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THE RED GOLD OF SERBIA
A HISTORICAL ETHNOGRAPHY OF SERBIAN RASPBERRY PRODUCTION FOR THE GLOBAL MARKET

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Abstract

This paper presents the first historical ethnography of raspberry production in Serbia, using an example of two typical actors in a field of entanglement between local production and kinship, global markets and politics of science. Introducing a small-farming household and a manager-agronomist, it disentangles how raspberries became a major export commodity – the red gold of Serbia. This economic success is traced to configurations of the socialist Yugoslav development project since the mid-1970s, when the agricultural cooperative Arilje in southwestern Serbia assembled a complex production, processing, transport and commerce network at the intersection of state-financed science and technology and small-scale farming. During early post-socialism, this cooperative innovation became radically dispersed and production skyrocketed. However, this competitive fragmentation unravelled the collaboration between agroscientists and farmers and aggravated the problems these actors face today, including labour shortages and price fluctuations because of a diminishing 'quality' of 'their' product.

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Introduction

Arilje is a peaceful town of 7000 inhabitants located at the confluence of two rivers in southwestern Serbia.[2] Its main square, bordered by a park and the so-called 'Circle of Culture' – a thirteenth-century Orthodox church dedicated to St. Achillius and flanked by an Ottoman-era former schoolhouse (now an art gallery), a fin de siècle library, and a house of culture (*sokolski dom*) with a youth centre and tourist information office – is an obligatory stop on the evening promenade through the pedestrian zone (*korzo*). Among the lawns, trees and flower beds stand a few statues. Near the house of culture is a monument to the raspberry – a realistic life-sized bronze sculpture of a smiling young woman wearing a summer dress, standing on a pedestal and casually balancing a crate filled with raspberries between her left hand and hip while picking another berry with her right hand.

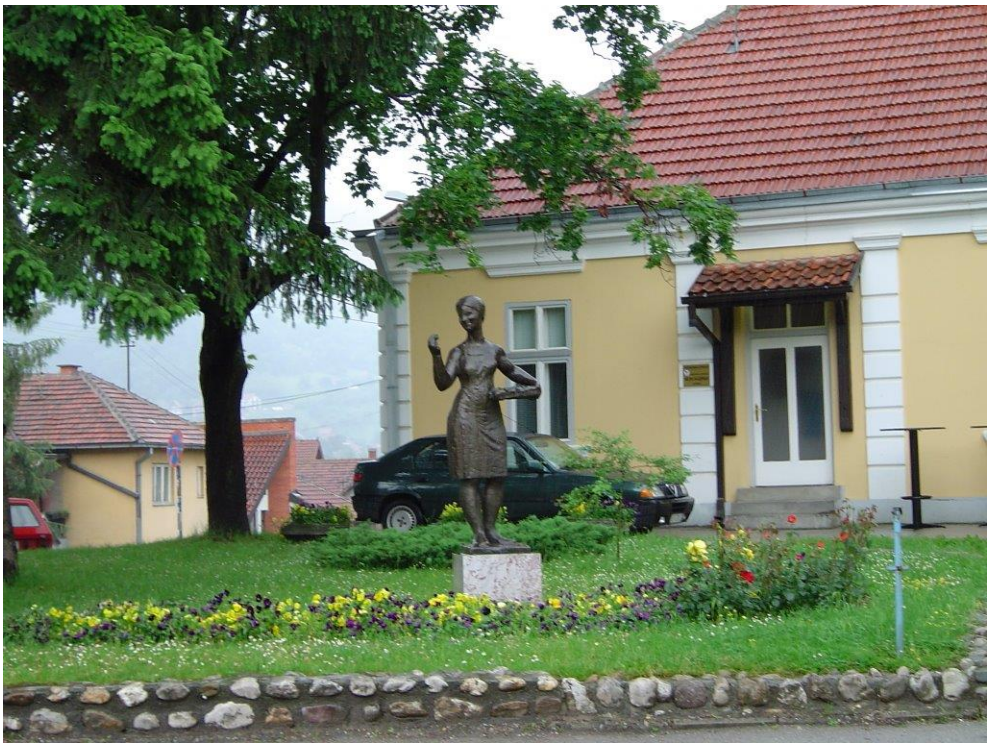

Figure 1: The raspberry monument.[3]

On 22–23 June 2012, this square hosted the opening ceremony for the first 'Raspberry Days' organised by 'Raspberries across Borders', a project funded by the European Union as a cross-border collaboration between Serbia and Bosnia-Herzegovina. Among the attendees waiting for

[2] Names of interview partners are anonymised, except for public figures like Professor Petrović.
[3] Source: https://mapio.net/pic/p-10568843/, last accessed 4 December 2020.

the speeches, three female promoters clad in mid-knee, raspberry-red dresses were standing next to the monument.

Figure 2: Raspberry Days 2012.[4]

The event included speeches by the EU's representative in Serbia, the mayor of Arilje, and the project's director, Professor of Agronomy Svetislav Petrović. According to Petrović, the raspberry was the 'question of all questions' (*pitanje svih pitanja*) in Arilje: it contributed five percent of the world production of this fruit and twenty percent of production in the Republic of Serbia and it accounted for fifty percent of employment in the municipality. For several decades, Arilje had achieved world records in yield per area and quality and was therefore known unofficially as the 'World Raspberry Capital'. At the same time, the town's agronomists and scientific workers, working closely with the producers, had made important contributions to raspberry science both at home and abroad. All this showed, Petrović continued, that Ariljans should constantly improve primary production technology to enhance quality and minimise producer costs. In light of this, he announced the initiation of a new project 'Advancement of Processing Technology and New Raspberry Products'.

[4] Picture taken from the undated entry '*Dani Maline*' (Raspberry Days) on the website of the Municipality of Arilje, which also provides a more detailed account of the event (see http://arilje.org.rs/aktuelnosti/vesti/798-dani-maline?language=sr-YU&galerija798_0=3, last accessed 4 December 2020).

Several things are remarkable about this small ceremony. First, the monument to the raspberry on which the promoters modelled their self-presentation reminds us that all inventions of tradition are embedded in preceding socio-political processes (Hobsbawm and Ranger 1983).[5] The circa-2000 monument differs from the historical gravitas of landmarks like the more modernist-abstract sculpture against fascism a few metres away in catering to a naïve art sensibility, even though – or rather because – its sculptor Velimir Karavelić is a renowned contemporary artist. Why the picker was portrayed as a maiden – in Arilje virtually everybody picks regardless of age or gender – is unclear, but the artist might have intended to evoke common associations of freshness, sweetness and hope.

Second, as the speeches suggest, Arilje has prospered for decades from raspberry production for global markets.[6] Over 4500 small raspberry farms are dispersed through the surrounding twenty-one villages and represent a significant side income for most of the municipality's 18,000 inhabitants. Ariljans like to invoke the nickname 'World Raspberry Capital' and boast that raspberries are 'the red gold of Serbia'.

Third, despite the achievements of the past, much scientific and technological effort towards improving quality and diversifying processing along international standards was needed if Arilje's farmers and entrepreneurs wanted to keep prospering from the raspberry.

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To explain how Arilje has become the unofficial world capital of the raspberry, this paper proposes a historical ethnography of a setting in which local production and kinship, global markets and politics of science are entangled. First, it outlines the theoretical framing for research on Serbian raspberries, the 'red gold of Serbia', as a post-Yugoslav companion species to humans that helps us discover surprising ruptures and continuities in Serbia's transformation from socialism to capitalism. Second, it 'assembles partial perspectives' (Hoag 2011) by sketching two case studies that have overlapping yet partially diverging positionalities in the Serbian section of a global crop value chain and highlight different phases in the development of the red gold of Serbia. On the one hand, the paper introduces a household of two brothers who are experienced raspberry farmers but struggle with failing health and labour scarcity. On the other, it returns to the senior raspberry expert from the opening vignette, Professor Petrović,

[5] The fifth and final Raspberry Days were held on 8–9 July 2016. Low crop prices and labour shortages in 2016 might partially explain the lack of enthusiasm for continuing the festival.

[6] According to the mayor's speech at the ceremony, Arilje produced 15,000 tonnes of raspberries in 2011 (see footnote 4). This amounted to eighteen percent of Serbian and three percent of world production (measured at 83,600 tonnes and 438,400 tonnes, respectively) (Petrović and Leposavić 2016, 9–10).

who was part of the team that assembled Arilje's raspberry production network during socialism and has continued to work to improve the sector.

Why study raspberries anthropologically? The wild *rubus idaeus*, a species in the *rosaceae* (rose family), grows in thorny thickets in woodland clearings in the Northern Hemisphere. The berries, typically red, and more rarely yellow, purple or black, are aggregates of dozens of drupelets without a central core: that is, the mature fruits easily separate from the receptacle upon picking. At first glance, the delicious and delicate berries seem an almost romantic, ephemeral fruit of summer. Until a few years ago, even garden varieties had to be eaten within a day of being picked or else immediately processed into jams, syrups or liquors to avoid spoilage. How, then, did raspberries become a multi-million-dollar industry employing thousands of workers? How has this global commodity market become a major source of export revenue for Serbia and one of the few economic sectors that have thrived there during four decades of political and economic hardship that have included the IMF-imposed structural adjustment programme of the 1980s, the wars and embargo of the 1990s, and several waves of neoliberal privatisations? It is a puzzle how raspberries survived the end of Yugoslavia in what has been described as the 'desert of post-socialism' (Horvat and Štiks 2015).

But raspberries more than survived, they prospered. Many interlocutors identify raspberries as a 'Serbian brand' and remember how the prime minister in 2001, Zoran Đinđić, considered declaring them a 'strategic product' (see Zorić 2011). At that time, shortly after the revolution that ousted Milošević, raspberries were Serbia's most important export commodity, as a representative of the German chamber of commerce at the time recalled to me in a 2016 interview. For decades, approximately one in seven raspberries produced worldwide has been grown in Serbia.[7] In Europe, Serbia vies with Poland for leadership in raspberry exports, followed by Spain and newcomers like Ukraine. Rather unusually when compared to the major transnational competition, Serbian raspberries are typically grown on small open fields, providing a supplementary livelihood for thousands of smallholders, townspeople owning weekend house plots, and day labourers. The berries typically come from plots of up to half a hectare, are handpicked by a few farmers and labourers, and are frozen at approximately six hundred refrigeration plants; then over ninety-five percent are exported to (in order of net value)

[7] According to my own calculation, between 2006 and 2018, Serbia produced 14 percent of raspberries worldwide (see the statistics provided by the Food and Agriculture Organisation of the United Nations online, http://www.fao.org/faostat/en/#rankings/countries_by_commodity, last accessed 4 December 2020; see also Petrović and Leposavić 2016, 9–10). Already in 1981, Yugoslavia produced 8 percent of the world harvest, at a time when Serbian raspberries made up 97 percent of the Yugoslav production (see Šoškić 1988, 12–16).

Germany, France, Belgium, Sweden, the United Kingdom, the United States and other countries (RZS 2016, 323).[8]

This paper is based on a total of four months of fieldwork and participant observation between 2016 to 2019, supplemented by documentary research.[9] I conducted eight narrative-biographical interviews with pioneers of the Serbian raspberry sector and dozens of interviews with farmers, labourers, entrepreneurs, scientists and local state officials. While also drawing on my previous doctoral research on local state relations in central Serbia, this fieldwork was mainly conducted in the municipality of Arilje, supplemented with shorter field trips within Serbia and to Bulgaria, Bosnia-Hercegovina, Hungary, and Latvia.

The first section sets out the theoretical framing. The second section describes the field and embeds it in the history of Yugoslavia. The third section, by way of two case studies, explains how the Serbian desire to produce raspberries for the global market emanates from the experiences of three generations that learned to appreciate the difficult-to-grow yet ultimately lucrative berries.

Raspberries as Post-Yugoslav Companion Species

The Manchester School (e.g. Gluckman 1958; Turner 1996; Long 2001) and later Marxian anthropologies since the 1970s have already studied how the state and capitalism were co-produced in the global world system and became entangled in multiple forms of social organisation, including kinship (Wolf 1982; Elwert 1983; Mintz 1985; Comaroff and Comaroff 1997; Graeber 2011). [10] Such entanglements were studied in more detail, in turn, by historians and historical anthropologists, who proved that despite drastic transformations kinship and economic arrangements were never decoupled for propertied classes like Euro-American farmers and family businesses (Sabean 1998; Narotzky and Smith 2006; McKinnon and Cannell 2013). For instance, the Western patriarchal bourgeois imaginary that emerged in the

[8] In other regions, much larger plantations are run as agribusinesses. For instance, the raspberry farms of Berry Mex, a Driscoll's supplier in Baja California, Mexico, extend over tens of hectares of state-of-the-art green and shade houses, intensively overexploit the aquifer, and their disciplinarian systems of production and on-place packaging superexploit hundreds of semi-permanent indigenous workers. Comparable conditions exist in Spain and Morocco (Zlolniski 2019).

[9] Archival research was limited as the documents of the bankrupt cooperative 'Jedinstvo' Arilje were unavailable.

[10] Nancy Fraser and Rahel Jaeggi have insightfully condensed long-standing debates in the critical social sciences to argue that capitalism is a recurring historical process of value extraction in three 'hidden abodes'. First, 'original accumulation', i.e. imperialist and other enclosures, means the production of 'second nature' by enforcing relatively exclusionary property relations on 'first nature'. Second, 'exploitation' means (according to the classic labour theory of value) that labour power produces value for capital by creating more wealth than it is being paid for. Third, 'reproduction' covers the hidden costs of care work that is usually outsourced to the less powerful, including women, people of colour, etc. (Fraser and Jaeggi 2018, 35–37, 90–101, 135–136).

eighteenth century came to portray kinship as the source of intimate love and care, nurtured by women and defying the cold rationalities and brute passions of the 'masculine' market place, but it was in practice just the other face of business: it glued the enterprise together (Kuper 2010; Johnson 2015). Nonetheless, in the nineteenth and twentieth century this binary, heteronormative bourgeois imaginary was radically dispersed among both upper and lower classes, where it served to legitimate gender divisions in un(der)paid care work and even framed debates about the state in anthropology (Alber and Drotbohm 2015; Thelen and Alber 2018). The more recent economic effects of the transformations of gender relations on family businesses brought about by the feminist movements since the 1960s have been studied by Marxist-feminist scholars (e.g. Yanagisako 2002), who have in turn trained a new generation of economic-political anthropologists (see Bear et al. 2015; Stout 2014).

One field in which kinship and capitalism produce frictions, as indicated before, is farming, and rural anthropologists have studied the relationship between social values, political economy, and the environment since their subfield emerged (Ofstehage 2020).[11] In the former Yugoslavia, anthropological studies of rural areas flourished until the 1980s (Filipović and Hammel 1982; Halpern and Kerewsky Halpern 1984; Bringa 1995), but there was comparatively little work on post-socialist agricultural transformations.[12] Meanwhile, post-socialist rural anthropology elsewhere generated heated arguments about how state-induced privatisations of collective property and other enclosures of the socialist commons triggered double movements (see Hann 2002, 2007).[13]

[11] In *Empire of Cotton*, Sven Beckert traces how cotton, one of the first global agricultural commodities, connected cities with the global countryside and shaped a new world. Around 1500, European merchants initially diverted cotton from the Indian Ocean trade to buy slaves and ivory in Africa; then they sold the slaves in the Americas, making cotton a link in the emerging 'Black Atlantic'. The latter had been violently established in what decolonial thinkers term the 'first modernity' of colonial genocide and epistemicide (Mignolo 2002). Beckert (2015) translated this moment into the travelling concept of 'war capitalism', which enters into dialectical relationships with merchant capital, and later industrial and financial capital. A contemporary example of how war capitalism operates may be how in Kalimantan forests have been violently plundered at a capitalist frontier and 'translated' into a global resource by Japanese wood traders (Tsing 2004).

[12] Miloš Matić analysed the *longue durée* of the exchange of goods in Serbian peasant culture (2009), and Slobodan Naumović (2013) the impacts of an EU twinning project in agricultural policy design, and of land-grabbing on local social relations in Northern Serbia. Environmentalist anthropology also revived interest in the rural question: for example, see the recent collection of short essays 'Green capitalism and its others' (Rajković 2020) .

[13] However, not all peasantries participate in double movements. Tania Li observed how in the 1990s original accumulation on Sulawesi took place through peaceful enclosures by indigenous neighbours scrambling to produce plantation-based commodities for global markets (Li 2014). Similarly, the farm crisis in the United States in the 1980s revealed that rural communities do not necessarily shelter their members from being crowded out by mechanisation, financialisation, and scientific standardisation. Instead, failure to keep up with capitalist innovation was typically understood as a personal moral failure, even by the farmers themselves (Dudley 2000).

After a general downturn in anthropological interest in agriculture in the 2000s, several recent studies have focused on global, national and regional agrifood commodity chains in the Global North and South (Fischer and Benson 2006; West 2012; Besky 2013; Paxson 2013; Weiss 2016). As one early study has shown, Maya peasants embraced new cash crops like broccoli because they 'desired' to participate in 'development' and, more prosaically, to secure the well-being of their children (Fischer and Benson 2006). The present study takes up the interest in farmers' aspirations. Like Maya broccoli, Serbian raspberries are produced by small farmers as a global crop valued for its health properties. But as I will show, raspberries in Serbia were introduced more gradually and especially differ in having been the object of more local innovation than broccoli in Guatemala, which was introduced according to a model packaged by US supermarkets and development agencies.[14]

Serbian raspberry farms are increasingly becoming 'conventional' – cultivated using agrotechnological chemical treatments – but their relatively small fields and egalitarian work practices are a far cry from the large-scale, high-tech, disciplinarian, exploitative and extractive raspberry plantations operated in Mexico by US agribusiness and its subsidiaries (Zlolniski 2019).[15] Thus, while the Serbian small-scale open fields do shape their environment, they are at least as much shaped by it. In this sense, Serbian raspberry farming appears to conform to what Jan Douwe van der Ploeg (2008) has named 'co-production': how different beings and entities – in his example, land and animal husbandry – are entangled by 'new peasants' in Latin America and Europe and produce sustainable rural development from below. But *pace* van der Ploeg, Serbian farmers would not have been able to invent and scale up Arilje's raspberry production without systematic collaboration with 'modern' agri-science.

In this context, the socio-legal scholar Sheila Jasanoff, inspired by environmentalist and postcolonial feminist concerns, has suggested the term 'co-production' to bring out how '(t)he making of science is also political' (Jasanoff 2004, 21). She distinguishes her approach to science and technology from both an optimistic view of it as progress and a pessimistic one that sees technology as disciplinarian, despotic and an iron cage. Admirably, she stakes out her project as 'profoundly humanistic, stressing the roots of science and technology in human agency and will, but denying any singular logic or design' (Jasanoff 2004, 37). Anna Tsing

[14] For Andrea Behrends and her colleagues (Behrends, Park, and Rottenburg 2014, 1–2) a model is 'an analytical representation of particular aspects of reality created as an apparatus or protocol for interventions in order to shape this reality for certain purposes'. They stress that such blueprints cannot travel to new sites without translation, but need to be 'conveyed, carried, picked up, called for and interpreted by various actors'.
[15] See footnote 8.

takes this thinking further and sets out to rethink post-capitalist futures by following the webs of translation that tie small organisms to large issues along commodity chains. In her *Mushroom at the End of the World* (Tsing 2015), the mushrooms that spontaneously grow between and nurture derelict forest plantations become a 'companion species' (Haraway 2008) that, according to Tsing, helps us think about life on a damaged planet. The mushrooms' practices, in her rendering, reshape and replenish environments depleted by previous overexploitation, and thereby reinvigorate human practice (e.g. by foresters, hobby and professional mushroom pickers, traders and scientists).

I argue that, unlike these mushrooms that spontaneously grow in 'patches' amid 'capitalist ruins', Serbian raspberries are grown consciously by their farmers in small plots amidst the capitalist ruins of a still surprisingly persistent socialist agricultural developmentalism. The red gold of Serbia, once assembled cooperatively as a 'modern' mode of farming and now increasingly branded as 'traditional', has not only survived but thrived under capitalist competition, even though the cooperative has been destroyed. Raspberries are thus a post-Yugoslav companion species that may help us find surprising ruptures and continuities in Serbia's transformation from market socialism to market capitalism.

Raspberries in Arilje

When Vasilije Jovanović gave me a tour through Arilje municipality in 2018, he demonstrated a remarkable spatiotemporal imagination. As we drove along the Moravica river valley past numerous raspberry fields interspersed with family homes, Vasilije repeatedly exclaimed how a certain structure had been 'built by the raspberry'. This attribution of quasi-agency to the raspberry was a metonym for the material benefits that could accrue from cultivating raspberries for the world market. Vasilije also remarked on how Arilje municipality had transformed in recent decades. However, his largely developmentalist account was not nuance-free: he maintained that the best raspberries grew on isolated fields in the higher altitudes on the hill slopes, rather than in the monocultures in the valley, where pests and diseases spread more easily. This resonated with his and his brother Marko's practice of growing raspberries in the hills of Dobrače (as I will show in my first case study), but also with contemporary agricultural knowledge, as a young agricultural engineer shared with me in an interview in 2016.

Born and educated in Belgrade, this agricultural engineer had lived in Arilje since 2011 and was initially employed by the EU project *Ariljska Malina* ('Arilje's Raspberry') (RRAZ 2011). After two years, the project abruptly ended and he found employment as a quality control

officer at a private refrigeration plant. He recalled to me his initial surprise that Arilje's villages seemed more developed than communities much closer to Belgrade. In the municipality of Arilje, such overlapping and sometimes contradictory narratives about raspberries circulate freely. Entangling raspberries with modernity and tradition, progress and decay, these stories are a staple of everyday conversation and create webs of relationships and significance.

But raspberries not only influence the talk but also the actions of thousands of households. This is how Goran from the central Serbian lowland village of Donje Selo explained in 2012 how the raspberry production cycle structured his family life:

> Sanja [his wife] goes up there [to the high-altitude farm of her parents in Arilje municipality] in the second half of March, beginning of April, starting to trellis the raspberries. Then comes the spraying, fertilising. From the winter protection until the harvest we have six to eight sprayings. The harvest begins in the last week of June or first week of July, when my wife and the [two teenage] children go up there together with two workers that we pay. The harvest lasts forty-five days, until mid-August, sometimes longer. Our area of approximately half a hectare yields some twenty tonnes per hectare. Meanwhile, I stay down here.

As Goran's quote suggests, raspberry work is labour intensive, and productivity per hectare is high, especially in Arilje.[16] Gaining access to valuable plots and know-how for raspberry production often also necessitates significant investments in long-distance kinship, including face-to-face and telephone communication, travel time, and tenacious work. In passing, the work in the field also structures the relations between the generations. It is widely believed to build character and a strong work ethic among the children, who are expected to help in the fields from the age of ten. Thus, the librarian of Arilje glowingly praised her teenage daughters' skill at picking quickly yet gently: 'She is like an octopus (*hobotnica*)'. It cannot be ruled out that some kids might enjoy the work, which is interspersed by joking and horseplay, despite the monotony of picking raspberries under the scorching sun. However, a young agricultural engineer who works for a Western NGO helping female-headed households to start raspberry farming confided that 'I'm sick of the raspberry, and I studied to get away from it'. Immediately,

[16] The former world record holder for yield, Milomir Stojić, claims to have consistently produced 28–31 tonnes per hectare of raspberries of the floricane 'Willamette' cultivar, and 24–27 tonnes/hectare of the primocane 'Meeker' (the average productivity in Serbia is 6 tonnes/hectare, in Arilje 10 tonnes/hectare). Stojić's general advice is to avoid herbicides and chemical fertilizers in favour of hoeing and manure, and to use family work instead of paid labour. At the same time, after thirty-five years in the business, he has scaled up his fields to six hectares of raspberries for fresh export (planted with the recently developed cultivars 'Tulameen' and 'Polka'), and securitised his investment by installing anti-hail nets and drip-tape irrigation (Agropress 2019). I estimate that Stojić employs sixty workers in high season to produce twenty tons per hectare, the minimum below which in his view production would 'not pay'. According to a calculation by Petrović and Leposavić (2016, 247–49), a technologically sophisticated field like Stojić's costs 40,000 euros per hectare.

though, he qualified, 'but it did pay for my education'. Similarly, the pensioner Aco, who was born in the village of Dobrače (where agricultural fieldwork for this paper was conducted), told me that his parents had paid for his education in Belgrade with their raspberries and that every summer he had helped them with the picking. The local prosperity, the pride peppered with ambivalence, and the intensive work habits the raspberry bestowed on Arilje have altered the rural-to-urban outmigration that social scientists have documented in the region since the 1960s (Puljiz 2013; Šuvar 1988). While many family homes in the municipality of Arilje's depopulating villages have been converted into weekend houses, during a temporary reverse migration each summer their owners 'come up' and work with relatives and previously unrelated labourers to take care of their raspberries.[17]

In the late 1950s, the Yugoslav economic vision of self-management of 'social property' (property belonging collectively to workers and society rather than the state, see Bonfiglioli 2019, 14) had entered the countryside, and plans for new agronomies of scale emerged. State-supported vertical integration processes in the cooperative sector became locally institutionalised in 1960, when Dobrače cooperative (established in 1933) was incorporated together with two neighbouring villages into the cooperative of Latvica village. In turn, in 1967, the Latvica cooperative joined two other cooperatives to become a municipal enterprise, 'Voćar [Fruit-Grower] Arilje', that together with similar enterprises in other parts of Serbia formed the big corporation 'Voćar Belgrade'. From then on, Latvica operated the agricultural extension station of Voćar Arilje, scaling up earlier experiments with raspberry production methods that had started in Dobrače with a municipal raspberry nursery in 1958. From 1975, when Voćar Arilje became part of the municipal multi-purpose enterprise 'Jedinstvo' (Unity), its now-combined agricultural production, processing, trade, and service (transport and construction) divisions jointly developed the potentials of the red gold of Serbia (see case two below).

During post-socialism, Serbian cooperatives like Jedinstvo Arilje have been fragmented by a protracted restitution process and neoliberally inspired policies, starting with the Federal Privatisation Law of 1990 adopted by Yugoslavia (Naumović 2013; Thiemann 2014, 2019). By 1993, the once again independent Latvica cooperative could no longer enforce its contracts with farmers, who began selling their raspberries elsewhere, declared bankruptcy and discontinued

[17] Since 2010, Arilje artists who had sought educational and professional opportunities abroad have returned every summer to organise 'ARLEMM', a summer school for musically talented children. The supporting program features high-end international acts and has gained regional recognition.

its agricultural extension services.[18] In 2012, the rump cooperative based in downtown Arilje declared bankruptcy, too, despite its impressive, historic, prime-location building and efficient modern Swedish refrigeration equipment.

In the early 1990s a frenzy had set in, resembling a 'shopping forum'.[19] New private refrigeration plants sprang up and undermined the contractually-guaranteed quasi-monopoly that the cooperative had built up since socialism by competing for the raspberries directly at the farm gate. The private entrepreneurs could offer higher prices than the cooperative because they lacked the latter's' scientific-technological apparatus and thus had lower overhead. The initial grading of raspberries into three qualities and even the outright refusal of substandard produce were effectively abandoned. Producing the raspberries became both easier and more lucrative for the farmers, but this proved to be a mixed blessing. What was once organised strictly according to the needs and possibilities of household work was now achieved by hiring additional day labour during the harvest season. Reduced controls quickly translated into deteriorating quality and turned Serbian raspberries from a highly sought commodity into one that could be emulated by the transnational competition. Within the global market, which slowly neared saturation, the average price for Serbian frozen raspberries depreciated.

However, these future problems were not yet apparent in the early 1990s. Despite the embargo imposed on Serbia because of the 1991–1995 post-Yugoslav wars, the international demand remained so high that raspberries could be exported to the West via Macedonia or Croatia. The primary producers became accustomed to looking for the most lucrative offers, which combined high prices and lenient controls with informal mid-season credit. Soon, the owners of cold storage facilities tried to undercut such 'forum shopping', but were never fully successful. After initial informal coordination between operators in the most intensive production regions, including Arilje, these formalised their contacts by founding the Association of Cold Storage Facilities in Belgrade in 2004.[20] Having observed these developments, farmers like Goran speculated that the biggest facilities engaged in oligopolistic price-gouging in coordination with the trade ministry.

[18] Remarkably, the municipality advised the cooperative not to sue defaulting farmers (Interview with the last head of Latvica cooperative, Slavoljub Radojević, 18 July 2018).
[19] On forum shopping and shopping forums in legal disputes, see Benda-Beckmann 1981.
[20] See the Serbian supplier website '*baza dobavljača*' (http://crm.siepa.gov.rs/suppliers-srb/supplier.php?ID=2425, last accessed 4 December 2020). Small operators cannot handle the grading, sorting and packaging for the international market; instead they freeze the original product and send it in boxes to the bigger ones. Because they felt underrepresented, some founded in 2018 on Facebook the Association of Small Cold Storage Operators (https://www.facebook.com/udruzenjehladnjaca/, last accessed 4 December 2020). The page has not been very active.

While the nation-state never effectively took over the role of quality enhancement that Latvica's extension service had once played, *transnational* statecraft gained in importance. Since the 1990s, the regulation of imports by the EU and its corporate food sector had already been incrementally toughened, making market access conditional on compliance to new food hygiene norms. The emerging transnational configuration has been dubbed 'supply chain capitalism' (Tsing 2009; Freidberg 2020). Since 2011, transnational quality standards have been (re)introduced in Arilje through EU projects including the one dedicated to the 'Advancement of Processing Technology and New Raspberry Products' announced at the first Raspberry Days in 2012. Perhaps the 2011–2012 800,000 euro EU project *Ariljska Malina* (Arilje's Raspberry) (RRAZ 2011) had the deepest impact: it employed two dozen agricultural engineers to train and certify five hundred cold storage facilities and farms for the Global G.A.P. (Global Good Agricultural Practice) standard.[21] In 2018, an association also bearing the name *Ariljska Malina* promoted the recognition of Arilje's raspberry as a product of Geographical Indication (GI) in collaboration with the United Nations' Food and Agricultural Organization (FAO). Slobodan Obradović, its president, believed that the GI may 'strengthen the entire supply chain, building trust between local producers, processors and retailers, and ultimately consumers' (FAO 2018).

For the individual farmers, quality concerns were closely entwined with concerns about labour. In the first decades of the post-socialist period, the official rate of unemployment in Serbia fluctuated between about twenty and thirty percent (RZS 2008, 2010, 2014), ensuring cheap labour for the 'small open-air factories', as the raspberry plots are also called. But in the 2010s a government economic policy that has heavily subsidised jobs and deregulated work standards to attract foreign investors caused both industrial employment and emigration to increase.[22] While previous post-socialist governments already sought foreign direct investments (FDI) by globally operating firms – for instance in the form of strategic partnerships in joint ventures with Fiat or Yura (Radenković 2016) – the present Vučić government has scaled up such efforts (Dragojlo 2017; Mašina 2017).

[21] Quality concerns led to the multiplication of certificates. Through strict quality controls – some meant to protect the supply chain capitalists, others the customers – grading and sorting of the frozen fruits have been reregulated. The biggest refrigeration plants advertise their compliance with multiple standards (e.g. ISO 9001, HACCP, various kosher certificates, FSSC 22000, IFS, and Global G.A.P.). While these standards are partly enforced by underfunded Serbian governmental laboratories and extension services, a certification market for private domestic and foreign consultants has emerged, the costs for which have been outsourced by the supply-chain to the Serbian cold stores.

[22] Statistical methods were changed in 2016. It now only takes as few hours of paid work per month for a person to be counted as employed, which lowered the rate of unemployment to 13 percent in 2018 (RZS 2019, 69, 76).

Small farmers like Vasilije and Marko attempted to counter the ensuing difficulties of finding pickers by cultivating a steady workforce through practices of doing kinship.

Vasilije and Marko: Recruiting Labour – Doing Kinship

On the afternoon of 11 July 2019, I helped Vasilije's and Marko's uncle Aco pick raspberries for several hours in his plot in the small creek valley just below their village neighbourhood in Dobrače. His plot and those adjacent were like vineyards, with straight rows of green plants standing three metres apart and about a metre and a half high. Around six o'clock, as the field became shady and cool, I left to join Marko and his team of pickers mid-hill. After crossing the creek and while walking along the slope, I reached Aco's plot first, then one belonging to his nephews Marko and Vasilije that was wildly overgrown with vines, and then his brother's, in similarly bad shape. The trail now wound a few hundred metres uphill, through a mosaic of overgrown pasture and new patches of young forest, until it reached Vasilije's and Marko's second plot, with some 20 rows. This plot was still in the sun and scorching hot. Blue boxes filled with raspberries stood stacked at the side, in the scanty shade of a tractor trailer. There were six pickers in the field: Marko (in his late thirties), an elderly man, three elderly women and seventeen-year-old Mara. The usual rounds of greetings ensued, but Mara only mumbled her greetings as she crouched in her row, wearily picking some low-hanging raspberries. Just two days before, I had driven her and her aunt from the latter's home, an hour away. Mara, who had already been picking peaches in her relatives' orchards for several weeks, seemed exhausted. She had barely integrated into the group, perhaps partly due to the huge age gap, but also partly because everyone's morale was low: during the rain yesterday, Mara's aunt had quarrelled with the male picker, who had shied away from her jokes about his picking skills. In any case, Mara had asked for her cousin to pick her up in the evening. Unfortunately, though, she could not rest yet.

A slight breeze set in. Unlike those in the valley, the rows were so high here that I had to stretch to reach some of the fruit, and the slope so steep that I needed to pay attention to keep my balance. And although some raspberries fell apart or were malformed by the heat, others were perfectly shaped and coloured and up to four centimetres long. You could collect four boxes on one side of the fifty-metre-long rows but Marko said a lot of raspberries fell down because they were overripe. 'If we had only had enough workers right at the beginning of the harvest', he continued, they would not have lost them. Regrettably, their third plot, on the upper end of the hill, would have to wait until tomorrow to be picked. But on the upside, with Aco's

son on his way from Belgrade to help them out, they might soon be able to stop worrying about pickers. Furthermore, if another cousin joined for the weekend, as he had vaguely agreed to, they could even start clearing the vines in the lower field. When we returned to Marko's and Vasilije's house on the old garden tractor after seven, we had 132 boxes in the trailer. Later, Marko delivered the boxes to the refrigeration plant. When he returned in the dark and his workers asked how much they had harvested today, he could tell them it was a solid 248 kilos of Grade A raspberries.

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During my fieldwork, farmers like the brothers Marko and Vasilije (and even their labourers) complained that they were short-handed and could not reach all the plants within the necessary two days: because of this, it would become more difficult to pick the raspberries and their quality worsened.[23] Raspberry farmers typically paid roughly seventeen euros (2000 Serbian dinars) –double the national going rate for agricultural day labour – and provided three meals and drinks, as well as housing free of charge. However, the work day was quite long (up to twelve hours) and it was becoming ever more difficult to find workers.[24] The weather had also become more volatile in recent years: for instance during the strong rains that had poured down the previous day, they had only picked fourteen kilos of Grade B raspberries and then sat idly in the house, even though one picker was normally expected to harvest at least thirty kilos and an especially good one could harvest fifty.

Since it was already mid-season, the brothers were still barely able to find the six good pickers needed to work their three plots totalling 0.6 hectares, even after two weeks of incessant phone calls by Vasilije, borrowing workers from other farms, and scheming to transport labourers to the village (and even enlisting this ethnographer to fetch them). They considered the two experienced older female workers, who had returned several consecutive years from

[23] In 2019, the farm gate prices resembled those of 2005: 1.23 euros (145 dinars) per kilo of Grade A raspberries and 68 cents (80 dinars) for the Grade B, which included, for example, raspberries picked in strong rain that were liable to get mouldy before they could be frozen. Even when they were deep-frozen in time, such raspberries only produced *blok* (solid frozen blocks) instead of IQF (individual quick frozen) *rolend* quality (from German for rolling). *Blok* needs to be processed further on an assembly line by being crushed into *bruh* (whole and broken pieces), from which *rolend* can be extracted. In a later step the broken pieces can be ground into *griz* (crumbles).
[24] To retain dependable and efficient workers, some farms have started to pay up to 30 euros (3500 dinars) per day, plus room, board, and transport. Such wage increases are in line with those recorded throughout Europe. For instance, in Germany agricultural hourly wages almost doubled from 5 euros to 9.35 euros (as of 2020) after the minimum wage was introduced in 2015.

Kragujevac and Kraljevo, 'already family'.[25] These women regularly handled the catering and supervised the crew in the fields when the brothers were away for dialysis.[26] Mara's efficient aunt and the inexperienced and less efficient man from Kragujevac were also close to retirement age, but it was unlikely that they would return the following year. The farmer Marko was not yet forty, and was experienced and efficient, but he left every two to three days for dialysis treatment in Arilje town, as did his brother Vasilije, who was also in charge of the catering. The cousin they were expecting, a bus driver in Belgrade in his forties, had taken two weeks of his summer holidays to help.

As their trouble finding workers that were neither schoolchildren nor pensioners increased, raspberry farmers like Vasilije and Marko grew concerned about whether the dearth of workers – many of whom now make their living in the West – would mean the end of Arilje's raspberries. In the eyes of Marko and Vasilije, the government should have subsidised rural employment or found foreigners willing to work on the Serbian farms during the summer. In general, they were worried because the government did not significantly raise the salaries for essential workers, not even in the public health sector where the brain drain to Western countries was especially pronounced.

The lack of pickers was a double bane to the sector because as soon as some berries went bad it hastened the ripening of the others. Furthermore, a lag in picking made the work more arduous: pickers had to be especially careful about overripe raspberries falling off the plant or, worse still, putting too much rotten fruit in the boxes: this might lead the freezing plant to downgrade the raspberries. Given their shortage of labour, Marko and Vasilije were presently considering abandoning their lowest field: even though it was conveniently located just below their home and near fresh creek water, it was beginning to lose productivity.[27] This plot had

[25] On certain occasions a kinship boundary was discursively resurrected. Thus, when one long-term worker interrogated Vasilije about where he had spent the night, he snapped, 'why do you want to know? You are not my mother'.

[26] Vasilije and Marko had Alport syndrome, a genetically transmittable disease that manifests in the male line, causes kidney failure, affects hearing, sight, bone density, etc. and from which two of their brothers had died. In their thirties, they ran the household alone, as their parents were recently deceased and their sister had married out. Both openly talked about their disease – especially Vasilije, an assertive disability activist and former member of the municipal Parliament of Arilje. In 2016, the brothers received a donation of a used home dialysis machine (worth four thousand euros). From now on, they could stop travelling to Užice for treatment and were visited by nurses at home. As a stable electrical voltage was essential for the dialysis process and not guaranteed in the village, they soon rented a flat in town, adding 100 euros a month to their expenses.

[27] Marko and Vasilije operated three plots, with their uppermost newly planted in 2012 on fallow land owned by their second uncle, initially for use by a cousin from yet another branch family who had since withdrawn from the venture. This plot contained the healthiest and most productive plants, both because the field was surrounded by forest and previously uncontaminated and because its higher altitude reduced heat stress during the increasingly hot and dry summers.

been in cultivation since the 1990s and the plant stock seemed to now be losing vitality as the rows became increasingly overgrown with vines: their blossoms, as the brothers self-deprecatingly jested, were turning it into a 'beautiful flower garden'. Moreover, this downturn in productivity was hastened because their uncles, who had fields in the same valley, needed help with pruning, spraying, and weeding because of their advanced age.

In other respects, at least, their uncle Aco was in good relations with his nephews: they visited daily during the summer, exchanged tools, and ran errands for each other. The brothers drove Aco's raspberries to the refrigeration plant, he often drove them to town for their treatments, and since he could not employ his son profitably at the moment he sent him to Marko and Vasilije. As I would observe during the next two weeks, Aco's son received the same pay as all others. A good worker who lived in the weekend house of his parents and ate some of his meals there, he effectively subsidised his cousins' farm. Thus, practices of growing together and becoming kin – even sometimes where no kinship existed before or where it had to be revived after long spells of physical distance – were essential for farmers like Vasilije and Marko. As in the historical anthropologies of family businesses cited in the theory section above, doing kinship was a common – if unreliable – strategy of access to capital (including land and credit) as well as work and labour. In Marko's and Vasilije's case, doing kinship built trust among the crew, maintained a core group of dedicated workers, and kept the labour costs manageable. This way, they could stay afloat and, instead of ploughing under all the raspberries, they only had to think about reducing their least productive plot.

The question of quantity production, as is becoming clear, is deeply connected to that of quality. For instance, how many raspberries a worker could pick likewise became a measure of the 'quality' of upkeep of the raspberry farm, and of the skills of the individual picker. But how had these quality standards been developed in the first place? To answer this question, in my second example I turn to the earlier scientific-technological organisation of the raspberry commodity chain by socialist-era entities. While this section is based on eight narrative-biographical interviews, it is organised around the life story of Prof Svetislav Petrović, who performed a remarkable dance across several domains: kinship, the local state, cooperative economics, and science.[28]

[28] My interlocutors maintained that there were 'four fathers' of Arilje's raspberry industry and I interviewed three of them in 2017–2018. Besides the former cooperative director, Professor Petrović, I met its agronomical technician and its agricultural engineer. (The cold chain technologist Ljubo Milutinović had already died). The technician, Slavoljub Radojević, had worked in the Latvica agronomic station and had retired by the time Jedinstvo declared bankruptcy in 2012. As a respected yet short-tempered extension worker (*terenac*) hailing from Dobrače, he collaborated closely with the villagers and he continues to sporadically advise his nephews Marko and Vasilije.

Svetislav: The Politics of Science of the Red Gold of Serbia

On 27 August 2017, I joined Marko, Vasilije and two other friends for an interview with Professor Svetislav Petrović, the octogenarian raspberry scientist who had delivered the opening speech at the first Raspberry Days. It had been a challenge to arrange the interview, as my previous attempts to reach him on his mobile phone through agricultural engineers and 'street-level bureaucrats' with whom he had previously collaborated had failed; however, Vasilije had been able to reach him on his landline. The brothers had been born in the same village as Professor Petrović and, as they now learned, their fathers had been friends and his ancestors had been the godfathers of their ancestors. Maybe these family ties were not the main reason why he responded, but by 'locating each other' through 'metaphorical links', the fellow Dobrače natives quickly established common ground for a warm conversation, which took place in a café near Arilje's Circle of Culture.[29] I had leafed through two editions of Petrović's handbook on raspberry production and knew he had chronicled his native village.[30] To my surprise, I now learned that Professor Petrović had also been a pioneer of the industry.

Svetislav Petrović was born in 1937 in Dobrače into a moderately prosperous peasant household with socialist leanings. He became acquainted with raspberry production as a young man when fellow villagers planted small raspberry plots next to their houses, sourcing the plants from a cooperative nursery that was established in Dobrače in 1958. Petrović went to secondary school in Arilje and Užice and studied agriculture in Zemun, near Belgrade. Upon his return to Arilje, he found employment as the municipality's agricultural officer. During the free local elections of the 1960s, he was twice elected to its municipal council (in 1963 and 1967), rose to municipal vice president and was subsequently twice the president of the municipality (1967–1974). In 1974 he became chief agronomist for the cooperative Voćar Arilje, which a year later merged into the mixed agriculture, processing, trading and transporting combine Jedinstvo, where he served as managing director. In this position he encouraged the young team of

The agricultural engineer and writer Dobrilo Nenadić (1940–2019) had been sent for disciplinary reasons from his native Arilje to Latvica in 1980 after writing a political satire in which the authorities recognised themselves. Nenadić authored the first scientific article on the Arilje system of production (Nenadić 1986) and his raspberry cultivation manual, co-written with Radojević and another colleague, appeared in five editions (Nenadić, Radojević, and Novitović 1986). I also interviewed five more 'old-timers' who had worked in Jedinstvo during socialism.

[29] On these techniques in former Yugoslavia, see Brković 2017, chap. 1.

[30] Petrović's solid village monograph on Dobrače appeared in the *Hronika Sela* series published by the Cultural Enlightenment Association of Serbia (see Petrović 2014). With over 900 pages, it is unusually comprehensive for a series that does not always conform to scholarly standards. During 12 years of research, Petrović was assisted by many people, including his nephew, a general physician who ransacked the Yugoslav Archives in Belgrade for two years.

agronomists and technicians from Latvica and sent them abroad to meet German customers and to foreign pomology research centres in England, France and Switzerland for further training. The team experimented with different varieties in close collaboration with cooperating farmers. Initially, the most promising varieties were 'Malling Promise' and 'Malling Exploit'. As the agronomist Slavoljub Radojević told me, Petrović showed the agronomists from Latvica he trusted them by not interfering with their sometimes-unconventional practices and by backing them up when they ran into red tape (I, 18 July 2018).

As a result, the production of raspberries advanced qualitatively and quantitatively. Soon the fruits were no longer stored in barrels with formic acid for syrup production but selected by hand for deep-freezing – initially in the cooperative's repurposed meat-cooling chambers – as deep-frozen raspberries fetched markedly higher prices on the global market than raspberry syrups. The infrastructures that made that innovative shift possible included the emergence of a Yugoslav refrigeration industry in the twentieth century, the expansion of agri-scientific research institutions since World War II and the massive electrification in and extension of paved roads to Arilje's villages since the 1960s. Petrović did not want to hasten the ongoing urban revolution. Instead, he planned to raise the living standards of the villagers. According to him, during the 1970s local households often had several children who had few opportunities to earn money in the region besides small-scale agriculture and animal husbandry as well as a nascent textile and metal industry. Small raspberry plantations based on household labour could produce berries of extraordinary quality as a reliable source of additional income.

In the advantageous political climate of the mid-1970s, Jedinstvo took the opportunity of Yugoslavia's Green Plan (1973–1985), which was modelled after India's Green Revolution and co-financed and organisationally supported by the Yugoslav state and the World Bank (Allcock 2000). Unlike other cooperatives, Jedinstvo raised productivity not only by obtaining inputs like tractors, fertilisers, and pesticides but also by connecting its agricultural extension service with plant breeding institutes and agricultural faculties in Čačak, Belgrade, and abroad. A new mode of production, the Arilje 'espalier system', was taking shape based on the floricane Willamette cultivar: one innovation was to cut the first shoots to allow more sun in the field and stimulate fruiting.[31] Two-year-old plants were trellised in spring and their side-branches

[31] Willamette, a floricane variety (yielding fruit during early summer on its second-year plants) was selected at Corvallis University, Oregon in the United States, in 1936 and put to production in 1943. For four decades it was the major economic raspberry plant in North America (Petrović and Leposavić 2016, 70–71). Hungarian raspberry breeders from the Fertődy Institute told me in spring of 2019 they had been incredulous when the Serbs chose Willamette with its unattractive purple colour and only reasonably good taste over their beautifully shaped, red coloured and aromatic 'Fertődy Juicy' variety patented in 1971. Petrović maintained that Willamette was tasty,

supported by up to four rows of lateral wires to prevent breakage under the developed fruits (Nenadić 1986).

By the early 1980s, Jedinstvo was giving free Willamette seedlings grown out of the plants' root (and thus genetically identical to its mother plant) to interested farmers every spring. One seedling was to be returned the following year and two more the year after for redistribution to new cooperators.[32] After initially hesitating, the farmers flocked to the cooperative.[33] In this successful experiment in exponential multiplication, the Latvica agronomists temporarily converted the farmers' fields into unlicensed nurseries. This was not strictly legal, Petrović admitted. First, for every plant the cooperative would have had to pay a licence fee to the American patent holders, which it could hardly afford.[34] Second, such patented plants could only legally be sourced from licensed nurseries to ensure that the plants were free of pathogens but there were not nearly enough Willamette seedlings in the nurseries. Nonetheless, Petrović would not recommend such a 'wild' multiplication today, he said, since there are hardly any pathogen-free seedlings or plots left (I, August 2017).[35]

By 1985, the cooperative had already rented cooperative freezing-storage facilities all over Yugoslavia for its raspberries. It was high time that it acquired a large contemporary refrigeration plant and cold storage facility of its own, but in the context of structural adjustment this proved a daunting task. Since 1982, austerity measures induced by the IMF had led to a deep crisis and by 1985 living standards had been reduced to the level of 1965 (Berkum and Bogdanov 2012, 47–48). In this crucial moment, when foreign reserves were extremely scarce,

healthy, robust, could be frozen with ease, and grew to unusual size when cultivated with hoeing and manure. Furthermore, it needed to be harvested only every second day, which was convenient for small farmers with multiple livelihood strategies. Finally, the agricultural extension service had managed to increase the previously unimpressive yields per hectare significantly (see I, Petrović 27 August 2017; I, Slavoljub Radojević, 18 July 2018; I, Dobrilo Nenadić, 15 July 2018).

[32] The practice of unlicensed propagation lives on among small farmers.

[33] Dobrilo Nenadić loved to narrate how in the early 1980s it was only gossip about the proceeds from the raspberry harvest – like a brand-new oven marvelled at by neighbourly women – that won over the households against the men's staunch refusals such as 'My father just freed the house from brambles. Like hell I'll plant that!' (I, 15 July 2018).

[34] The problem of property rights on patenting has increased since the 1980s. As studies of tomato cultivation in the EU have shown, even small organic farmers exchanging local seeds risked fines for violating patented property rights of seed multinationals (Aistara 2018, 185–211). Only as late as 2017 did strong farmers' protests in broad transnational alliances successfully change these laws (Hendriks 2017).

[35] This reflects widely shared scientific knowledge: 'The planting of fully disease-free certified *Rubus* stocks in clean soils free from persistent viral, bacterial and fungal diseases and certain pests has a major bearing on the lifespan of plantations'(Graham and Brennan 2018, 6). According to a relatively new standard scientific practice, the pure line raspberry cultivars are cloned and reproduced in petri dishes. Ironically, when the yield of Willamette decreased in the 2000s due to unintentional cross-breeding in the fields, contamination of plant stock with pests, and reduction of hoeing and using cow manure, the cooperative acquired licensed cultivars from the United States to upgrade its genetic stock. But these rarely germinated, and may have even introduced new pathogens.

Petrović and the cooperative's economist secured a huge credit line from the state banking system of the Socialist Republic of Serbia. According to Petrović, Jedinstvo had only achieved this with some cunning. The cooperative organised a huge Thanksgiving fair, called the press and invited the President of the Socialist Republic of Serbia for the ceremonial laying of the cornerstone of their new refrigeration plant despite not yet having secured the necessary large loan from the banks. This hustle was only discovered afterwards and to avoid a public scandal the state supported the cooperative in acquiring the most advanced Swedish technology then available.[36] Thus, Jedinstvo obtained the largest refrigeration facility in the region, which could freeze five tonnes of raspberries daily in its new 'flow tunnel' (IQF freezer) and store eight thousand tonnes, as my interlocutors proudly recalled.

In the 1990s, during the collapse of Yugoslavia, Svetislav was lucky enough not to have to oversee the decline of the cooperative. He had already finished an MA correspondence course in economics from Kragujevac in 1985, and then a PhD correspondence course in pomology from Belgrade in 1990. With his doctorate based on advances in raspberry production in hand, he pursued a career in science and retired as Professor of Phytology at the Agronomical Faculty Čačak in 2003. Meanwhile, Serbia truly became a leading exporter of frozen raspberries, and Petrović extended and advanced the technical and scientific knowledge available to the raspberry sector through teaching, consulting and writing 130 articles and co-authored over a dozen scientific and popular science monographs. For six years, he also worked in Požega as the director of the processing firm 'Budimka', which developed value-added raspberry products like jams, syrups, and juices to help Serbia advance from being a mere producer of raw materials.[37] One of the workers Petrović trained at Budimka and supported in finding international customers was Miško Stanić, a successful young raspberry farmer who came from an Arilje village and who adopted the principle to 'be honest with the producers [farmers], and to be completely honest with the buyers', as Petrović put it, so that the modest refrigeration plant operation Stanić had started in 1992 grew into the second biggest refrigeration plant conglomerate in Serbia. In 2012, as noted earlier, the cooperative Jedinstvo declared bankruptcy, and in 2015 Stanić bought up its idle facilities, including the 1986 refrigeration plant. Since then, the compound has been renovated and is working again.[38] Stanić now owns

[36] Slavoljub Radojević's account slightly differed. He said that while a team member lobbied the Serbian parliament, the support of the Serbian chamber of commerce was unequivocal from the outset (I, 18 July 2018).
[37] In the 2000s, Budimka was unsuccessfully privatised and it has not operated for years.
[38] In 2019, I did fieldwork at the Jedinstvo cooperative's compound in Arilje town in receiving, receipting, freezing, storing, sorting, packaging, and transporting raspberries, based at Vasilije's and Marko's town flat.

eighteen to twenty thousand tonnes of storage capacity spread among five refrigeration plants in three municipalities. All by himself, he can store more raspberries than the entire annual production of France, which is itself 'a serious producer' (as Petrović put it). Thus, a transition from small farmer to capitalist was possible.

In the last decades, Petrović has participated in or led several research and development projects in Kosovo, Montenegro, Bosnia-Hercegovina and Serbia. Some of these collaborations arguably increased regional competition with Arilje's raspberry growers and may have aggravated the boom-bust cycle that has affected the sector, but Petrović attributed recent price fluctuations more to agreements between exporters than to international demand, which he thought was still elastic. Furthermore, to Petrović, as well as his pupil and co-author Dr Aleksandar Leposavić from the Institute of Pomology in Čačak, the biggest challenges for the knowledge and capital-intensive raspberry sector were the unprofessional application of agronomical measures and sub-marginal production by beginners in less-than-ideal territory (I, Aleksandar Leposavić 2016). Most of the scientists and technologists I met adapted the knowledge and skills they had acquired during previous decades of socialist development to the constantly changing configurations of the sector. But even under the present globalised capitalist conditions, they have continued to advocate the close collaboration with small farmers that characterised their innovative practices during the socialist-era. Therefore, they attracted international funding for new research when national level institutions became dependent on it and advised powerful entrepreneurs, but also did not consider it beneath them to talk to impoverished farmers, like Marko and Vasilije.

The Five Phases of State, Kinship, Capital and Science in the Red Gold of Serbia

Striving towards a new relational anthropology of the red gold of Serbia, I have shown how since the 1970s the municipality of Arilje has become enmeshed in complex and changing economic orders through the emerging raspberry sector. Five phases in the historical development of the raspberry economy can be discerned and are condensed here with a view to new research openings.

First, in the market-socialist-era of the 1970s and 1980s, Arilje's socially owned agricultural enterprise Jedinstvo invented the so-called 'Arilje espalier system', which was co-produced by state-backed legal, scientific, financial, and freezing-transport infrastructures, in combination with cooperative agrotechnological extension work and in collaboration with eager-to-experiment farmers who at the time could profitably enlist household members for

manual tasks like trellising, hoeing and picking. The cooperative's agricultural extension officers scientifically described the emerging Arilje espalier system of small raspberry plantations. The trade section expanded the infrastructure of the cold chain (grids of electricity, roads, refrigeration plant, and transport). This infrastructure serviced the trade with processing industries in the European Community and satisfied the mostly German-speaking customers by advancing the cooperative's own food security standards. Their innovative, yet comparatively cheap product seems to have partially driven out English competition in the 1980s. As the cases in this paper demonstrate, local cooperative innovation based on kinship and other social ties of obligation had become entangled in national and transnational economic, state, and scientific networks and thus generated value and growing global competitiveness.

Second, in the early capitalist era of the 1990s, the cooperative production model lost legal and financial support by the state and a vital part of Jedinstvo Arilje – its extension service in Latvica that was responsible for quality enhancement in farming – disintegrated. Although the main processing and commerce division of the cooperative survived, local farmers-turned-entrepreneurs began to copy its infrastructures of value and exported their raspberries via other former Yugoslav republics, circumventing the international embargo. This 'modularisation' of the raspberry infrastructures stimulated internal competition for the raspberries, leading to consistently high prices for farmers combined with decreasing quality requirements. Farmers who reacted by enlarging their plots experienced work shortages, and increasingly replaced steps of cultivation like manuring and hoeing with chemical measures. For the harvest, farmers began employing workers from outside their extended household. With its growing output, Serbia, together with Hungary and Poland, led in the European export market, each producing about 20–40.000 tonnes of raspberries annually.

Third, during the state-led financialisation of capitalist agriculture since the 2000s, farmers and entrepreneurs obtained access to plentiful credit (often with high interest rates and denominated in foreign currencies). The raspberry production module proliferated and was also quickly scaled up within households, where raspberries replaced other agricultural activities including animal husbandry. As households and cold stores beyond Arilje entered the sector, Serbian raspberries turned into a major competitor on the world stage. Day labour became both central for the harvest and increasingly cheap as Serbia's industry struggled under the combined adverse effects of the previous decade of war damage and embargo, and the subsequent asset stripping and failed privatisations. This abundance of cheap labour allowed leaps in the quantity of raspberries produced, which were accompanied by increased use of pesticides and chemical

fertiliser. Quality, for example the size of raspberries and number of raspberries per plant, decreased, reducing productivity per hectare. Nonetheless, the output grew enough to displace Hungarian competition. Meanwhile the market leadership of the cooperative Jedinstvo collapsed, and the amplitude of yearly price oscillations increased. While the global price of Serbian raspberries tended to decrease, local expenses for labour, servicing credit, and agrotechnological measures grew.

Fourth, by the early 2010s scientific and technological advances had not kept up with the quantitative growth and increasing labour dependency of the red gold of Serbia for decades. Several EU programmes began actively importing transnational quality standards but, while relatively successful, the 2011–2012 project 'Arilje's Raspberry' ran out before it could be scaled up to the whole sector. Meanwhile, a farmworkers' movement that emerged from the great strike of 2011 pushed the government to broker an export deal with an Austrian firm over 50,000 tonnes of raspberries, which failed spectacularly. The movement then lost impetus and became domesticated, with its leaders joining parties in coalition with the new government after May 2012. Over the next few years, the sector grew, peaking in 2015 when Serbia produced a record-breaking 100,000 tonnes of raspberries, more than its closest global competitors, Poland and Mexico. Arilje municipality produced perhaps one fifth of this Serbian bumper harvest. Its raspberries were now regularly consumed abroad in processed and deep-frozen form, and increasingly packaged for individual consumption by Western supermarkets, but their origin remained barely known.

Fifth, since 2015, the sector experienced serious difficulties, including overproduction, refrigeration plant overcapacities, and competition with neighbouring countries that copied the Serbian module. The increasingly illiberal state has remained unenthusiastic about quality regulation, antitrust law enforcement, or refinancing of relevant techno-scientific institutions. The resulting lack of local innovation means the quality of raspberries has not been raised significantly to a level that might fetch high-end world market prices again. Moreover, labour scarcity due to the outsourcing of labour-intensive factories by EU economies to Serbia and, conversely, labour emigration into the EU, has intensified. Increased subsidies for new plantations (up to fifty-five percent of costs) stand next to calls for 'non-serious' producers to stop raspberry farming, signalling the bifurcation of the sector. Branding 'Arilje's Raspberry' for end-consumers as a 'traditional' or 'authentic' quality product became a new straw of hope for Arilje's small-scale farmers, with their entrenched vestiges of higher standards of production, to regain an advantage against the national and international competition in the

boundary-spanning market of potential 'singularities' (Karpik 2010; Monterescu 2017). Since 2018, when 'Arilje's Raspberry' became a 'geographically-indicated product' within Serbia with FAO support, international brand recognition has proceeded slowly. Scattered reform initiatives around fresh fruit exports, organic production, introduction of new varieties (such as for an extended harvest season), forming new cooperatives, new technologies of plant protection, tailored insurance, and value-added processing, have laid the groundwork of a new innovation pact.[39]

Afterthoughts

How have the protagonists of the two case studies reacted to these changes? Two relational modalities, pursued with different levels of intensity and varying success, have emerged from the presented ethnographic material: 'doing kinship' and 'political-scientific bridging'. Doing kinship was ubiquitous in Arilje. Like Marko and Vasilije, many interlocutors obligated themselves to their new and old kith and kin to be able to produce raspberries. Their plots were not purchased; instead they accessed them through remaking and strengthening ties of kinship. Besides their own self-exploitation, they recruited pickers from their extended kinship network and hired day labourers, with some of whom they established trust relationships in a kinship idiom over time. Even when needing money for some urgent expenses, they had pluralist strategies and accessed formal credit from banks, sought advances from the cold storage operators, or received informal credit from their wider networks of relations.

Well embedded in kinship and also able to use it effectively, Professor Petrović was also involved in the second modality of politico-scientific bridging. He did not turn social venture into private capital in the wake of the transformations from socialism to capitalism but translated his practical and technological knowledge into science and participated in several Serbian and EU-financed raspberry projects. His move into the scientific field was not irreversible, however: he retained political ties to his Socialist Party of Serbia and, due to his seniority, served from 2008–2012 as the chairman of the municipal council, where he claimed he continued to work across political trenches. Petrović did not completely severe his economic ties, either. For a while he was the director of a jam and juice factory and he later informally advised his erstwhile pupil Stanić, who bought up and refurbished the bankrupt cooperative.

[39] On 30 April 2020 the Serbian government formed a 'Working Group for the Improvement of Raspberry Production and Markets in the Republic of Serbia', based on similar initiatives in 2018 and 2019 (*Službeni Glasnik RS* 2020).

Most Ariljans, like Marko and Vasilije, also acquired some proficiency in politico-scientific bridging, initially by mastering technological aspects of the Arilje espalier standard and its complex yearly rhythms of pruning, spraying, staking, picking, storing and transporting. Indeed, while some villagers did carefully read manuals and handbooks of raspberry production, the knowledge on raspberry cultivation circulated even more widely, as did the plants themselves. Furthermore, during various periods Vasilije (Marko less) also took up political responsibility in the Municipal Parliament and as a disability activist.

In conclusion, the raspberry has proved a remarkable companion species to reveal the history of former Yugoslavia. Observing the frictions between kinship, global markets and the politics of science that have shaped the red gold of Serbia, this paper has shed light on two specific post-socialist modalities of adapting to the political economic transformations of the wider region: salvaging value from the socialist developmentalist state by doing kinship and salvaging value by politico-scientific bridging.

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Zusammenfassung

Das Working Paper entwickelt einen historisch-ethnographischen Zugang zur exportorientierten Himbeerproduktion Serbiens mit Hinblick auf die Verflechtungen von lokaler Produktion und Verwandtschaft mit globalisierten Märkten und Wissenschaftspolitiken. Anhand zweier typischer Akteure – einem kleinen bäuerlichen Haushalt und einem Agronomen in ehemals leitender Position – wird dargelegt, wie Himbeeren zu einem serbischen Exportschlager, dem roten Gold Serbiens, wurden. Dieser Prozess lässt sich im Wesentlichen auf Konfigurationen des jugoslawischen Entwicklungsprojekts seit Mitte der 1970er Jahre zurückführen, als im Südwesten Serbiens das landwirtschaftliche Kombinat "Jedinstvo Arilje" ein Produktions-, Verarbeitungs-, Transport- und Handelsnetzwerk an der Schnittstelle von staatlich finanzierter Wissenschaft und Technik und Kleinlandwirtschaft zusammenstellte. Im frühen Postsozialismus wurde diese Innovation von hunderten privatwirtschaftlichen Exporteuren reproduziert, was zu einer beträchtlichen quantitativen Produktionssteigerung führte. Die einsetzende Fragmentierung der Wirtschaftskette lockerte jedoch gleichzeitig die Zusammenarbeit zwischen Agrarwissenschaft und Landwirtschaft und verschärfte jene Probleme, mit denen die Akteure heutzutage vermehrt zu kämpfen haben: Arbeitskräftemangel, Preisschwankungen, und eine tendenziell abnehmende Qualität ihres Produkts.

Biographical Note

André Thiemann was a doctoral student at the Max-Planck-Institute for Social Anthropology and received his PhD from the Martin Luther University in Halle/ Germany. After postdoctoral fellowships at the Center for Interdisciplinary Studies (ZiF) Bielefeld and the Institute for Advanced Studies (IAS) in Budapest, he became Visiting Professor at the Institute for Sociology and Social Anthropology at Central European University Budapest (CEU), before joining the Riga Stradins University, Latvia. His research addresses central questions of the anthropology of the state, political economy and care, ethnographically examining the global countryside in Serbia, Latvia and Germany.

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