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Biometric payment and gendered kinds in Ghana

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ABSTRACT

This paper explores how biometric payment practices in Ghana reinforce historically grown, patriarchal frames of representing women's economic participation. As central modes of participation in social life, payment practices tie closely into national narratives of modernity and economic development. In this light, Ghana's current biometric identification agenda, of which biometric payment constitutes a central element, has come to associate female entrepreneurs with normative gender identities which question their discipline, autonomy, and meaningful contribution to the economy. Two different institutions seeking to classify Ghanaian women in the interest of altering their behavior will be at the heart of the discussion. In the first case, I will focus on development experts' routine representation of (Ghanaian) women as "dependent" on assistance. In the second case, I focus on the regulatory institutions of Ghana's financial sector and the pursuit to formalize what is generally framed as "deviant" female entrepreneurship. The article addresses how the articulation of these normative gender identities reproduces historically rooted conceptions of Ghanaian women's autonomy and economic participation, to the effect of their continued exclusion from relevant public decision-making processes. The paper finally explores the unconventional ways in which female Ghanaian entrepreneurs-turned-activists index emancipatory gender identities to seek recognition for their economic contribution.

KEYWORDS

Ghana; biometric identification technologies; financial inclusion; normative gender identities; human kinds

PALAVRAS-CHAVE

Gana; tecnologias de identificação biométrica; inclusão financeira; identidades de gênero normativas; tipos de seres humanos

PALABRAS CLAVE

Ghana; tecnologías de identificación biométrica; inclusión financiera; identidades normativas de género; tipos de humanos

Pagamento biométrico e tipos de gênero em Gana

RESUMO

Este documento explora como as práticas de pagamento biométrico no Gana reforçam os quadros patriarcais de representação da participação econômica das mulheres, historicamente crescidos. Como modos centrais de participação na vida social, as práticas de pagamento estão estreitamente ligadas às narrativas nacionais da modernidade e do desenvolvimento econômico. Nesta perspectiva, a actual agenda de identificação biométrica do Gana, da qual o pagamento biométrico constitui um elemento central, passou a associar mulheres empresárias com identidades normativas de gênero

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que questionam a sua disciplina, autonomia, e contribuição significativa para a economia. Duas instituições diferentes que procuram classificar as mulheres ganesas no interesse de alterar o seu comportamento estarão no centro da discussão. No primeiro caso, centrarei a representação de rotina dos especialistas em desenvolvimento das mulheres (ganenses) como "dependentes" da assistência. No segundo caso, centrar-me-ei nas instituições reguladoras do sector financeiro do Gana e na procura de formalizar o que é geralmente enquadrado como empreendedorismo feminino "desviante." O artigo aborda a forma como a articulação destas identidades normativas de género reproduz concepções historicamente enraizadas da autonomia e da participação económica das mulheres ganesas, com o efeito da sua contínua exclusão dos processos de tomada de decisões públicas relevantes. O documento explora finalmente as formas não convencionais em que as mulheres empresárias ganenses – activistas virais – indexam as identidades de género para procurar o reconhecimento da sua contribuição económica.

Pago biométrico y tipos con género en Ghana

RESUMEN

Este trabajo explora cómo las prácticas de pago biométrico en Ghana refuerzan los marcos patriarcales históricamente desarrollados para representar la participación económica de las mujeres. Como modos centrales de participación en la vida social, las prácticas de pago están estrechamente vinculadas a las narrativas nacionales de modernidad y desarrollo económico. En este sentido, la actual agenda de identificación biométrica de Ghana, en la que el pago biométrico constituye un elemento central, ha llegado a asociar a las empresarias con identidades de género normativas que cuestionan su disciplina, autonomía y contribución significativa a la economía. En el primer caso, me centraré en la representación rutinaria que hacen los expertos en desarrollo de las mujeres (ghanesas) como "dependientes" de la asistencia. En el segundo caso, me centraré en las instituciones reguladoras del sector financiero ghanés y en la búsqueda de la formalización de lo que generalmente se enmarca como empresariado femenino "desviado." El artículo aborda cómo la articulación de estas identidades normativas de género reproduce concepciones históricamente arraigadas de la autonomía y la participación económica de las mujeres ghanesas, con el efecto de su continua exclusión de los procesos públicos de toma de decisiones relevantes. Por último, el documento explora las formas poco convencionales en que las empresarias ghanesas convertidas en activistas indexan identidades de género emancipadoras para buscar el reconocimiento de su contribución económica.

1. Introduction

Throughout history, innovations in identification technologies have been closely tied to the production of different types of personhood (Higgs 2009). In particular, inscriptions in and measurements of the body for the purpose of identification have historically been associated with delinquency. These historical attitudes, according to Higgs (2009,

346), continue to shape perceptions of the more recent advent of biometric identification technologies, that is, the probabilistic relationship between a body's physiological measurement and its prior registration in a database. Advocates of biometric technologies, in contrast, seek to legitimize the technology's proliferation with ample discourses of inclusion, thus silencing how the effects of biometric identification technologies on power structures, rights and recognition are, at the very least, ambiguous (Rao 2018).

This article advances an STS-inspired argument about the ways in which (state) knowledge infrastructures relate to the production of gender-normative identities. The article draws on the now classic theory of "human kinds" advanced by Ian Hacking (1985, 1995), arguing that biometric personhood rearticulates measurement practices aimed at rendering a population "legible" to the State (Scott 1998). As individuals are grouped into certain social aggregates, historically grown binaries and inequalities are reproduced. Specifically, this contribution deals with the association of biometric identity registration with gendered concepts of personhood. It does so by analyzing representations of femininity in Ghana's developing biometric population data system. Reading these representations against the background of allegedly emancipatory claims of neoliberal personhood purported by the financial-technological complex of biometric identification technologies, I argue that actors at both local and transnational levels reproduce registers of Ghanaian womanhood in terms of dependence and deviance in their pursuit to introduce biometric identification technologies in the West African country.

The societal applications of biometric identification technologies are multiple and so are their gendered dimensions. I concentrate here on financial transactions as deeply gendered practices. Not only are electronic payment solutions the first sector in which biometric identification was established in Ghana (Breckenridge 2010). Payments, in their various forms, further relate to complex legal, political and social relations, and are of such importance that those who exhibit certain (in)actions in their respect may be viewed as deviant, or in other ways worthy of state attention. The by now vast literature on financial inclusion indicates the fundamental relevance of payment and saving practices for participation and inclusion in substantive rights.

By taking payment practices as a vantage point to examine the construction of normative gender identities in the context of Ghana's new biometric identification system, I shed light on two different institutions seeking to classify Ghanaian women in the interest of altering their behavior, and specifically, formalizing their economic practices. In a first instance, I will focus on development experts' association of biometric identity registration with (economic) empowerment and, in turn, an image of Ghanaian women dependent on assistance. In a second analytical step, I focus on the regulatory institutions of Ghana's financial sector and their pursuit to formalize what is framed as deviant female entrepreneurship. The article ties these representations of female economic participation together by arguing that they present historically continuous frames for Ghanaian women seeking recognition for their contribution to national development. While acknowledging that technological innovation affects the production of gendered kinds relating to Ghanaian men as well, the article focuses on gendered representations of Ghanaian women as they are foregrounded in top-level discourses of development tied to biometric identification.

The paper proceeds in four parts. I begin by elaborating on the theoretical relevance of biometric technologies for the production of gendered "human kinds." I proceed to

describe how the circulation of biometric technology, and the measurement practices that it is thought to enable, are intimately linked to the discourse of empowerment promoted by international development agendas, and the disciplining projects of digital financial services (DFS) and financial inclusion. I eventually zoom in on Ghanaian women's resistance to state attempts at disciplining them to adopt gender identities intrinsic to neoliberal governmentality.

The paper draws on closely related fieldwork in urban Ghana from January to February 2016, July to August 2017 and April to May 2018, in addition to long-term observation of the media on this topic, as well as previous doctoral research on female entrepreneurship in urban Ghana.

2. The biometric construction of "human kinds"

Biometric identity registration systems are expressions of contemporary societies' desire for systematic knowledge about groups of individuals. Modeled on the positivist idea of efficient causation, Hacking argues, modern societies seek to classify human behavior into ever more refined categories, or "human kinds," in the pursuit of intervening in and modifying their behavior (Hacking 1995, 351, 352, 360). Following Hacking (1995, 352),

human kinds [are] kinds about which we would like to have systematic, general, and accurate knowledge; classifications that could be used to formulate general truth about people; generalizations sufficiently strong that they seem like laws about people, their actions, or their sentiments (...) precise enough to predict what individuals will do, or how they will respond to attempts to help them.

Biometric technology, seen in this light, taps into a desire for "hard" empirical evidence on social phenomena and hence the "right classification" of people (Hacking 1995, 352, 360). As Mordini and Massari note (2008, 488), biometric identification technologies seek to reduce doubt by associating "identities to individuals by using measurable personal features instead of something owned or known by the individual." Yet, biometric technology measures populations not only by means of identifying unique bodies based on their physiological traits. Integrated in larger population data ecosystems, biometrics crucially connect to people's social, and therefore, value-laden practices. The production of biometric "data doubles" (Bouk 2017) links formerly disconnected registers within the population data ecosystem, opens new "data journeys" between them (Lemov 2017), and ultimately provides analytical insights into new areas of people's lives.

Hacking's argument is theoretically relevant in that human kinds "are part of what we take knowledge to be. They are also our system of government, our way of organizing ourselves" (Hacking 1995, 364). Reflecting Foucault's core theme of subject formation in the context of discourse and bio-power (1977), Hacking is careful not to associate registration practices with power alone, but to remain open to processes of struggle, mobilization, and even emancipation. Following from this, when classifications of people change through the introduction of new technologies and modes of knowledge production, "the space of possibilities for personhood" changes with them (Hacking 1985, 229; 1995, 368). As humans come to act only in relation to the categories labeling them or their actions (Hacking 1985, 233, 236), "[t]o create new ways of classifying people is also to change how we can think of ourselves, to change our sense of self-worth, even how we remember

our own past” (Hacking 1995, 369). Human kinds possess this transformative potential because they are laden with value. By “making up people” in this way, Hacking argues, we ultimately come to “distinguish kinds of people or behaviour that are deviant” or considered normal, respectively (Hacking 1995, 360, 367), while at the same time, the recognition of subject positions allows persons to be addressed as such and to formulate plausible claims (Krause and Schramm 2011, 127).

Human kinds can consist of many social categories, including categories of gender. Although Hacking shies away from defining gender as a “human kind” in and of itself (1995, 356), he details how normative ascriptions of gender cut across core aspects of social life and hence play a key role in the production of human kinds. “Human kinds” define the circumstances in which people associate themselves and interact with gender-normative behavior in their everyday lives. However, they are not absolute, as human activity is always located in the in-between spaces of multiple categorizations, for example, when actors index non-conventional gender norms in their practices of seeking rights and recognition by resisting and creatively altering the kinds associated with them, as illustrated in this paper’s final section.

Transposing the concept of “human kinds” into the biometric agendas currently shaping “cultures of surveillance” (Purdeková 2016) in Africa is not unproblematic. Rooted in a North Atlantic techno-political context and tradition, Hacking’s theory rests on a notion of the individual which gender theorists such as Adomako Ampofo et al. (2004) have described as at least troubling. The argument presented here ties into this observation in that it focuses on the very conceptions of the person that are inscribed in “ordering technologies” traveling into the Ghanaian context through the work of international organizations funding large-scale identification systems across the continent, as well as predominantly North Atlantic technology providers designing infrastructures, material technologies and even workflows, while African policy makers follow a logic of leapfrogging when adopting the new solutions (for an overview of the politics and economics of the Ghanaian biometric ID system, see Thiel 2020, Akrofi-Larbi 2015; Breckenridge 2010).

In the following sections, I look at two registers of female identity – dependence and deviance – transported into Ghana’s current biometric policy agenda before turning my attention to the creative ways of subverting these classifications by Ghanaian market women.

3. The gendered focus of biometric development agendas

Widely applauded as an avenue toward “legal identity for all” in the context of the limited administrative registration of vital events (birth, marriage, divorce and death), biometric technology has received strong tailwind from a range of international development organizations (e.g. UNICEF, UNHCR, World Bank). At the forefront of this agenda, the World Bank’s “Identification for Development” (ID4D) program heralds biometric identity registration as a panacea for myriad development issues. With the articulation of the Sustainable Development Goals (SDGs), and goal 16.9 in particular (“free and universal legal identity, including birth registration”), the promotion of identity registration as a goal in and of itself has become a priority for the international community. The idea of strengthening identification systems across the world as part of SDG 16.9 follows three general

and overarching development goals: “inclusion and access to essential services,” “effective and efficient administration of public services,” and a “more accurate measure of development progress” in addition to enabling many other SDGs¹ and supporting the partial agendas of the various international organizations (e.g. the World Bank’s Twin Goals, or UNICEF’s CRVS strategy) (World Bank 2016, 3, 13).

Despite its broad range of developmental goals, the ID4D agenda’s narrative neatly specifies a gendered target, taking as a point of departure that “children and women, from poor rural areas in Africa and Asia” are disproportionately prevented from “fully participating” in their societies, and ultimately from “exercise[ing] their human rights” (World Bank 2016, 5) due to their lack of means to identify themselves vis-à-vis third parties.

Women often struggle to assert their rights and access to services due to lack of personal identification. Lacking their own bank accounts, their government benefits and wages are deposited into their husbands’ accounts. Birth and marriage registration can help enforce minimum age of marriage legislation and so help combat child marriage. Registration and legal proof of identity contributes to women’s ability to inherit property and claim their property rights in the event of marriage dissolution or widowhood. (World Bank 2016, 5)

While doubtlessly addressing some of the most pressing issues, the discourse of disempowerment reified in such development programs, Cornwall, Gideon, and Wilson (2008, 5) argue, “runs the risk of infantilizing women, lumping them together with children as the deserving objects of intervention.” This could not be clearer than in the ID4D agenda’s generic grouping of women and children as groups at particular risk of structural exclusion from civil registration systems (World Bank 2017, 9; see Hanmer and Dahan 2015) and the almost universal representation of women and children as supposedly homogenous social aggregates on the covers of reports and guidelines.

This kind of imagery and the reasoning it purports has received strong feminist criticism. As Cornwall et al. (2008) note, when development agencies began to focus on women’s roles in development, they did not revisit their assumption of (hetero-)normative gender identities. Though operating with the vocabulary of gender, the authors argue, development agencies have “never really been able to grasp the concept” and instead instrumentalized women as new “weapons in the fight against poverty” or, respectively, as sites of “smart economic” investment (Cornwall et al. 2008, 2). Development programs targeting women with biometric technologies follow suit in this tradition of emphasizing the potential of women as “resourceful providers, reliable micro-entrepreneurs, [and] cosmopolitan citizens” (Hawkesworth 2006, 202, cited in Cornwall et al. 2008) – provided they are being empowered by the promises of the new technology as in the following example,

[T]he computerized ID system provided direct access of cash transfers to women for the first time. Evaluations showed that, as a result, households spent more on nutrition and child

¹Biometric identification has further been linked to SDG 1.3 (social protection systems for the most vulnerable), 1.4 (access of the poor to economic resources, including property and finance), 1.5 (assistance in dealing with shocks and disasters), 3.1 (Reducing the global maternal mortality ratio) and 3.2 (child mortality), 3.3. (ending the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases), 5a (giving poor women equal access to economic resources, including finance), 5b (enhancing the use of technology, including ICT to promote women’s empowerment), 10.7 (safe and responsible migration and mobility), 10c (reducing the cost of remittance transfer), 12c (eliminating harmful energy subsidies), 16a (strengthening the capacity to fight terrorism and crime), 16a (fighting crime and terrorism), 16.5 (reducing corruption), among many others (World Bank 2016, 2017).

education, and that women's confidence increased as did their importance in household decision making. (World Bank 2016, 5)

The quote shows how the association of technology with women's lives merely expands on the latter's expected roles as providers of care, rather than transforming their role in society. Such examples support the point raised by Cornwall et al. (2008) that the narrative about the promise of empowerment reproduces the idea of "women's compliance with normative expectations" (3). The 2018 civil registration and vital statistics conference "Making the Invisible Visible: CRVS as a basis to meeting the 2030 Gender Agenda" reproduced the similar and wide-held belief that "[i]f you want to eliminate poverty, empower women. If you want to achieve peace, involve women. And if you want to achieve economic growth, invest in women."² Below the cover of docility and compliance, such statements reproduce "deeply conservative notions of womanhood" (Cornwall et al. 2008, 3).

As development's empowerment narrative focuses on women's efficiency, especially regarding their ascribed "responsibility for meeting children's needs and their tendency to expend less resources" (Cornwall et al. 2008, 5), it exhibits neoliberal policy thought which relies on the value-laden "human kind" of the disempowered woman "who saves and repays regularly, puts pressure on other group members to do similarly (...) and is committed to the welfare of the family" (Chakravarti 2008, 1).

In addition to reproducing neoliberal concepts of personhood, development thought's core definition of women's normative gender identity as a family-centred nurturing and judicious caretaker meets a long tradition of African feminist debates. Adomako Ampofo et al. (2004, 687–688) criticize the over-association of African womanhood with development which has reached into gender studies in Africa "at the expense of independent theoretical and innovative empirical research." Where such independent research has been carried out, it strongly suggests that Western feminist discourses silence the experiences of African women and superimpose concepts which reflect the experiences of white middle-class feminists, especially the public–private dichotomy, the notion of the nuclear family, notions of motherhood, and gender as main signifier of difference. Oyewumi (2002: 1), in particular, criticizes how Western feminist thought has assumed African societies under the "cultural experiences and epistemologies" of the nuclear family system, thus silencing "local concerns and interpretations" as well as African women's "wishes, and their desire to understand themselves more clearly" in non-universal terms.³

For Adomako Ampofo et al. (2004), foregrounding African perspectives requires close empirical observations of issues including health, violence, sexuality, education, politics, work, and globalization, among other pressing issues. The argument presented here cumulates in the final section reflecting Ghanaian women's self-perceptions of their participation in reproducing the nation as mothers and as skillful traders. Despite its

²Report available online at https://crvssystem.ca/sites/default/files/inline-files/IDRC_CRVS_Gender_Report_Final_EN_1.pdf.

³This notion has also been central to Aihwa Ong's response to the Fourth World Conference on Women in Beijing in 1995, which states that "a new transnational and transcultural strategy [emerged] to confront the entangled issues of globalization and women's rights" which "implies a contingent North-South feminist partnership for intervention in different countries where the gender gap is pervasive" This "strategic sisterhood," Ong criticizes, is based on a notion of citizenship for all women which is "conceptualized in absolute, universalistic terms of freedom and equality, regardless of differences in historical and cultural experiences, not the least of which is colonialism" (Ong 1996: 109–10).

limitations, Hacking's theory of human kinds allows a double-sided view of gendered subject formation in which certain framings by top-level actors find their way into the claims-making strategies and hence self-presentation of female entrepreneurs, while other elements meet outright rejection. I will show how the modes of representation travel into Ghanaian claims-making arenas along multiple vectors, including gendered frames inscribed in biometric technology, as in the work of transnational advocacy.

4. The articulation of normative gender identities in the financial inclusion agenda

As has been noted above, biometric identification technologies have been linked to various areas of development. Prominent among them, biometrics are credited with enhancing access to DFS by providing new means of authenticating transactions and reducing fraud. Sreter and Breckenridge (2012, 2) argue that despite their routine marketing in terms of improvements in governance efficiency and development, biometric identification schemes generally aim at increasing the size of the financial sector, specifically through the formalization of informal credit markets.

The Ghanaian financial industry was the first sector to introduce a biometric identification system in the West African country, with the *e-zwich* biometric payment application (Breckenridge 2010). The *e-zwich* card is a fingerprint-enabled debit card introduced in 2008, used to save money, pay for purchases, settle bills, and receive government payments. Yet, social and psychological factors initially hindered the adoption of the *e-zwich* card as a universal means of payment (Dzokoto et al. 2016). Following Dzokoto et al. (2016) consumers did not find the debit card to be transparent and falsely accused the technology for losses of funds. The general mistrust in turn discouraged vendors from adopting the point of sale (POS) devices thereby further limiting the system's penetration (Dzokoto et al. 2016).⁴ In order to increase the adoption of the *e-zwich* payment system, it has more recently been linked to the public payroll system, the National Service Scheme, and the payment of welfare benefits in the government's Livelihood Empowerment Against Poverty program (LEAP) besides ensuring interoperability with other payment platforms, including mobile money applications. This is in line with the publication of the "National Payments Roadmap," which developed jointly by the Bank of Ghana and Standard Chartered Bank, notes how the country remains a cash-based economy⁵ despite intensified efforts to expand the reach and interoperability of various payment platforms (that is, inter-bank switches, mobile money operators).

⁴The introduction of identification technologies is generally accompanied by narratives of visibility and the state's production of legibility (Scott 1998). African Studies scholars, in particular, complicate this notion by pointing to the ways in which African modernities are associated with invisibility (Meyer 2015). Ethnographic observation during my PhD research in Makola market revealed how financial losses were at times associated with witchcraft (Thiel 2015: 152). This is in line with Dzokoto, Asante and Aggrey's (2016) observation that biometric payment suffered as financial flows remained intransparent for consumers and Parish's (2000) argument about transnational technological monetary networks.

⁵This is despite the fact that the number of mobile money customers in Ghana has dramatically increased since 2014, skyrocketing from about 7 million customers (from about 4 million in 2013) to nearly 20 million clients in December 2016 (Ghana's population is about 28 million, with a mobile phone penetration rate of 131%, according to the National Communications Authority). Within the same period, conventional bank customers increased more gradually from about 8 million to 10 million account holders. The recent initiative of GHIPSS, in their role as a subsidiary of the Bank of Ghana, to ensure interoperability among the scattered payment systems in the country (gh-link, and more

One of the fundamental claims of international financial organizations is that women represent a disproportionately large share of the world's "unbanked"⁶ population; especially in the area of financial inclusion's current driver – DFS. The World Bank's Global Financial Inclusion Database (FinIndex), provides an abundance of statistical knowledge about Ghanaian women's economic practices that locates the notion of female entrepreneurship outside formal financial institutions. While adoption rates by male adults only exceed those of women by small margins,⁷ the general association of informal economic activity in Ghana with women traders evidences a deeply gendered interpretation of these statistics with far-reaching consequences for the normative framing of their behavior and access to important resources, rights and recognition.

Efforts to promote DFS such as the *e-zwich* card, following Breckenridge (2010, 655), are less about the increase in efficiency, clients' security and convenience, than about the state's desire to "capture and order the economic activity that has long sought to escape central power." Keith Hart's work on the Ghanaian "informal economy" (Hart 1973) shows the creativity with which urban economic actors skillfully evade the ordering activities of the state, typically, in order to under-value their economic activities vis-à-vis internal revenue collection. More recent scholarly work has emphasized the gendered nature of these activities (e.g. Lindell 2010). In the case of Ghana, the image of the successful West African market woman has become iconic for female entrepreneurship in the so-called informal economy, but also for its evasive relationship with the state (Clark 1994, 2001).

These gendered 'kinds' of female economic activity are rooted in urban Ghanaian marketplaces' historical association with deviancy, in particular, memories of violent descents on the country's marketplaces by the military regime of Flight Lieutenant J.J. Rawlings (PNDC 1981–1992). On August 18, 1979, Accra's largest marketplace, Makola #1, fell victim to the discursive move of accusing market traders of standing in the way of Rawlings' popular revolution. Soldiers, assisted by a large crowd, demolished the symbol of retail in the Ghanaian capital (Robertson 1984, Clark 1994, 381, Awuah 1997, Darkwah 2002, 30). As Robertson points out, "market women, because of their visible role, were forced to bear the brunt of public displeasure provoked by shortages in goods, invisible inflation, decline in terms of trade, corruption, and incompetence" (1983, 469). Public opinion in Ghana stigmatized women traders as "human vampire bats" or "exploitative parasites hoarding their wealth and goods while people starve" (Clark 2001).

recently, the pursuit of mobile money interoperability) lays the foundation for the further digitization of economic transactions, and not least the linking of payments to individual identities.

⁶Factors associated with this global trend are myriad, including generally lower income compared to men, socio-cultural prescriptions of property ownership and transfer, as well as structural discrimination by banks and other financial institutions (Karlan and Morduch 2009; UPU 2015).

⁷34% of Ghanaian women held an account at a financial institution. Among the richest 60% of the female population, this percentage does not rise above 41%. Even considering other forms of accounts, financial inclusion in Ghana remained below the 50% mark, which translates into over a third of Ghanaian women (35.6%) reporting being unable to come up with any sort of emergency funds. In addition, although another third had borrowed money over the course of the last year, only 8.9% had access to a financial institution to do so. Besides borrowing from private lenders (4.9%), buying on store credit (3.8%) and borrowing from employers (2.8%), the largest group of women had access to loans from friends and family (20.7%). Further, only 0.8% of women owned a credit card in 2014, and a mere 0.5% used it. Debit cards were slightly more adopted, at a rate of 8.8%, with 7.5% of women carrying a debit card in their own name. Nonetheless, debit card usage was limited to 3.3% of Ghanaian women. Mobile money accounts surpass this penetration rate with 11.8%, yet usage to pay bills, receive and send money in 2014 stagnated only around 1%.

While traders in food items were accused of instilling fear in the producers [that they were refusing to sell their produce], traders in consumer items were accused of creating artificial shortages by hoarding goods and selling them at exorbitant prices. (Darkwah 2002, 30)

In the aftermath of the attacks, traders not only suffered severe economic losses. Mensa-Bonsu (2007, 277) emphasizes that “the penalties prescribed for the offences set down, was death by firing squad or imprisonment of not less than three years.” Memories of this time therefore continue to shape older traders’ attitude towards state actors.

With the adoption of the Structural Adjustment Programs, urban marketplaces gradually saw the influx of male actors (Overå 2007, Thiel and Stasik 2016). Nonetheless, to this day, in the Ghanaian market system, normative practices of intergenerational capital transfer continue to reproduce the notion of established female traders as gatekeepers controlling access to informal credit and other resource flows required for market entry (Marfaing and Thiel 2013). The recent turn to DFS, and prominently among them the *e-zwich* biometric payment system, represents a move to formalize these forms of circulating capital. They thereby challenge the very redistributive processes that make up the “human kind” of iconic female entrepreneurship within the social universe of the Ghanaian marketplace (Marfaing and Thiel 2013, Thiel 2015).

Although Ghanaian policy makers usually speak with great respect when they address issues concerning women entrepreneurs, they do so in highly gender-normative terms, noting how “their hard work has allowed a generation to educate themselves” (see Marfaing and Thiel 2017). Policy makers thereby reproduce the notion of trade activities as income generating “pursuits that do not conflict with domestic work,” in particular, child-care (Pellow 1977: 122, cf. also Seligmann 2001).⁸ At the same time, policy makers criticize female traders’ actions – or rather their inactions regarding desired processes of financial formalization – as undisciplined. This becomes most evident in evaluations of female entrepreneurs’ payment practices. The dominant picture of female economic activity is routinely painted in terms of cash payments. While almost all revenue collectors I spoke to over the course of my research decry the practice of underreporting transactions, other regulators – and traders themselves – point to the risk of robbery and other losses involved in handling cash, especially in long-distance travel required for wholesale.⁹ By pointing to cash transactions’ increased risks and inconveniences, female entrepreneurs are represented as irrational, and ultimately as incompetent. Worse, their activities are presented as detrimental to the whole nation. “These traders don’t understand the risks of carrying cash. Or its consequences: the amount of bills the Central Bank has to replace every year because of them is money lost to development.”¹⁰

This is further problematized where large international transactions, for example, in the trade with China, are involved (Marfaing and Thiel 2014). Statements such as the following are common among trade agents but also state officials. “You know, there are traders who carry as much as US \$300,000 in cash when they go to China. When they see a debit card they are surprised.” The notion of surprise here may be an exaggeration, but it only superficially masks the common, and largely male perception of female traders’

⁸Clark (1999) denounces the claim that Ghanaian women regard trade as “ideal nursing-mother work” on the basis of its compatibility with childcare, but rather sees it as a means to provide the steady income needed to sustain children in urban Ghana.

⁹Interview with the Ghana National Tomatoes Traders and Transporters Association in 2014.

¹⁰Interview GHIPSS 2017.

ignorance. At the same time, such statements indirectly reference traders' state-evading practices, for example, of securing foreign currency through private middlemen and creating a lack of transparency that secures some manoeuvring space at the moments of import and taxation.

5. Resisting biometric discipline

Adomako Ampofo et al. (2004) note that despite the fact that African women have always contributed their "productive and reproductive labor" to state economies, "a gendered division of labor exists between women's and men's work" and "women's labor still remains invisible and devalued yet indispensable to state economies" (Adomako Ampofo et al. 2004, 699). This is mostly due to the academic focus on formal work relations, where men generally outnumber women. Yet, as informal work has become increasingly important for socio-economic and political inclusion (Lindell 2010), but also for women's participation in globalization and modernity (Darkwah 2002), notions of autonomy and subordination cannot be reduced to gendered livelihoods but need to take into consideration the larger social and techno-political configurations that shape Ghanaian women's access to representation and participation.

When Hacking speaks of the production of "human kinds," he warns that each category has its own history which can only ever be traced in partial terms (1985, 234). In a bid to approximate this production process, Hacking suggests differentiating between two sets of vectors contributing to the production of kinds. On the one hand, a "community of experts" acts on their desire to quantify people and their behavior, in order to locate them in causally defined categories. "From above," these experts "create a 'reality' that some people make their own" when they understand themselves in its regard (Hacking 1985, 234).¹¹ The case of Ghana's national biometric identification agenda shows how different actors can inscribe different normative issues in the problematization of women's economic activities. For Ghanaian policy makers, the desire to identify women's financial transactions rests on the causal assumption of women's alleged incompetence and indiscipline standing in the way of national development. Ghanaian policy makers problematize cash-based transactions not merely as a matter of traders' professional choices (and in turn, consumers' preferences although these are surprisingly absent from this debate), but as important issues of economic development. Ghana's "National Payments Roadmap" (Bank of Ghana 2017) states how "greater financial inclusion and a significant shift from cash payments to electronic/digital payments, to be achieved within a 'cash-lite' economy," ultimately "stimulate and sustain economic progress" for the nation (Bank of Ghana 2017, 9, 10).

Development narratives of empowerment, in contrast, assume the opposite causal relationship between women's economic activities and identification: it is through identification that women can be included in markets, and ultimately in developmental

¹¹Innovations in population data systems and the classification they materialize have featured prominently in the social study of quantification since the debate around Hacking's "kinds." Mainly located in STS scholarship, these studies tend to focus on infrastructural re-organization (Bowker and Star 1994) in the form of incremental, overlapping translations of ideas, organizations and material objects (Star and Ruhleder 1996) which are shaped by path dependencies, frictions and even outright failures (Edwards et al. 2007). I here choose to reflect Hacking's argument as it foregrounds how "human kinds" change in the interplay of expert knowledges and the actions of the so-classified populations in relation to their classification.

processes. Yet, although the narrative on biometric technology as a tool for development produces kinds of women who are to be empowered by financial inclusion and the ability to engage in global market interactions, it simultaneously frames a re-embedding of women in the familial context where they are expected to “translate any gains from the market into the means for household survival, and will be prepared to make unlimited personal sacrifices to provide the household with a safety net against the ravages of neoliberal macroeconomic policies” (Cornwall et al. 2008, 5).

Despite their competing outlooks, both normative frames confine women economic actors within the boundaries of neoliberal personhood defined in relation to their ability to participate in the market as enterprising selves, while remaining under the close surveillance of the state and gendered expectations as providers of care.

The second vector, which Hacking (1985, 234) names “presses from below,” is constituted by “the autonomous behaviour of the person” thus classified. The preceding sections treated Ghana’s larger identification agenda in the light of normative classification of women’s economic activities. In the remaining part of this contribution, I lay out how women entrepreneurs act in relation to these categories by indexing different gendered frames.

Women entrepreneurs consciously evade the normative prescription of being disciplined into financial transparency and uphold their own classification as empowered and disciplined economic agents. Mobilizing competing repertoires of expert knowledge, especially the statistics produced by the ILO’s informal sector agenda (see Bruno, Didier and Vitale’s (2014) concept of “statactivism” detailing the role of statistical production in transformative social processes), female traders are apt to point out their work’s contribution to national development, framing themselves in terms of relevant economic actors and – ultimately – taxpayers.

Women spokespersons for the New Makola Traders Union of Accra’s main market, Makola Market, expressed their gendered identity and called for recognition by Ghanaian state actors on Ghana’s public television station GTV during a special program of the popular talk show ‘Mmaa Nkommo’ (‘Women’s Talk’).

If you look into our contribution to the economy, you can see that market women contribute 85%.¹² We pay our taxes which are used for the development of the nation. They use them for a lot of things. (...) We are part of the economy.

Another invited speaker, the Ghana representative of the UK-based NGO WIEGO, seconded this association leader’s standpoint in the program.

They contribute massively to the economy, in the sense that IRS [Internal Revenue Service] collects taxes, AMA [Accra Metropolitan Assembly] collects toll. These bits and pieces make it a lot. Some of the money is used for roads, some is used to repair the hospitals; it is used for all sorts of development in our nation. It is important that the government pay more attention to these women and assist them where necessary and possible. (...) The government should be thankful, but instead these women have to beg to get attention.

¹²This statistic usually refers to the contribution of informal sector workers as a whole, the contribution of trade to Ghana’s GDP is in reality closer to 6% (Ghana Statistical Service 2015).

From the 2-hour program, 1 hour of which was later broadcast, these two comments are representative of traders' self-perception as relevant – and disciplined – contributors to the reproduction of the state.

On the other hand, learning from international development organizations and NGOs, especially in the form of workshops and influencer trainings, traders also regularly deployed the register of motherhood in their negotiations with state authorities. Invoking one's duty to return home with enough money to feed the children is one of the most common depictions of female traders in negotiations with public officials. In traders' claims towards the state, children are presented as the nation's main resource and basis for the future.

Motherhood is regularly applied in traders' negotiations with authorities coming to collect a daily tax contribution as a plea for exemption from fees and fines, so that they may feed their children. Also regarding contesting policy at the national level, invoking one's duty to return home with enough money to feed the children is one of the most powerful arguments of female traders. In traders' claims towards the state, children are presented as the nation's main resource and basis for the future. "If you give loans to men, they will spend it. But if you give it to a woman, she will know how to spend it well, both her business and her family will benefit. Help the women to help the whole nation."¹³ Another market woman put it more personally.

I remember a while ago, I was pregnant. The police came to the market and cleared it. They shut traders down. They said that we were not allowed to sell there. They destroyed our goods. What is the sense in that, because I am working to raise this child to become a man for the nation, but you are causing me damages.

At the same time, gendered frames relating to motherhood tie into the register of dependence when traveling into Ghanaian markets through the work of transnational NGOs. Emphasizing notions of capacity building in areas such as housekeeping and marital affairs, in addition to the prominent issue of business skills, such as bookkeeping, traders relate to legible registers of female entrepreneurship in their strategies of framing their discipline, skills and contribution as mothers.

I was relying on the market to raise my children. Because I was able to control my money, I could cut unnecessary expenses from my business such as attending funerals. You will collapse your business! So we need to train the women. About 65 percent in the market are illiterates.¹⁴

At a meeting with a panel of authorities at the Ghana Trades Union Congress in 2014, which was reviewing their financial support across various market trader organizations in the country, one market leader deliberately misspelled her responses on the whiteboard and color-coded cards provided by the reviewer. Usually communicating in perfectly drafted emails, she later admitted that her errors were a conscious and strategic move to underscore her argument that women traders were excluded from educational and other opportunities to build their lives. A similar strategy included pretending to not speak English at top-level gatherings. This strategy reproduced the very classification of female entrepreneurs as uneducated and ultimately dependent on the assistance of

¹³Interview New Makola Traders Union 2011.

¹⁴Interview Kantamanto Banana Sellers Association 2011.

others to fulfill their main role, that is, the support of children and the maintenance of the household.

Women entrepreneurs' attempts at de-classification (Ranci re 2007) hence differ in relation to the registers used to describe their activities. While women traders manage to resist the classification as deviant, they embrace – even in the moment of resistance – their “kind” as caring mothers entitled to assistance and relief from their hardship. While these examples illustrate the power of top-down vectors shaping “human kinds” to co-constitute the framing of gender-normative identities even in the moment of their de-classification, they above all show the creativity of Ghanaian women indexing multiple gender-normative identities and the recognition they afford.

6. Conclusion

The introduction of new technologies in Ghana rearticulates patriarchal gender identities which are deeply rooted in historical representations of female entrepreneurship in the subversion of the state. In that light, biometric technologies are mobilized in Ghana as a means to address the desire for increasingly accurate knowledge about gendered (and other) kinds. They do so in areas that are (historically) framed as problematic, and hence requiring state attention. The paper focused on biometric payment applications which, among the myriad applications of biometric technologies, has been established in Ghana since 2008 and has since allowed new political visions for the extraction of capital in the form of taxation, besides other developmental and disciplining uses. While men are more readily associated with these technologies designating modernity, in the Ghanaian context, women are typically framed as resisting the adoption of new technologies (and by extension financial inclusion and formalization of their transactions) on the grounds of their alleged ignorance and fiscal indiscipline. This is despite the strong role of Ghanaian women entrepreneurs in market trade and their widely accepted role as providers for the newly educated generation of Ghanaians. A vast body of literature has deconstructed these representations of deviance and sought to represent female entrepreneurship in Ghana in light of its substantive contribution to the (re)production of the nation, noting how women entrepreneurs in Ghana actively oppose normative gender ascriptions of the Ghanaian state and international development discourses by advancing competing indices of normative gender identities that articulate female entrepreneurship in terms of responsible and invaluable contributors to the material reproduction of the nation. They thereby contrast the human kind of deviance with the kind depicting their iconic female entrepreneurship. Drawing on the register of taxation, women entrepreneurs-turned-statactivists reference alternative sets of statistical expert knowledge when they contest dominant classifications of female entrepreneurship (Bruno, Didier, and Vitale 2014). However, women traders also rely on the register of motherhood to support their claims to resources and recognition. They thereby reproduce normative identities that associate women with the private realm and thereby classify women entrepreneurs as dependent and in need of empowerment. Ghanaian women confirm here that individuals can only perceive of themselves and act in relation to their classification, even when seeking to de-classify and transform.

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References

- Adomako Ampofo, Akosua, Josephine Beoku-Betts, Wairimu Ngaruiya Njambi, and Mary Osirim. 2004. “Women’s and Gender Studies in English-Speaking Sub-Saharan Africa: A Review of Research in the Social Sciences.” *Gender and Society* 18 (6): 685–714.
- Akrofi-Larbi, Richmond. 2015. “Challenges of National Identification in Ghana.” *Information and Knowledge Management* 5 (4): 41–45.
- Awuah, Emmanuel. 1997. “Mobilizing for Change: A Case Study of Market Trader Activism in Ghana.” *Canadian Journal of African Studies* 31 (3): 401–423.
- Bank of Ghana. 2017. “Impact of Mobile Money on the Payment System in Ghana: An Econometric Analysis.” https://www.bog.gov.gh/privatecontent/Public_Notices/Impact%20of%20Mobile%20Money%20on%20the%20Payment%20Systems%20in%20Ghana.pdf
- Bouk, Dan. 2017. “The History and Political Economy of Personal Data Over the Last Two Centuries in Three Acts.” *Osiris* 32: 85–106.
- Bowker, G., and S. L. Star. 1994. “Knowledge and Infrastructure in International Information Management. Problems of Classification and Coding.” In *Information Acumen: The Understanding and Use of Knowledge in Modern Business*, edited by L. Bud-Frierman, 187–213. London: Routledge.
- Breckenridge, Keith. 2010. “The World’s First Biometric Money: Ghana’s e-Zwisch and the Contemporary Influence of South African Biometrics.” *Africa: The Journal of the International African Institute* 80 (4): 42–662.
- Bruno, Isabelle, Emmanuel Didier, and Tomasso Vitale. 2014. “Statactivism. Forms of Action Between Disclosure and Affirmation.” *Partecipazione e Conflitto* 7 (2): 198–220. doi:10.1285/i20356609v7i2p198.
- Chakravarti, Uma. 2008. “Beyond the Mantra of Empowerment: Time to Return to Poverty, Violence and Struggle.” *IDS Bulletin* 39 (6): 10–17.
- Clark, Gracia. 1994. *Onions Are My Husband. Survival and Accumulation by West African Market Women*. Chicago, IL/London: The University of Chicago Press.
- Clark, G. 1999. “Mothering, Work, and Gender in Urban Asante Ideology and Practice.” *American Anthropologist* 101 (4): 717–729.
- Clark, Gracia. 2001. “Gender and Profiteering: Ghana’s Market Women as Devoted Mothers and ‘Human Vampire Bats.’” In *‘Wicked’ Women and the Reconfiguration of Gender in Africa*, edited by D. Hodgson and S. McCurdy, 293–311. Oxford: James Currey.

- Cornwall, Andrea, Jasmine Gideon, and Kalpana Wilson. 2008. "Reclaiming Feminism: Gender and Neoliberalism." *IDS Bulletin* 39 (6): 1–9.
- Darkwah, Akosua. 2002. "Going Global: Ghanaian Female Transnational Traders in an era of Globalization." PhD diss., University of Wisconsin.
- Dzokoto, Vivian, Rebecca Asante, and John K. Aggrey. 2016. "Money That Isn't: A Qualitative Examination of the Adoption of the 1 Pesewa Coin and Biometric Payment Cards in Ghana." *Ghana Studies* 19: 3–34.
- Edwards, P. N., S. J. Jackson, G. C. Bowker, and C. Knobel. 2007. "Report of a Workshop on History & Theory of Infrastructure: Lessons for New Scientific Cyber Infrastructures." Accessed December 12, 2019. <https://www.ics.uci.edu/~gbowker/cyberinfrastructure.pdf>
- Foucault, M. 1977. *Discipline and Punish: The Birth of the Prison*. Harmondsworth: Penguin.
- Ghana Statistical Service. 2015. *Revised 2014 Annual Gross Domestic Product*. Vol. 06/2015.
- Hacking, Ian. 1985. "Making Up People." In *Reconstructing Individualism. Autonomy, Individuality, and the Self in Western Thought*, edited by Thomas C. Heller, Morton Sosna, and David E. Wellbery, 222–236. Stanford, CA: Stanford University Press.
- Hacking, Ian. 1995. "The Looping Effects of Human Kinds." In *Causal Cognition: A Multi-Disciplinary Debate*, edited by Dan Sperber, David Premack, and Ann Premack, 351–383. Oxford: Clarendon Press.
- Hanmer, Lucia, and Mariana Dahan. 2015. "Identification for Development: Its Potential for Empowering Women and Girls." <https://medium.com/world-of-opportunity/identification-for-development-its-potential-for-empowering-women-and-girls-1fffd37c3f88#.xsje2jn7k>
- Hart, Keith. 1973. "Informal Income Opportunities and Urban Employment in Ghana." *The Journal of Modern African Studies* 11 (1): 61–89.
- Hawkesworth, M. 2006. "Feminists v. Feminization: Confronting the War Logics of the Bush Administration." *Asteriskos* 1 (2): 117–142.
- Higgs, E. 2009. "Change and Continuity in the Techniques and Technologies of Identification Over the Second Christian Millennium." *Identity in the Information Society* 2: 345–354. doi:10.1007/s12394-009-0035-1.
- Karlan, Dean, and Jonathan Morduch. 2009. "Access to Finance." In *Handbook of Development Economics*, Vol. 5, Chap. 71, edited by Dani Rodrik and Mark Rosenzweig, 4703–4784. Amsterdam: Elsevier.
- Krause, Kristine, and Katharina Schramm. 2011. "Thinking Through Political Subjectivity." *African Diaspora* 4: 115–134.
- Lemov, Rebecca. 2017. "Anthropology's Most Documented Man, Ca. 1947: A Prefiguration of Big Data from the Big Social Science Era." *Osiris* 32: 21–42.
- Lindell, Ilda. 2010. *Africa's Informal Workers: Collective Agency, Alliances and Transnational Organizing in Urban Africa*. London and Uppsala: Zed Books and The Nordic Africa Institute.
- Marfaing, Laurence, and Alena Thiel. 2013. "The Impact of Chinese Business on Market Entry in Ghana and Senegal." *Africa. Journal of the International African Institute* 83 (4): 646–669.
- Marfaing, Laurence, and Alena Thiel. 2014. "Agents of Translation": Westafrican Entrepreneurs in China as Vectors of Social Change." Working Papers of the Priority Programme 1448 of the German Research Foundation, 4.
- Marfaing, Laurence, and Alena Thiel. 2017. "African Entrepreneurs in China: True Actors of Globalization." In *Mobility Between Africa, Asia and Latin America: Economic Networks and Cultural Interactions*, edited by Ute Röschenhaler and Alessandro Jedlowski, 200–219. London: Zed Books.
- Mensa-Bonsu, Henrietta. 2007. "'Political Crimes' in the Political History of Ghana: 1948–1993." In *Ghana Law Since Independence: History, Development and Prospects*, edited by Henrietta Mensa-Bonsu, 239–305. Legon: University of Ghana.
- Meyer, Birgit. 2015. "Picturing the Invisible." *Method & Theory in the Study of Religion* 27 (4/5): 333–360.
- Ong, Aihwa. 1996. "Strategic Sisterhood or Sisters in Solidarity? Questions of Communitarianism and Citizenship in Asia." *Indiana Journal of Global Legal Studies* 4 (1): 107–135.

- Overå, Ragnhild. 2007. "When Men Do Women's Work: Structural Adjustment, Unemployment and Changing Gender Relations in the Informal Economy of Accra, Ghana." *Journal of Modern African Studies* 45: 539–563.
- Oyewumi, Oyeronke. 2002. *Conceptualizing Gender: The Eurocentric Foundations of Feminist Concepts and The Challenge of African Epistemologies*. Dakar: CODESRIA.
- Parish, Jane. 2000. "From the Body to the Wallet: Conceptualizing Akan Witchcraft at Home and Abroad." *The Journal of the Royal Anthropological Institute* 6 (3): 487–500.
- Pellow, Deborah. 1977. *Women in Accra: Options for Autonomy*. Algonac, MI: Reference Publications.
- Purdeková, Andrea. 2016. "'Mundane Sights' of Power: A History of Social Monitoring and its Subversion in Rwanda." *African Studies Review* 59(2): 59–86.
- Rancière, Jacques. 2007. *On the Shores of Politics*. London: Verso.
- Rao, Ursula. 2018. "Biometric Bodies, Or How to Make Electronic Fingerprinting Work in India." *Body and Society* 24 (3): 68–94.
- Robertson, Claire. 1983. "The Death of Makola and Other Tragedies." *Canadian Journal of African Studies* 17 (3): 469–495.
- Robertson, Claire. 1984. *Sharing the Same Bowl: A Socioeconomic History of Women and Class in Accra, Ghana*. Bloomington: Indiana University Press.
- Scott, James. 1998. *Seeing Like a State. How Certain Schemes to Improve the Human Condition Have Failed*. New Haven, CT, and London: Yale University Press.
- Seligmann, Linda. 2001. "Introduction: Mediating Identities, Marketing Wares." In *Women Traders in Cross-Cultural Perspective: Mediating Identities, Marketing Wares*, edited by Linda Seligmann, 1–24. Stanford: Stanford University Press.
- Star, S. L., and K. Ruhleder. 1996. "Steps Toward an Ecology of Infrastructure: Design and Access for Large Information Spaces." *Information Systems Research* 7: 111–134.
- Szreter, Simon, and Keith Breckenridge. 2012. *Registration and Recognition: Documenting the Person in World History*. Oxford: Oxford University Press.
- Thiel, Alena. 2015. "Heterotemporal Convergences: Travelling Significations of Order and Their Adaptations in the Claims-Making Strategies of Accra's Makola Market Traders." Doctoral diss., Department of Politics and International Relations, University of Aberdeen.
- Thiel, A. 2020. "Biometric Identification Technologies and the Ghanaian 'Data Revolution'." *The Journal of Modern African Studies* 58 (1): 115–136. doi:10.1017/S0022278X19000600.
- Thiel, Alena, and Michael Stasik. 2016. "Market Men and Station Women: Changing Significations of Gendered Space in Accra, Ghana." *Journal of Contemporary African Studies* 34 (4): 459–478.
- UPU. 2015. "Gender and Financial Inclusion Through the Post." http://www.upu.int/uploads/tx_sbdownloader/genderAndFinancialInclusionThroughThePostEn.pdf
- World Bank. 2016. "Identification for Development. Strategic Framework." <http://pubdocs.worldbank.org/en/179901454620206363/Jan-2016-ID4D-Strategic-Roadmap.pdf>
- World Bank. 2017. "Principles on Identification: For Sustainable Development Toward the Digital Age." <http://pubdocs.worldbank.org/en/200361509656712342/web-English-ID4D-IdentificationPrinciples.pdf>