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From Social Trust to Blockchain-Mediated Trust

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Gourmets all over China wait all year for autumn, because that means the crab season is near. In the lower Changjiang (Yangtze) Delta region, the hairy crabs cultivated in Yangcheng Lake and nearby ponds (hereafter YL crabs) are a gastronomic delicacy, prized for their fragrant taste. YL crabs' status was raised in 2005, when they were declared China's first geographical indication (GI) product.[1] GI licensing is highly lucrative for crab farmers – only certified producers can use that appellation in their marketing. A problem for the eager public is the significant gap between the available supply of YL crabs and the nationwide demand: YL crabs account for only 0.4 percent of China's annual crab harvest.[2] This has given rise to the counterfeiting phenomenon known as 'crab bathing' (洗澡蟹).

In crab bathing, crabs cultivated elsewhere are placed in Yangcheng Lake, then labeled and marketed as locally harvested. Disguised as YL crabs, huge numbers are sold at unreasonable prices; unscrupulous merchants even inject some of these crabs with water to increase their weight (Xie 2021). Logistical chaos has ensued in the local crab market, which the local government has failed to regulate. This market comprises aggregators, buyers, regional wholesalers, shopkeepers, and finally, consumers. Step

by step, with coordination lacking between these multilayered distribution channels, the price inflates, and YL crabs become difficult to authenticate.

As early as 2006, anti-counterfeiting tags were distributed to farmers with GI certificates. Unfortunately, cheap, forged authentication devices soon flourished; they could even be bought online for 1 RMB each (Sun and Zou 2007). The distribution channels coordinating the movements of both authentic and counterfeit YL crabs are too readily interoperable, enabling the latter to exploit the value chains of the former, which has led to public distrust of the brand and even the market in general.

A crab-focused e-commerce store on JD.com, selling YL crabs with an anti-counterfeiting tag attached. The anti-counterfeiting tags, which change every year, are distributed by local bureaucratic agencies to certified farmers. Photo: JD.com, Inc.: n.d.

Upgrading the Industry via Standardization

A series of logistical betrayals – weight discrepancies, inflated prices for gimcrack goods, the illicit flows of counterfeit crabs – were seen as resulting from the absence of well-

conceived, executable industrial standards (W. Zhang 2021). Responding to national techno-developmentalist agendas, the local government delegated some regulatory responsibilities to corporations. For instance, the Internet+ (互联网+) initiative strives to upgrade traditional industries using information technologies (State Council 2015). Likewise, the Thirteenth Five-Year Food Safety Plan (State Council 2017) mandates corporations' use of digital means such as food traceability systems to oversee issues like food security and false advertising. Although traditional market networks remain resilient, these policies demonstrate a governmental desire to 'upgrade' the food production market, by facilitating a shift from the hub-and-spoke network comprising multilayered, value-extracting middlemen, to a platform-oriented, business-to-consumer model wherein corporate and government agencies may easily intervene. In recent years, Chinese e-commerce platforms, including JD, Pinduoduo and Seeco, have begun to move crab sales online.

Driven by techno-developmentalist ideologies, local governments have now collaborated with corporations to trigger e-commerce penetration and a so-called 'industrial upgrade' (产业升级). On 13 September 2021, Pinduoduo (China's largest agriculture-focused e-commerce platform) and the Jiangsu Freshwater Fisheries Research Institute jointly consolidated a Changjiang Delta Crab Grading Standard. It formalized a series of industrial standards for crustaceans, including grading criteria, packing methods, storage and shipment procedures, solutions to weight discrepancy disputes, and more (W. Zhang 2021).[3] According to Pinduoduo's promotional material, the new standards would curb the spread of shoddy goods and false advertisement, both online and offline; and offer clear guidelines for quality assessment, encouraging consumers to choose other high-quality, non-YL crabs of the region (W. Zhang 2021). On the same day, Hancong Jiang, official representative of Huai'an Bureau of Commerce, joined Pinduoduo's crab sale broadcast to introduce the standards and recommend Hongze Lake crabs to the livestreaming event's 600,000 participants (X. Zhang 2021). These were advertised as being of the same quality as YL crabs.

The new standards were designed to formalize the distribution procedure and open the market for non-YL crabs from nearby lakes (especially to nonlocals), thereby triggering the development of new regional brands. Thus, Pinduoduo initiated the Changjiang Delta Cloud Crab Sale Festival to promote crab e-commerce (Zuo 2020). It also launched the Changjiang River Delta New Crab Farmer Program, offering farmers training in e-commerce, ranging from creating an online store to livestreamed sales strategies. This aimed to turn crab suppliers into tech-savvy entrepreneurs, cultivating one hundred leading brands among one thousand certified crab vendors over the next five years. Pinduoduo hoped to propel regional economic development by introducing new regional brands to nonlocal consumers, creating an online value-added market estimated to be worth twenty billion RMB (Xie 2021).

Technology-Mediated Trust

State policy and corporate promotional discourse have framed the transition to platformized transactions as an ideal solution to help farmers bypass value-extracting

middlemen, expand the market and ultimately upgrade the logistics of distribution via transcribing the flow of crabs onto platform data. In 2019, the Chinese State Council urged corporations to implement 'smart' Internet + Food (互联网+食品) supervision for agricultural products (State Council 2019). According to Linwei Fan, who oversees the quality control of crab products at JD, the platform has imposed the strictest standards to remedy misleading advertisement.[4] Specifically, JD requires merchants to submit six official certificates before they can launch online anything bearing geographic indications; AI programs are deployed to authenticate product descriptions. Furthermore, each crab sold on JD is accompanied by an exclusive, inalterable barcode that consumers can scan to track harvesting, packaging and delivery (Liu 2020). If the number of crabs listed by a supplier exceeds the productivity range estimated by JD's big data, the platform will stop assigning QR codes to this supplier (J. Chen 2020). Likewise, Pinduoduo has developed a database of agricultural brands to algorithmically predict harvest times and identify suspicious products appearing out of season (Pinduoduo Inc. 2021).

Although the market transition to platformized transactions is gradual and limited, it is eulogized in China's techno-developmentalist discourse as a technological fix that can provide a greater level of transparency for activities that were either partially or completely opaque in traditional market networks. To achieve this, blockchain – data-storage systems "using linked, sequential chunks of information" (Werbach 2018: 14) – is key (Tang 2018). Blockchain infrastructure allows participants to trust the data appearing on a distributed, synchronized ledger, since those recorded transactions are immutable (Satoshi 2008). To participate in this agricultural e-commerce market, crab farmers must subscribe to platform-based "trust-mediating services" (Bodó 2021: 2668), which register the distribution histories of crabs as measurable, time-stamped checkpoints for "protocological control" (Galloway and Thacker 2007: 31), a form of power and control that is operationalized via distributed networks and protocols.

Distributing crabs from the Changjiang Delta region to consumers nationwide relies on cold-chain delivery. After harvest, highly perishable crabs must be kept between 2 and 8 degrees Celsius and delivered within three days.[5] In cold-chain delivery, IoT-based thermal detectors harness and transmit real-time, location-tagged data inside refrigerated trucks and flights, enabling verification of the crabs' movement history and environmental condition.

At the interface between blockchain-based cold-chain transportation, software protocols and human labor, the platformization of crab distribution signals a gradual subscription to an extra-visible "informatized sovereignty" (Rossiter 2016: 40) wherein contingencies can be contained. Decisions mediated via data-crunching algorithms are seen to possess greater trustworthiness than human-mediated representations in fixing logistical chaos (Keymolen 2016; Botsman 2017). The threat of counterfeit crabs is used by the state and corporations to legitimize the platformization process and the corresponding shift from social trust to technology-mediated trust. Rather than eliminating the need for trust, blockchains afford trustiness without trusting (Werbach 2018). Platformized transactions are complemented by "smart contracts" (Szabo 1997) that supposedly empty the room of uncertainty, providing end-to-end observation and verification, whereas human-led proactive measures by their nature must fall short. Platformization has emerged out of local bureaucracies' incompetence in regulating

the value chains of GI brands in the traditional market networks. Without replacing state sovereignty in the market, informatized logistics complement state-mediated trust by reformulating the movements of crabs into integrative, blockchain-enabled platform data, in which institutional intervention can be undertaken more easily than in the traditional, multilayered market networks.[6]

Notes:

[1] GI indicates a product's place of origin when its reputation is primarily determined by the particular natural or cultural conditions of the region. See CNIPA 2021: 7–8. For GI descriptions of YL crabs, see W. Chen n.d.

[2] Xie 2021, citing statistics from the *Beijing News*.

[3] The standards classify crabs into four classes based on weight, completeness (i.e. no missing legs), color, aroma, etc.

[4] Cited in J. Chen 2020.

[5] Cold-chain infrastructure is only financially manageable for large-scale companies. Ninety-five percent of agricultural e-commerce platforms struggle to make a profit, because the cost of cold-chain hardware can constitute forty percent of the total expense (Yuanyuwuliu 2021).

[6] The transition to platformized transactions can lead to structural inequalities in terms of market share and rights over data access. Platforms can accumulate hyperscale data about individuals to shape the operativity of the agricultural market, and predict and modify users' behavior, wherein new varieties of monetization, subjugation and control can be produced. See Zuboff 2015.

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