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Congealed Labor, Canned Fish: From the Adriatic towards a global history of the oil sardine

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Fish have been actors in international disputes for centuries, from the Hundred Years War through a "Cod War" in the Cold War-era to Brexit negotiations. Ulf Brunnbauer explores why not only the big, valuable fish, such as tuna and salmon, but also the relative small fry of sardines can offer an illustration of the changing history of global capitalism and experiences of economic change. He traces the entanglements of human, environmental and multi-species histories. His essay stresses the interconnections of local agency and external forces, nature and resource exploitation, and networks and historical ruptures. He also highlights the significance of gender relations in the canned fish industry. As he argues, the history of canned sardines can be written into the larger narratives of modernization, industrialization, exploitation of humans and degradation of nature. At the same time, it never completely tallies with any of these larger stories but involves ambiguities and surprising turns. But what else could we expect when such volatile creatures like humans and sardines make history?

Mirna Fish Factory, Rovinj, Croatia. © Ulf Brunnbauer

Fish(y) politics

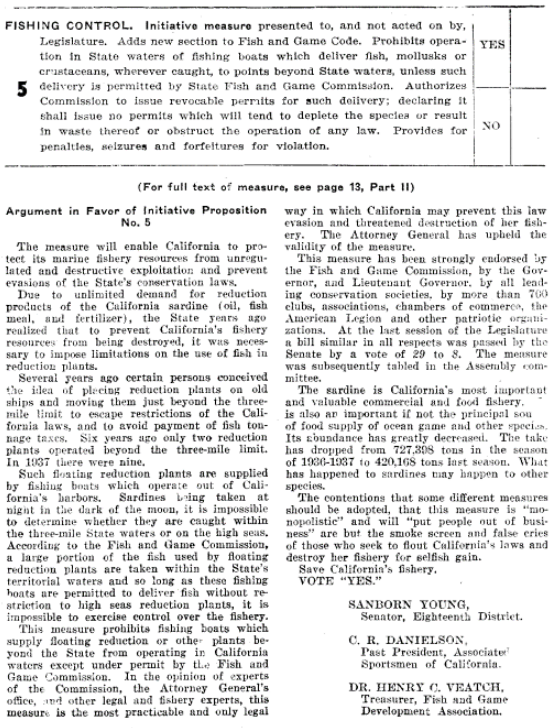
Fish can be very political. They can trigger inter-state disputes because of their proclivity to ignore imaginary borders in water. The Brexit talks almost failed because of disagreements between the UK and the EU over fishing rights, some of them going back many centuries. Iceland and the UK fought even a "Cod War," which involved the navies of both countries.[1] It started in 1958, when Iceland began to extend its territorial waters and claim exclusive rights on one of the most valued fish, cod, in them. The dispute reached the UN Security Council in 1975 and led Iceland severing its diplomatic relations with the UK and threatening to leave NATO. It was ultimately resolved in favor of Iceland through NATO mediation and US pressure on the UK because Iceland was strategically more important to the North-Atlantic alliance than British cod fisheries.

The US, in turn, was embroiled in the "Tuna War" with Peru and Ecuador, after these countries had extended their fisheries jurisdiction in the early 1950s and started to arrest US fishing boats roaming in what they now considered their waters. US Congress passed a Fishermen's Protection Act in 1954 while in the late 1960s, the US suspended military and financial aid to Ecuador and Peru and introduced additional sanctions, when US fishing boats were seized again. Peru in turn kicked out the US military mission.[2] Disagreements between England and France over fishing rights off the coast of North America were among the many disputes that led to the Hundred Years War. Canada and the United States quarreled over overlapping fishing rights as well, for example with respect to salmon.[3] Salmon was one of the major reasons why European settlers appeared along the north-western Coast of North America in the first place, who led a war against native Americans and against the environment.[4]

> The exploitation and consumption of these species allows us to see how global capitalism works. […] Global forces manifest themselves in very different ways depending on always specific local contexts or to put it differently: local actors – especially in the form of institutions – can modify the vectors of secular change and of capitalist accumulation.

So, big fish generate big problems. Yet, this is not to say that small fish cannot gain political attention. The sardine, who will be the protagonist of this essay, had its moments of political fame as well. António de Oliveira Salazar, for example, the infamous long-term dictator of Portugal, took a lively interest in the fate of the Portuguese sardine, not only because canned sardines were one of the major export products of interwar Portugal but also because canneries were often shaken by workers' protests.[5] Its economic importance made the sardine a bone of political contestation in California, too, which in the 1920s and 1930s competed with Portugal for the crown of being the world's sardine center, as immortalized in John Steinbeck's famous novels *Cannery Row* and *Sweet Thursday*. In 1938, a ballot initiative was put before voters in California which proposed introducing measures to protect Sardine stocks.[6] It was motivated by a curious development – or, to put it another way, by the ingenuity of American capitalism when it comes to avoiding regulations. The Argument in

Favor of the Proposition explained: “Several years ago certain persons conceived the idea of placing reduction plants [that is, plants to produce fish oil and fish meal used as fertilizer] on old ships and moving them just beyond the threemile limit to escape restrictions of the California laws, and to avoid payment of fish tonnage taxes.” By exploiting the fact that California’s jurisdiction reached only three miles beyond the coastline, these plants encouraged unregulated fishing which threated the destruction of sardine stocks, as seen in a conspicuous decline in catches in the years before. This, the proponents argued, threatened California’s “most important and valuable commercial and food fishery”. The initiative was passed.



FISHING CONTROL. **Initiative measure** presented to, and not acted on by, Legislature. Adds new section to Fish and Game Code. Prohibits operation in State waters of fishing boats which deliver fish, mollusks or crustaceans, wherever caught, to points beyond State waters, unless such delivery is permitted by State Fish and Game Commission. Authorizes Commission to issue revocable permits for such delivery; declaring it shall issue no permits which will tend to deplete the species or result in waste thereof or obstruct the operation of any law. Provides for penalties, seizures and forfeitures for violation.

5

YES

NO

(For full text of measure, see page 13, Part II)

Argument in Favor of Initiative Proposition No. 5

The measure will enable California to protect its marine fishery resources from unregulated and destructive exploitation and prevent evasions of the State's conservation laws.

Due to unlimited demand for reduction products of the California sardine (oil, fish meal, and fertilizer), the State years ago realized that to prevent California's fishery resources from being destroyed, it was necessary to impose limitations on the use of fish in reduction plants.

Several years ago certain persons conceived the idea of placing reduction plants on old ships and moving them just beyond the threemile limit to escape restrictions of the California laws, and to avoid payment of fish tonnage taxes. Six years ago only two reduction plants operated beyond the three-mile limit. In 1937 there were nine.

Such floating reduction plants are supplied by fishing boats which operate out of California's harbors. Sardines being taken at night in the dark of the moon, it is impossible to determine whether they are caught within the three-mile State waters or on the high seas. According to the Fish and Game Commission, a large portion of the fish used by floating reduction plants are taken within the State's territorial waters and so long as these fishing boats are permitted to deliver fish without restriction to high seas reduction plants, it is impossible to exercise control over the fishery.

This measure prohibits fishing boats which supply floating reduction or other plants beyond the State from operating in California waters except under permit by the Fish and Game Commission. In the opinion of experts of the Commission, the Attorney General's office, and other legal and fishery experts, this measure is the most practicable and only legal way in which California may prevent this law evasion and threatened destruction of her fishery. The Attorney General has upheld the validity of the measure.

This measure has been strongly endorsed by the Fish and Game Commission, by the Governor, and Lieutenant Governor, by all leading conservation societies, by more than 700 clubs, associations, chambers of commerce, the American Legion and other patriotic organizations. At the last session of the Legislature a bill similar in all respects was passed by the Senate by a vote of *29* to *8*. The measure was subsequently tabled in the Assembly committee.

The sardine is California's most important and valuable commercial and food fishery. is also an important if not the principal sou of food supply of ocean game and other species. Its abundance has greatly decreased. The take has dropped from 727,308 tons in the season of 1936-1937 to 420,168 tons last season. What has happened to sardines may happen to other species.

The contentions that some different measures should be adopted, that this measure is "monopolistic" and will "put people out of business" are but the smoke screen and false cries of those who seek to flout California's laws and destroy her fishery for selfish gain.

Save California's fishery.
VOTE "YES."

SANBORN YOUNG,
Senator, Eighteenth District.

C. R. DANIELSON,
Past President, Associated Sportsmen of California.

DR. HENRY C. YEATCH,
Treasurer, Fish and Game Development Association.

FISHING CONTROL California Proposition 5 (1938). Source: http://repository.uchastings.edu/ca_ballot_props/373

Ten years later, a decline in sardine catches of almost 400 % within three years provoked another ballot initiative in California. This time, the initiators proposed the prohibition of the use of the purse net and the round haul net in certain parts of California’s territorial waters.[7] They claimed their measure would preserve California’s

"multi-million dollar commercial fishing industry" and "its multi-million dollar sports fishing industry." The adversaries argued the opposite. The suggested regulation would "destroy a great industry, a tremendous annual food supply of low cost, high quality protein." 6,000 cannery workers and 6,000 fishermen would lose their livelihood, with ripple effects on the manufacturers of cans, of packaging, of tomato sauce, on the shippers and so on. The opponents made an argument eerily similar to today's climate denialists: "An Initiative controlling a natural resource is basically unsound […]. Ocean fishery is subject to great natural changes in abundance yearly with periodical good and bad 'crops' – even WITHOUT man's interference [emphasis in the original]." The measure consequently failed – not that it made much difference: the sardine had gone for good from the Californian waters, putting the many canneries dependent on them out of business in the late 1940s/early 1950s anyway.[8]

What connects these examples is that the fish in question are perfectly suited for preservation, even before large fishing vessels were equipment with deep-freezing capabilities: sardines, tuna and salmon are stuffed into cans and shipped around the world; cod is salted or dried and then turned into delicious *bacalao* dishes in places far away from where it is processed. The exploitation and consumption of these species allows us to see how global capitalism works. In their book *A History the World in Seven Cheap Things*, Raj Patel and Jason W. Moore argue that capitalism in its quest for cheapness exists only through frontiers, "expanding from one place to the next, transforming socioecological relations, producing more and more kinds of goods and services that circulate through an expanding series of exchanges."[9] The oceans, and nature in general, are one such important frontier. They have been seen by capitalism as a free gift – to quote Patel and Moore again – because under capitalism, we are "happy to view the ocean as a both storage facility for the seafood we have yet to catch and sinkhole for the detritus we produce on land."[10] We can add the effects of greenhouse emissions because they lead to rising sea temperature levels which have massive effects on sea-life, as the sardine can testify. Commodities such as a can of oil sardines, therefore, are not only congealed labor-time (as Marx has taught us) but also congealed nature.

> the beauty of big narratives is that they provide explanations for the chaotic realities we can observe by putting the specific into a larger story. Big theories about global development give meaning and relevance to the small histories that we experience and remember. The shortcoming of such big stories is that they poorly capture ambiguities and differences on the local level.

Global-local contexts

Now, the beauty of big narratives is that they provide explanations for the chaotic realities we can observe by putting the specific into a larger story. Big theories about global development give meaning and relevance to the small histories that we experience and remember. The shortcoming of such big stories is that they poorly capture ambiguities and differences on the local level. As a historian, I am loath to quickly explain away local specificities

and paint historical developments in unicolor ways. When zooming in on lived experiences and on the small scale, things usually get less straight-forward and less black and white. What might appear as a small episode in global capitalism's insatiable hunger for new markets, might from a local perspective look like a promising path towards modernization. What on the one hand might appear as an exploitative labor relation in an industry that hardly pays a living wage, can on the other hand be perceived by workers as an advancement to their prior existence as poor farmers. Global forces manifest themselves in very different ways depending on always specific local contexts or to put it differently: local actors – especially in the form of institutions – can modify the vectors of secular change and of capitalist accumulation. How, "depends on what shoes we have to run in",[11] that is, which resources are available to local actor.

The sardine and its industrial exploitation are a case in point. True enough, this is a story of cheap labor, cheap nature, cheap care, and so on, likewise in Southeastern Europe, my area of expertise. But it is also one of economic development of impoverished areas, of social advancement, of modernization, of struggles over rights and wages, and of local pride for a product that is healthy, affordable, and ubiquitous. The history that comes out of a sardine can speaks not only about crisis and exploitation but also about visions of the futures and about world-making. Let's hear from a foreman from the *Mirna* sardine cannery in the town of Rovinj in Istria, Croatia, which I have studied in more detail: [12]

> The problems started in the 1990s, especially from 1995 to 2000, when the dolphins appeared. There were so many dolphins. They so much frightened the fish and then you can eat your own net […]. In earlier times [in the 1970s and 1980s], we worked a lot for Kuwait, and for Iran. And we worked a great deal for our army, for military provisions. […] We had been trained in a different system. We were more western educated, because we were, sometime, before that under Venetian rule, and then we were under Austria for 180 years. This means, my grandfathers, both of them, served under Franz Joseph. They made the railways; they made the harbor. […] And something else I want to tell you: these big weather changes, if you heard about that three or four years ago, it was terrible here.
>
> *Oral history interview with foreman at the Mirna fish cannery, Rovinj*

This oral history interview is just one example of experiences of empire, of nature and its changes, of business success, of meaningful work and of challenges, and how they are situated on symbolic geographies of modernity that intersect in multifold ways. Producing canned fish linked people to the wider world but also to their immediate environment. Their relevant spaces of action, i. e., their life-worlds, were wide-ranging, but at the same time localized. There is a clear consciousness of connections and of place, and their multiscalar geographies and divergent timelines. In the following, I want to disentangle some of these relations, including those between

local agency and external forces, nature and resource exploitation, and networks and historical ruptures. The history of canned sardines can be written into the larger narratives of modernization, industrialization, exploitation of humans and degradation of nature. At the same time, it never completely tallies with any of these larger stories but involves ambiguities and surprising turns. But what else could we expect when such volatile creatures like humans and sardines make history?

A potted history of canned sardines

> Karl Marx made clear that commodities are products of class relations. A can of sardines is a case in point. Work in a fish cannery was – and still is – hard and poorly paid. Workers face noise and an unsavory stench. In the past, before frozen fish was shipped across the world, cannery work was often seasonal, pay thus irregular, so that workers either had to find alternatives during the period without fish landings or depended on the wages of other family members. For these reasons, it was often marginalized labor that filled the shopfloor of a cannery – in California, British Columbia, France, Portugal, Germany, Morocco, Istria and elsewhere.

First things first – a bit of history. Sardine canneries came to the Upper Adriatic in the 1870s, when these coasts belonged to the Habsburg Empire.[13] Some of them were founded by French entrepreneurs, others by Austrian businessmen, mainly from Trieste but also from the Empire's interior. In the town of Rovinj, my case study, the first cannery was established by a French company in 1882. Twenty-seven canneries are said to have opened along what today is the Slovenian and Croatian coast before the outbreak of World War I, years described as the "golden era of the Croatian fish processing industry."[14] It is indicative that the sardine industry began to boom in the Upper Adriatic after its major ports (Trieste, Fiume/Rijeka) had been connected to Central Europe by railway, making the transportation of cans to Vienna, Prague, Budapest, and beyond fairly quick and cheap. These canneries were often the first and for a long time only industrial enterprises in places that used to be very poor before the arrival of mass tourism. They provided paid jobs, although often only seasonal, and created new connections because their production depended on supplies and demand from somewhere else. The coastal people neither produced tin nor ate fish out of a can.

The important role of French entrepreneurs is no coincidence. It was a Frenchman, Nicolas Appert, who in 1795 invented the modern preservation of food by sterilization and hermetically sealing it in containers (first made of glass, later of tin). The first canneries appeared in France as well: a certain Joseph Colin established the first sardine cannery in Nantes in 1822.[15] From there, the business quickly expanded along the coast of the Bretagne, also helped by new railway connections. By 1879, France boasted 160 factories for canned sardines employing thousands of workers and securing the livelihoods of thousands of fishermen. Towns such as Douarnenez, Quiberon, and Concarneau became symbols of the industry (with remnants, a lively memory culture and touristic exploitation of the sardine canning industry up until today).[16] The boom in Brittany did not last,

though, because beginning in the 1880s, sardine stocks declined precipitously. So, French sardine entrepreneurs moved to other places, helping not only to kick-start sardine canning in the Upper Adriatic but also to turn Northern Spain (Galicia and the Basque country) and Portugal into leading producers of canned sardines.[17] By around 1910, Portugal had become the world's most important exporter of this product.

The first ever sardine cannery, Nantes, 1820s. Model of the city, Museum of the History of Nantes. Photo by Ulf Brunnbauer

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Aside from French businesses, the role of Austrian capital was crucial in the Upper Adriatic, of course. A particularly interesting case was Carl Warhanek from Vienna. Born in Bohemia in 1829, he received his training at the Polytechnic Institute (now the Technical University) in Vienna. After completing his education, he travelled widely as a salesman. On one of these journeys, he became familiar with the technology of canning fish in Marseille, which inspired him to opening such a factory in the vicinity of Trieste. He quickly expanded his business, organizing a fishing fleet and opening several canneries in Istria and Dalmatia.[18] In 1880, he even established a fish-canning factory in Vienna, where he was appointed Purveyor to the Imperial Court. This factory, and another one in the Austrian town of Traun, continued to produce canned fish into the early 1990s – made possible, by the way, by the recruitment of female migrant workers, many of them from socialist Yugoslavia.

Cannery shopfloors

Karl Marx made clear that commodities are products of class relations. A can of sardines is a case in point. Work in a fish cannery was – and still is – hard and poorly paid. Workers face noise and an unsavory stench. In the past, before frozen fish was shipped across the world, cannery work was often seasonal, pay thus irregular, so that

workers either had to find alternatives during the period without fish landings or depended on the wages of other family members. For these reasons, it was often marginalized labor that filled the shopfloor of a cannery – in California, British Columbia, France, Portugal, Germany, Morocco, Istria and elsewhere.[19] This also means that the structure of the cannery shopfloor gives a fair picture of patterns of marginalization and inequality. Unsurprisingly, for instance, Californian canneries depended on cheap immigrant labor; in the fish canneries these were initially often Chinese, and later Japanese and Italian, and then Mexican workers, very often women.[20] In Europe, it was almost exclusively women who filled the cannery shopfloor at a time when there were few, if any other paid jobs for them available along the coast. Their pay was sub-subsistence, made possible by the fact that their families either did some farming or their men earned a living as fishermen. When local women could not be recruited, canneries turned to migrant women from the interior or from abroad. The fish canning industry of the German Empire, for example, recruited women from workers' households as well as Polish female migrants.[21] And so, we arrive at the second law of sardine canning (the first law is that you need sardines): the workforce almost everywhere was and is predominantly female.

In the history of Rovinj, the case study explored here, work in the sardine cannery also had an interesting ethnic dimension. Until the exodus of most of the town's Italian population in the years after World War II, when Italy lost control of Istria, Italians provided the fishermen and the (female) labor force in the local tobacco factory. The fish cannery work, in contrast, was done by Croat (Slavic) women. Unsurprisingly, the latter carried the least prestige during a time when Italians dominated local urban life.[22] In a place where ethnicity mattered for social stratification, this became immediately visible on the shopfloor, very much like in the United States.

The predominance of female labor in the cannery in Rovinj but also elsewhere in Yugoslavia continued throughout the socialist period and today. In 1951, for example, 84% of all employees of the Mirna cannery in Rovinj were women, most of them classified as *filetti*, i. e., workers cleaning and filleting the fish. When a sanitation inspection at the cannery in 1954 revealed that "the majority of the female workers did not cut their nails and had dirty nails," the director responded by pointing out that long fingernails helped in cleaning the fish.[23]

Workers at Mirna, 1960s. Unknown author, photo courtesy of the Mirna factory, Rovinj.

So, there is a pattern. Yet, family resemblance does not mean sameness. In a collaborative project with ethnologists in Ljubljana, we interviewed (former) female workers of fish canneries in today's Slovenia and Croatia. Many of them spoke in a nostalgic tone about work in the cannery and about the work-based community under Yugoslav socialism. Some of them had come from the country's interior and found work in a cannery a liberating experience from the patriarchal families they had left.[24] Why is such apparently unpleasant work is remembered so fondly? We can exclude the possibility that fish offal smelled better under communism or that socialist sardines were easier to handle. Cleaning the fish, putting it into cans, and stacking the cans, all this was hard manual work in a socialist factory, too.

It is how socialism managed such low-skilled, humble jobs that made its shopfloor so different from capitalist ones. Unskilled workers received a lot of recognition and felt acknowledged as a valuable part of society. Wage differences between them and skilled workers as well as administrators were not very high. To this we need to add the effects of self-management that was introduced in Yugoslavia in the early 1950s and subsequently expanded so that since the mid-1970s, firms operated as amalgamations of so-called Basic Organizations of Associated Labor. This led neither to real workers' control nor to factory democracy. But it did help to build affective communities around the workplace and alliances between workers and directors. Factories provided ample social welfare and opportunities for diverse educational, cultural, and leisurely activities, and the cannery in Rovinj made no exception. A photo album from the Mirna factory is full of pictures of working women. Many photos depict celebrations and training events in the 1970s indicating their crucial function in creating a

shopfloor community. Of course, a few pictures cannot tell a social history. Yet what is conspicuous in these photos is the confident expression of most of the women (though not of the *Miss Sardele* when the director asked her for the first dance at Mirna's annual anniversary celebration).[25]

Photos from an album, kept at the Mirna factory in Rovinj. Used by courtesy of the factory.

In the Yugoslav context at least, cannery work was also one of local experiences of economic and social advancement in areas that were economically depressed before the advent of mass tourism. When looking at representations of Portuguese canneries under Salazar, that is, in a semi-fascist dictatorship, similarities are evident. Sardine canneries in 1930s Portugal were presented as nuclei of modernization in areas previously untouched by industrialization. They were shown as places were women found waged work – as a step towards modernity, including the provision of childcare.[26] Incidentally, it was a form of industrialization that was tightly embedded in existing local economic and resource extraction patterns, linking fishing, oil making, and vegetable production. This might help to explain its resilience.


DIE ENTWICKLUNG
EINER GROSSEN
INDUSTRIE

VON INGENIEUR HENRIQUE PEREIRA

Der Ursprung der Konservierung von Lebensmitteln wird gewöhnlich in prähistorische Zeit verlegt, als der Höhlenmensch, unter dem Zwang der Verteidigung gegen eine feindliche Umwelt darüber nachdachte, wie er in den Zeitabschnitten zu seinen Essen käme, in welchen die Natur ihm nicht gestattete, die par Erzeugnisse für seine Ernährung zu erfassen.

"The development of a large-scale industry", in *Das Goldene Buch der Portugiesischen Fischkonserven* [The

golden book of Portuguese preserved fish] (Lisbon 1938) – public domain. Photo by Ulf Brunnbauer

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Resilience

As the abovementioned examples of Brittany and California indicate, sardine canning can be a volatile business, especially when the sardines disappear. Sardines are a capricious species that needs certain ecological conditions to reproduce and overfishing also led to stock depletion. Examples of uninterrupted production across political and other ruptures are, therefore, even more in need of an explanation. The Mirna factory in Rovinj, which soon will celebrate its hundredth anniversary – not many industrial enterprises in Southeastern Europe survive long enough for that – is a case in point. This is quite a feat considering the frequent political and economic transformations in this region. Istria has changed hands several times in the twentieth century, from Austria (until 1918) to Italy (1944), to brief German occupation and Allied control, finally to Yugoslavia (1947) and since 1991 independent Croatia. These changes meant not only newly drawn borders but usually also a radical reorientation of economic structures, social stratification, and ideological projects. To these transformations we should add the European Union, to which Croatia acceded in 2013, because the EU brought another fundamental change of the political-economic and institutional framework (the catchwords ‘competition policy’ and ‘anti-subsidy rules’ must suffice here to indicate its significance). The survival strategy of a business such as the Mirna cannery elucidates not only the local implications of such big changes but also the agency of local actors, who developed their own mitigation, adaptation, and subversion practices. This is how also global change becomes deflected.

A good example are the efforts of the cannery in Rovinj to reestablish trade connections to suppliers and consumers that happened to be located across the Iron Curtain after Istria was joined to Yugoslavia. Mirna had traditionally procured olive oil from Italy (to which Istria belonged until 1944/5), tin for the cans from Germany, and sardines from other Mediterranean countries, now all belonging to the West. Their main consumers were in Western Europe, the United States, and Czechoslovakia (which severed relations with Yugoslavia in 1948). The inland Yugoslavs were generally no big fish eaters. The business documentation of the 1950s indicates systematic lobbing efforts ‘from below’ towards the government to liberalize foreign trade and to provide support for exports. When socialist Yugoslavia finally embarked on an export-led development strategy in the late 1950s, the Rovinj cannery was well positioned to benefit from that. They had a very strong argument to ask for government subsidies because most of their products went to hard-currency countries. So, not only migrant workers but also canned sardines helped to integrate Yugoslavia into the international division of labor. Export was seen as the ‘spatial fix’ (*pace* David Harvey) of Yugoslav socialism – which ultimately proved to have erosive consequences, but this is another story.[27]

During the 1960s and 1970s, Mirna built a real empire of fish, acquiring its own fishing fleet, operating smaller

factories in other places, buying a small shipyard for repairs, producing its own tin cans and packaging, running its own shipping business and so on. It became a *Kombinat*, or complex firm, producing more than 10,000 tons of canned fish per year in the 1980s. In-sourcing was a popular business strategy during socialism to limit reliance on unreliable suppliers. The Mirna people were among the first worldwide to farm seabass and giltheads, they sold ready-made fish meals, and were proud to export to around fifty countries across the world, from the USA to Australia. They did quite well even in the 1980s, when Yugoslavia's economy fell into deep recession, helped by record sardine catches in the Adriatic. In the mid-1980s, Yugoslav fishermen, most of them based in Croatia, landed more than 40,000 tons of sardines annually. Mirna even managed to survive the deep economic crisis in early 1990s Croatia, aggravated by the war and crony privatization in the mid-1990s – although only just. Its ultimate revival came with the take-over by Croatia's main food conglomerate, *Podravka*, in 2014, which invested in new machinery.

Delikatesni plodove jadranskog mora [Delicacies of the Adriatic] (Rovinj, [1990]). Photo by Ulf Brunnbauer

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Industrialization had come to Croatia in the nineteenth century mainly in the form of food processing – and this also appears to be one of the country's few viable industries today, with the other big coastal industry,

shipbuilding, disappearing. There are economic reasons for that, such as the low capital-intensity of this industry, but other factors play an important role as well. Food radiates a sense of locality and authenticity that can add a dose of extra resilience in the face of global market pressures (this is where French marketing really excels, praising the value of *terroir*). As the Mirna people say – I quote from a late 1980s' brochure – the Adriatic sardine is "of special delicacy and extraordinary flavour", better "than those from the Oceans."[28] It is the basis for the "*Super food from the Adriatic*", which is one of Mirna's current slogans.

"Superfood from the Adriatic", Rovinj, 2021. Photo: Ulf Brunnbauer

Conclusion

> The history that comes out of a sardine can speaks not only about crisis and exploitation but also about visions of the futures and about world-making.

In Monterey, California, Cannery Row today exists only as a tourist attraction that has, as per its website, "*memorable experiences*" for "*the history buff, shopping enthusiast, food fanatic or nature lover.*"[29] Its memory is kept alive also by John Steinbeck's immortal novel of the same name. In Monterey – and on many Adriatic islands, as well – tourism has won the contest over who can exploit the shoreline, against the canneries. In her masterful history of Monterey's canning and hotel businesses, Connie M. Chang showcases how class and ethnicity shaped this struggle – and that ultimately even the business acumen of the cannery owners could not overcome the revenge of nature: sardines just disappeared from the Californian coast by the end of the

1940s.[30] While this had disastrous effects on local workers, hotel managers were happy that their guests would not complain anymore about the stench coming from the canneries. The collapse of what during World War II was the sardine capital of the world heralded the disappearance of the fish canning industry from North American soil. The last fish cannery in the US closed in Maine in 2010. The American cannery business moved south, where both the sardine and the low-cost labor is located, like in Peru.

Monterey, California, 2022. © Ulf Brunnbauer

Mirna and the few other Croatian sardine canneries that still operate might find their days numbered as well. First, they face growing difficulties in recruiting workers for production that cannot be fully automatized. Their salaries are well below those in tourism. Most locals own at least one if not more property thanks to socialism – so why toil in a factory when you can make a living by renting out? When , after buying new machinery, the cannery in Rovinj introduced a second shift a few years ago, they struggled to fill the vacancies. They recruited workers from Croatia's economically depressed regions and from Bosnia. A cannery operator in Dalmatia even decided to dismantle the machinery and set up shop in the Serbian town of Niš, where cheap labor was abundant. One possible solution to the cost-problem might be upscaling, drawing on the example of French and Portuguese firms who produce higher quality sardine cans with fancy marketing. This helps them to ask much higher prices and withstand Moroccan competition where labor costs are much lower. Morocco has become one of the largest producers of canned sardines and can export to the EU tariff free.

Canned fish shops in Brittany, 2022. © Ulf Brunnbauer

Yet, there is an even more substantial threat to this Adriatic industry that had proven quite resilient during the twentieth century, namely, rising sea water temperature. Because of their biological characteristics, small pelagic fish such as sardine, anchovy, and herring, which represent about 20–25% of the total annual world fisheries catch, are highly sensitive to environmental forces and extremely variable in their abundance.[31] Sardines can spawn only in relative narrow ranges of water temperature and salinity levels. These conditions are maintained by the system of currents peculiar to the Adriatic: a western current brings relatively cool water with less salinity southwards while a northward flow along the eastern coast transports warmer waters from the Ionian Sea. The sardines spawn in-between. Climate change threatens this sensitive balance. As a result, the sardine might disappear from the Adriatic and from the whole Mediterranean to be replaced by tropical and subtropical species, with sardines in turn becoming increasingly abundant in the North Sea, off the Scottish coast. So, maybe the establishment of sardine canneries might be a chance for post-Brexit Britain to live up to its global pretensions (if Scottish independence does not come)?

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