural, etc.). Turaeva-Hoehne (2007) points to the emic distinction between *katta* (big) and *kichkina* (small) Uzbeks. This locally widely employed categorization of 'big' versus 'small' Uzbeks offers a fertile ground for a complex and hierarchically organised system of coercive reciprocity⁷ which at the same time limits the individual's flexibility and risk-proclivity. Focusing on variants of differentiation specifically in agriculture, Oberkircher and Hornidge (2011, 404-406) document the 'types of people' distinguished locally. The authors record the following four types, with the former being the most, and the latter the least, influential in agricultural decision-making (2011, 404): (a) *upper people* – those who have an official mandate to deal with water or other agricultural decisions; (b) *water persons* (*mirabs* (water masters) and *suvchilar* (water persons) – those who traditionally were legitimised to manage water because of water knowledge gained through formal education or a water-related practical profession; (c) *farmers* – large-scale farmers under state-plan for the fulfilment of production quotas; and (d) *dehqons* – small-scale subsistence farmers.

Hierarchical and segmentary differentiation can be observed along the lines of individuals' formal roles in the state hierarchy, agricultural expertise ('local masters') and informally held power positions (i.e. via the ability to assure water access), farm types (large-scale under state procurement system versus subsistence), as well as traditional hierarchies (i.e. age, sex) and clan/family/ethnic structures. Politics as a function system pervades agricultural production of all forms. Much less than in the West can 'agriculture' be considered a sub-system of economics, while farms (as organisations) *participate* in politics less than in Soviet times. Indeed, Soviet farms were both economic and political units and, as organisations, largely autonomous (Van Assche and Djanibekov 2012). Politics itself is more hierarchical now than in Soviet times, while the rhetoric of political unity veils a reality where the goals of politics (production targets for foreign currency and food safety; control and stability) are eroded by, and dependent on, clan politics, ethnic and religious factions, family ties, memories of former Soviet affiliations, and sometimes pure local resistance/cooperation. For the three farm types, the large 'private' farms responsible for cotton and wheat targets are more subjected to direct state control, but they also reap more benefits from the remains of the Soviet system, including access to specialised knowledge-intensive support organisations (traces of science) and, especially after they grew with land consolidation, some form of lobbying with (thus participation in) politics. The other farm types are subjected less to direct state power but, partly because of this marginal

⁷ The notion of 'coercive reciprocity' depicts a system of mutuality that takes on the character of a socio-culturally enforced norm; therefore a reciprocal give and take relationship in which giving and helping each other out is a compulsory/socially enforced, rather than voluntary, act amongst actors.

position, can sometimes focus more directly on profit-making in their role as economic organisations. Politics can suddenly interfere, interrupting farm decision-making, as indicated below:

“If we say ‘no’ to the hokim⁸ or someone from above⁹, they will take revenge on us by means of sending a tax inspector or by a public prosecution officer to us, easily!” (Personal communication with the manager of the MTP workshop, September 2009).

Access to land, water and knowledge thus depends on political connections and interference. Politics cannot be ignored but does not give reliable access. So, even for the fulfilment of politically imposed targets, one has to rely on other networks, as mentioned earlier. Society in general is more hierarchical now, with politics more in the centre and more centralised itself. The incomplete control by politics however, the partly rhetorical character of unity, creates ample space for discursive practices as bridging devices (see below).

5. Coping with Institutional Opacity, Mediating Variants of Differentiation

Our analysis thus far supports Ziegert’s (2009) idea of the “vicious circle in the post-soviet dilemma”. Ziegert states: “Such a ‘washing out’ of clearly marked boundaries or limits of the operations of functional systems, for instance by party nomenklatura networks exercising effective control across system boundaries, in turn restricts [the local management regimes’] capacity to adjust effectively and functionally to the pressures of social change and towards further differentiation” (2009, 103). The governance of land, water and agricultural knowledge in Uzbekistan is challenged by this ‘vicious circle’. We now deepen our analysis of access to land, water and knowledge (via the proxy of agricultural services), in order to reconstruct the overlapping forms of differentiation in Khorezmian agriculture and their effects, vicious or not.

5.1. Land

With the exception of private gardens and *tomorqas* (land plots for subsistence agriculture (on average 0.25ha), all agricultural land in Uzbekistan belongs to the state (Trevisani 2008). Consequently, leased farm land cannot be freely traded, but instead is (re-)allocated by the state. As outlined above, several land reforms were undertaken (Veldwisch 2008; Trevisani 2008; Lerman 2008). While these, in the early years after independence, focused on the dissolution and step-wise semi-privatisation of the large-scale state and collective farms (*sovkhoses* and *kolkhozes*), since late 2008 several rounds of consolidation created cotton-wheat farms of 75-150 ha (Djanibekov et al. 2012). The frequency of reform and the lack of clarity in implementation criteria have resulted in a high degree of uncertainty with regard to land use rights. This in turn had negative effects on long-term land use planning and on longterm planning and investment with farmers (Hornidge et al. 2011b; Djanibekov et al. 2010; Oberkircher and Hornidge 2011; Eichholz et al. 2012).

⁸ *Hokim* (Uzbek) depicts the district governor or a body of the state administration in general.

⁹ ‘Above’ here refers to any state organization on the district and regional level (Author’s clarification)

While the respective president's decree (No. UP-4041 of October 20, 2008) merely highlights the aim to re-distribute the land to the most productive farmers, our data indicate three underlying paradigms: (a) to ease irrigation water management by reducing the number of potentially discordant players; (b) to facilitate the exercising of direct state control over cotton and wheat production by the same principle (reducing the number of actors); (c) economies of scale (Eichholz et al. 2012; Djanibekov et al. 2012).

Land consolidation in Khorezm was basically the forced merger of smaller farms into bigger ones, with formerly independent farmers entering the role of sub-lessees or contract workers. This obviously reinforces hierarchical forms of differentiation. A few farmers that had been identified as leading, and well connected, (male) figures in the WUA by previous research (Abdullaev and Mollinga 2010) succeeded in remaining farmers, now managing substantially larger lands:

1. The chairman of the former *Zarbdor* kolkhoz in the western part of the WUA (*rais*) and large-scale farmer since 1993, was allocated another 100 ha in the second round of land consolidation in early 2009, adding up to a total farm size of 202 ha. Additionally, more than 25% of his land (62 ha) was freed of the state procurement system for cotton and wheat, allowing him to grow freely tradable cash crops like rice¹⁰ or vegetables.
2. The chairman of the rural council (*shura*) was allocated land in the centre of the WUA near a lake, where high soil salinity increases the chances of exemptions from the state plan. Deliberate classification as 'poor' soils can be profitable if there is enough water to grow rice. In 2009, another 60 ha were added to his 115 ha. He maintains good relationships with relatives in government positions in Tashkent and in the seed industry.
3. The chairman of the machine tractor park was allocated land at the head of the WUA, where the water from the main canal enters the WUA irrigation system. He manages about 80 ha of which 63 ha were added to his farm after the 2009 land redistribution. His free area consists of 14 ha where he plants rice. Although his land is close to the canal and at the head end of the WUA, the relatively high elevation requires the use of pumps to lift water onto his fields. Yet, as he is the chairman of the machine tractor park, access to the required technology and fuel is assured.

These examples illustrate that individual actors' abilities to employ their social resources and networks in a process of hierarchical and segmentary differentiation become important. As part of a process thought to increase agricultural performance by creating larger land plots, social ties and connections are mobilised to secure access to land and thus reaffirm the individual's position that is used as legitimation in the first place. A mutually reinforcing cycle of social differentiation along lines of age, sex and (expertise/role based) hierarchies, as well as coping with the effects of these forms of differentiation in ways reaffirming the form of differentiation in the first place, can thus be observed.

¹⁰ Rice can be sold directly on the local market so that sales revenues stay directly with the seller. In contrast, state crops are sold via bank accounts where revenues cannot be withdrawn for private consumption.

5.2. Water

Annually, about 3.5 - 5 km³ of water is diverted from the Amu Darya to the irrigated fields in Khorezm through a dense network of irrigation channels (totaling 16,000 km). The water arriving in Khorezm is collected in the Tuyamuyun water reservoir, and its volume is rationed depending on the monthly water demand in the region. More than 95% is used in agriculture. Irrigation water is brought to the fields in open, non-lined canals resulting in substantive losses due to evaporation and groundwater discharge (Manschadi et al. 2010; Hornidge et al. 2011b; Tischbein et al. 2011). Due to its tail-end situation, Khorezm's water situation highly depends on the areas upstream. Ongoing reforms in the 'formal' water sector are increasingly met with 'informal' arrangements on the local level. Shortcomings of the state-created water user associations (WUAs), responsible for water management at the local level, are compensated by WUAs delegating tasks (i.e. pump management, cleaning of drains etc.) to the water users who in turn are less and less motivated to pay WUA fees (Ul-Hassan et al. 2011; Hornidge and Ul-Hassan 2010). Another example is the use of small, unregistered mobile pumps to move water to field canals. Water theft is formally considered illegal, but is widely practised (Oberkircher 2011b; Hornidge et al. 2011b). Furthermore the conscious circumventing of state interferences in order to assure water access was also recorded amongst large-scale farmers. Oberkircher (2011b, 1275) reports:

“Fermer: I have four pumps. Two driven by electricity and two driven by tractor. LO: Why do the two work with a tractor? Fermer: [...] When the electricity is off we use them. [...] LO: So the electricity is sometimes turned off when the water comes? Fermer: Sometimes?? 90% of the time! LO: Why do you think this happens? Fermer: The authorities do it on purpose. [...] LO: Do they do it so that people don't pump and so the water reaches further downstream? Fermer: Yes, they want to control the pumping. LO: So, when they do this, you use the tractor pumps? Fermer: Yes” (interview with a farmer, conducted by Lisa Oberkircher; August 2008).

Water is an essential resource and the reliance on formal and informal coordination mechanisms is not surprising; yet our findings are relevant because of the highly authoritarian control system in which the 'informal' inherently also challenges the 'formal' and thus becomes political. Risks are compensated by mobilising social ties and networks. These social ties, depending on the risks that they are supposed to compensate, in some cases can be characterised as patron-client relationships in which village mayors, neighbourhood leaders and persons close to the local power holder (*hokim*) are just as much included as the formally responsible water managers or inspectors (Oberkircher 2011b, Hornidge et al. 2011b). Yet, in other cases, these mobilised social ties and networks are more horizontally organised mutual favours and part of a highly developed system of coercive reciprocity (Turaeva-Hoehne 2007). These mutual favours take on the character of exchangeable (cash-free 'tradable') goods, meaning that each favour also comes with its price, but roles (giving or taking etc.) can change depending on the aim of the 'transaction'. As such, this system of reciprocity takes on the character of a market, and differs from long-term developed, hierarchically structured patron-client relationships, where the role division patron versus client is defined and maintained according to social and political status in Uzbekistan.

Both, the mobilising of patron-client relationships and the more horizontally organised social ties and networks for mediating the coexistence of varying forms of differentiation, are additionally embedded and facilitated by the employment of three types of practices (Hornidge et al. forthcoming) mentioned above: *formal, strategic and discursive practices* enable the individual, based on his/her social, financial, physical etc. resources, to find his/her own way of coping with the limitations in agricultural resources management, crucial for livelihood provision. Yet, neither the limitations nor the nature of the practices are openly communicated. Instead the 'formal', including the dominating state presence in agriculture, is continuously discursively reaffirmed and thus open conflict as a positive engine for change is prevented.

5.3. Agricultural Service Provision

We mentioned the plight of the revamped service organisations earlier, being underfunded and serving many masters. Neither the farmers nor the agricultural service providers had experience with performance being measured in terms of economic profitability. They were suddenly expected to act as capitalist-style firms. At the same time, requests and intrusions by various governmental actors and farmers cannot easily be ignored, disrupting the application of the binary code of payment/non-payment (Shtaltovna 2012).

Research into agricultural service provision reaffirms the coexistence of different forms of social differentiation. While agricultural service providers (machine tractor parks, fertilizer companies, bio-labs and micro-credit banks) have been officially privatised, the degree of factual privatisation, and thus also independence gained from politics as a dominating function system, varies significantly. The general pattern nevertheless is that those essential for cotton and wheat production and profitability more broadly, are kept closer. The (monopolistic) fertilizer company e.g. is not privatised and continues to be closely monitored and with state support, brings state harassment and demands in various guises. Bio-labs in contrast are largely left alone. Less harassment is linked to less state support. Machine tractor parks (MTPs) as the third example are in between these two extremes. A growing competition of machinery services significantly weakens the position of the previously monopolist provider, while the state does not intend to continue supporting it. In consequence the MTPs' economic conditions are difficult, while their services, vital to the state ordered agriculture, continue to be demanded by farmers. The close link between MTPs and the farmers is frequently tapped by the state by demanding the MTP heads participate in meetings and events reinforcing state control over agriculture (Shtaltovna et al. 2011, Shtaltovna 2012). The following quotation illustrates an intensive patron client relation:

"First, the MTP has to provide services to the farmers growing state crops. Before them, only the heads of other state organisations can get services (e.g. gas provision, hokim, director of the school, director of the water management organisation, bank, state inspection). If the head of the MTP refuses to follow the above mentioned order, there is a high chance that he will meet obstacles while receiving services provided by those institutions" (Farmers' survey, Gurlen district, June-July 2009).

While each of these organisations has a clearly defined mandate in terms of the services it provides, agricultural knowledge provision was never regarded as an activity requiring separate organisations.

Agricultural expertise used to be collected, maintained and passed on in the context of the *kolkhoz*, a role not explicitly fulfilled now by any of the formed agricultural service organisations (Shtaltovna 2012; Van Assche and Djanibekov 2012). Instead specific types of knowledge connected to their mandate are passed on by each organisation separately. Other forms of knowledge, their further development and sharing, i.e. on the actual processes of farming, on new seed varieties or experimentation with old varieties, are not taken care of. Former *kolkhoz* managers are frequently sought after for their increasingly outdated advice. Consequently, access to agricultural knowledge as a required resource is highly personalised, a factor further nurturing hierarchical and segmentary differentiation over functional.

Thus the vacuum created with regard to the governance of agricultural knowledge is a (negative) side effect of restructuring agriculture not in the form of an autopoietically closed subsystem of one function system (i.e. the world economy), that is along lines of functional differentiation, but instead guided by the state (externally rather than self-reflexive) and divided into three types of agricultural practices with the first type making up, by far, the largest share of production: state ordered agriculture as a subsystem of the regional, here national, economic function system with the binary code centred on the fulfilment of the state procurement system of cotton and wheat; second, commercial agriculture of mainly rice, linked to the regional (provincial & national) economic function system; as well as third, subsistence agriculture for home consumption, coupled with the function system of world economy via seed production and use. The importance of agricultural knowledge and expertise was not acknowledged and consequently no agricultural service organisations, explicitly focusing on extension work, were created. Moreover teachers, doctors and state bureaucrats, without agricultural experience, were assigned the role of farmers (as the implementers of the state plan, rather than sole decision-makers over 'their' land). These under-skilled farmers turn to the various networks, new and old, they are part of.

6. Concluding Discussion

Khorezm province in Uzbekistan is a region challenged by tremendous processes of change. To survive and secure livelihood provision, farmers and farms (as organisations) require access to land, water and agricultural knowledge. This in turn requires navigating different networks and identities available to them, linked to several forms of structural differentiation.

We observed hierarchical, segmentary and traces of functional differentiation. Society at large has become more hierarchical in Uzbekistan, with politics taking the central place. Yet politics in many ways over-reaches in terms of control, under-performs in terms of service provision, and offers contradictory incentives and directives, leading to not only a widespread distrust of politics and formal coordination mechanisms, but also a reliance on several types of practices, appertaining to a complex world in which different forms of differentiation offer different configurations of opportunities and threats at different times. Unfortunately, reliance on segmentary and hierarchical differentiation make it harder for functional differentiation to re-crystallise, as it makes it harder for organisations to function as autopoietically closed decision-units. The short-term coping of farms with the everyday challenges of agrarian transition undermines the region's capacities for long-term

adaptation and social change through processes of developing theme (rather than person) focused function systems. The observed processes make it harder to depersonalise governance and adapt the function system's binary codes to their global equivalents. With regard to agriculture, for example, this would mean to neglect the locally found binary codes 'fulfilment of state plan/non-fulfilment of state plan' in state-planned agriculture, 'market access and paying customers/no market access and no paying customers' in commercial agriculture and 'a meal for my family/no meal for my family' in subsistence agriculture and, with these also, the inclusion of parts of agriculture into the political function system and exclusion from the economic function system, and vice versa. Instead it would allow for increased autopoietical closure of agriculture as one subsystem of world economy, while at the same time also for the structural coupling of it with others, i.e. the polity, or judiciary.

Yet, would such a reduction in institutional and organisational complexity, while allowing for structural and cultural diversity, in fact foster *positive* development? It is not our intention to attach value to different development paradigms with 'less developed' or 'pre-modern' at one end and 'industrialised' and 'modern' at the other end of the spectrum. Rather it is the aim of this paper, to take Stichweh's consideration of the 'Eigenstructures' of world society seriously and thus study structural formations that reproduce pre-existent differences and at the same time renegotiate and modify them, in a process of global – local negotiation, refusal and reciprocal adaptation. Our research in Uzbekistan illustrates these negotiation processes between different layers and forms of social differentiation. It also indicates the hurdles of short-term, immediate coping with the challenges of transformation and change and its impediments to long-term adaptation. As such, it portrays the 'Eigenstructures' of world society in this world region as a currently on going negotiation process between pre-existent structural formations (hierarchical, segmentary, functional) and their respective 'Eigencultures' (Stichweh 2006; 2007), i.e. hierarchical, male-dominated culture of agricultural knowledge diffusion. With regard to the governance of agricultural resources such as land, water and agricultural knowledge, the mobilisation of patron-client relationships, a complex system of coercive reciprocity and a trilogy of formal, strategic and discursive practices all reaffirm hierarchical and segmentary differentiation over functional differentiation. The decreasing functionally focused differentiation increases institutional opaqueness and organisational complexity further, making long-term development linking up with global communication complexes even more difficult.

Our analysis further shows that, for the three assets most relevant to the reproduction of Uzbek agriculture (land, water, knowledge) and for the three main farm types, the forms of differentiation that shape competition, differ. The co-existence of functional, segmentary and hierarchical differentiation makes it possible to reinvent institutional configurations for each of the competitive games on a regular basis, adjusting to new central steering attempts and ever shifting ecological and economic conditions. Tragically, this richness of coordinative resources can only operate in opacity, and undermines the conditions for a deepening of functional differentiation. Thus, adaptation in the short term jeopardises adaptation in the long run. Arguably, under conditions of a necessarily highly technical (since fully irrigated) agriculture, knowledge is the most formidable obstacle, since the current reproduction of agriculture relies on re-networked traces of scientific Soviet agriculture, on a personalised knowledge base that needs de-personalised forms of differentiation for its rejuvenation.

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Information on the competence network Crossroads Asia

The competence network Crossroads Asia was established in 2011 to generate novel perspectives on inter-disciplinary Area Studies research. Comprised of six research institutions with regional expertise covering Afghanistan, Iran, Kazakhstan, Kyrgyzstan, Nepal, Northern India, Pakistan, Tajikistan, Uzbekistan and Xinjiang, the network aims to further an understanding of the interactions of individuals with a connection to places from eastern Iran to western China and from the Aral Sea to northern India. In doing so, it intends to contribute to overcoming the neglect of non-‘Western’ epistemologies, insights and forms of knowledge generation, as well as to close certain gaps between systematic disciplines and Area Studies.

The research within the network has centered on figurations, defined as specific causal and functional connections making up constellations (e.g., familial, religious, or economic networks). During the first funding phase of the project (2011-14), micro-level empirical research focused on figurations related to three thematic concepts: conflict, migration and development. Since early 2015, the network has begun a second funding phase in which there is a synthesizing of earlier research. We are beginning in-depth analyses of how spatial realities are constructed by the movement of people, goods and ideas, as well as how these emerging constructions – with their limiting borders and boundaries – enable and constrain mobility. Physical and social mobility, as well as imagined/mental mobility, are all considered in this context. Our overarching research questions include: What, in particular movement, makes borders and boundaries take on significance? In turn, what causes their meaning to be altered or even lost? Within and across limiting components (e.g., geographic, political, socio-cultural and/or ethnic borders and boundaries), which factors contribute to im(mobility)?

Based on this extensive research and diverse analyses thereof, we are aiming to collectively elaborate a Crossroads Perspective for understanding complex webs of ties and their spatial dimensions. This non-prescriptive selection of conceptual and methodological tools for rethinking how to conduct research on fluid, dynamic and complex phenomena will be articulated at our conferences and workshops, in publications including an Area Studies textbook, and in teaching, including at the new ‘Global and Area Studies’ graduate program at the Humboldt Universität Berlin, one of the network institutes. The Crossroads Perspective will consist of a methodological approach (‘Follow the Figuration’), as well as an ethical component, to guide Area Studies researchers in reflecting on their position in relation to their subjects, as well as the tangible impacts of the research they conduct. The Crossroads Perspective will also contain a tool-kit of concepts which have proven resilient in our empirical analysis of, for example, bordering processes in Kashmir; cross-border bazaar trade between Kyrgyzstan, Kazakhstan and China; and Baloch networks rooted in Afghanistan, Pakistan and Iran.

The competence network understands itself as a mediator between the academic study of Crossroads Asia and efforts to meet the high demand for information on this area in politics and the public. Findings of the project will feed back into academic teaching, research outside the limits of the competence network, and public relations efforts. Further information on Crossroads Asia is available at www.crossroads-asia.de.

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