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## Rice, sapphires and cattle: Work lives of women artisanal and small-scale miners in Madagascar

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Strong global demand for coloured gemstones,<sup>1</sup> particularly in India and China, has led to a phenomenal expansion of the market in recent years (KPMG 2014). Levin (2012) suggests that globally, 80 per cent of gemstones are mined artisanally. In Africa, with the notable exception of Gemfields, a London-listed large-scale miner of gemstones in Zambia and Mozambique, most of the mining of coloured gemstones is poorly regulated and conducted by artisans using hand tools. Artisanal mining of gold has been widely investigated, but that of coloured gemstones has received comparatively less attention. The role of women in gemstone mining has received even less.

In the past 17 years, Madagascar has risen to become one of the world's largest producers of fine sapphires, ranging from the best blues to yellows, pinks, oranges and purples (Shigley et al. 2010). Large investments by the World Bank to professionalise mining and to create sustainable livelihoods through, for example, the creation of lapidary training centres have had limited success. For the most part, rough stones are shipped out of the

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1 The technical term used for coloured stones—not diamonds—such as sapphires, rubies and emeralds, but also a wide range of other minerals such as aquamarine, garnet, amethyst, opal and citrine.

country to be cut in the large specialist gemstone-cutting centres in South Asia, and then onto showrooms in Hong Kong (Cartier 2009). My review of project documents showed that the role and unique contribution of Malagasy women in artisanal and small-scale mining (ASM) is all but ignored.

Madagascar remains one of the poorest countries on earth, with 88 per cent of the population living on US\$1.25 a day (World Bank 2014), with most of the poor living in rural areas with high and chronic levels of food insecurity (World Bank 2011). There have been marked increases in poverty following the political crisis of 2009 and environmental shocks such as extended drought and cyclones. Poor economic development hampers Madagascar's capacity to respond to changing climate and unexpected shocks (*ibid.*). Madagascar is expected to be severely affected by climate change and attendant increases in cyclones, drought and floods, with significant decreases in its farming communities' capacity to produce staple crops (Harvey et al. 2014).

In 2013, Madagascar was officially declared a fragile state—that is, 'a state with weak capacity to carry out basic governance functions, and lacks the ability to develop mutually constructive relations with society. Fragile states are also more vulnerable to internal or external shocks such as economic crises or natural disasters' (Organisation for Economic Co-operation and Development (OECD) 2013). Madagascar combines extreme poverty and aid dependence with all the above-mentioned features of a fragile state.

In response to these challenges, ASM has provided a lifeline to an estimated 800,000 people (personal communication, Rupert Cook, August 2014), with a significant number of these people working in the gemstone sector. Roughly half of those working in ASM are thought to be women. Very little in revenue has returned to the state, or worse, most has been misappropriated (Duffy 2007; Cartier 2009). There are just a handful of scholarly publications that have studied ASM in Madagascar (Walsh 2003, 2012; Cartier 2009; Canavesio 2014), and there are a number of World Bank reports that are either dedicated to, or reference, ASM (Cook 2012). All make only passing reference to the role of women. The one exception is the work of Remy Canavesio (2013), a French geographer who spent five years researching gemstone mining and supply chains, and who returned to his thesis data to re-interrogate it from a gendered perspective.

To contextualise the discussion, we begin by reviewing the literature related to women and ASM, mostly in Africa, and then focus on women miners of gemstones in Madagascar. We outline the methodology used and then present cases.

## Women in ASM: The African perspective

The literature on women in ASM over the past 20 years has not been extensive, and in many ways it reflects broader societal trends that have only recently begun to document and analyse women's important role in, and the impacts on, the extractive industries. Noestaller's (1987) work on ASM commissioned by the World Bank makes no reference to women or gender issues. However, in 1995, Béatrice Labonne of the World Bank presented on women in ASM at a special event on 'Women and Natural Resources' at the Fourth World Conference on Women in Beijing. Drawing on work by Esther Ofei-Aboagy on Ghanaian women miners, Labonne published one of the first papers in this area: 'Artisanal Mining: An Economic Stepping Stone for Women' (Labonne 1996). It paints a positive view of opportunities for women in ASM, but makes no reference to the specific health and safety issues faced by women on ASM sites. By contrast, in 2003, Heemskerk's detailed ethnographic study of the Maroon women artisanal miners working in rural Suriname found that if long-term social and health conditions were considered, work on informal mining was not likely to improve the quality of women's lives (Heemskerk 2003). Yakovleva (2007) presents a detailed, essentially descriptive, case study of the work, income, health and family of women miners in camps and villages in the Eastern Region of Ghana. She argues for gender mainstreaming of assistance for ASM. However, it is the work of Jennifer Hinton that sets the benchmark for the literature on ASM and women in Africa, both as a co-author when considering the impacts of mercury for women (Hinton et al. 2003), and in her broad and analytic review of mining and gender roles in her doctoral work (Hinton 2011). She brought to the fore key issues, such as the impact of the commodity and mine lifecycle on the work of women in ASM.

Hinton has warned against over simplifications and generalisations about women's roles (Hinton 2011); however, typically the work women do is less visible than that of men. They are not usually found digging the main ore bodies and going underground, but they may be found digging

or panning around the edges, transporting, washing and processing. Malpeli and Chirico (2013) investigated 137 gold and diamond sites in West Africa over five years, collecting data directly from women at mine sites. They found that women's participation in mineral extraction was dependent on the thickness of the overburden and accessibility of the deposit, and that women were mostly involved in processing. Along with geomorphology, economic factors such as the value of the commodity being mined, the stage of the life of the mine, access to finance, the hierarchical organisation of the mine, land, permits and equipment also determined women's participation.

Women's work in ASM is often not clearly differentiated from other duties; for example, women may grind stones with kitchen equipment, and process gold with mercury as they cook, while their children play beside them. In Madagascar, it is common to see women sieving for sapphires next to others doing the family laundry. Thus, the women's role is often not valued, well remunerated or recognised and, as a result, women may not be included in any formal or informal census of those involved in ASM, and may not be considered by policymakers (Eftimie et al. 2012). Policy may impact men and women miners differently, and their specific needs may be neglected in gender-neutral policies (Hinton 2011). Hinton, in her doctoral study of gender and ASM in Uganda, argued that such gender-neutral policy actually negatively impacts on women in ASM, thus damaging the whole community (*ibid.*).

One thing that is well established across the globe, and particularly in Africa, is that women involved in ASM earn considerably less than men, even when doing the same task. In addition, they work longer hours since they still carry the burden of domestic work (Eftimie et al. 2012). For example, in a formal gold mine camp in Ghana, women who transport gold ore and water, and pound rocks, have salaries 60 per cent lower than men involved in digging (Akabzaa and Darimani 2001).

Women's role in ASM remains constrained by socio-economic and cultural barriers, which impact on resource rights and decision-making. Women are typically proffered land of less value, and women's capacity to benefit from ASM may be constrained by *de jure* and *de facto* inequity in access to land and property rights (Meinzen-Dick et al. 1997). In Kenya, for example, the traditional social system allows women access to, but no control over, the land; thus, their overall production is low (Amutabi and

Lutta Mukhebi, in Lahiri-Dutt 2008). Women have difficulty obtaining finance from banks and may require their husband's consent before obtaining a permit.

Women are often excluded from direct contact with more valuable deposits, and can be found digging on the less valuable sections of the lease while men pursue more lucrative seams underground. Where women are involved in the sale of minerals, they tend to deal with less lucrative sales deals. For example, Malagasy women traders buy and sell the smaller gemstones, while the larger, more precious loads are reserved for males acting in concert with other powerful males, such as the mayor and the local police chief. This limits their access to real financial power (Canavesio 2010). Where ASM has been formalised, women working in cooperatives, for example in Ethiopia, are paid less than men (personal communication, Solomon Negussie, December 2014). Even women mine owners experience gender bias, with men being reluctant to follow their orders, and women being forced to use male agents (Tallichet et al. 2003).

ASM has the potential to provide a livelihood, but there is no capacity for resilience and little savings in the case of an accident, illness or a natural disaster. Canavesio (2010) describes the tragic situation of women who have gone to the sapphire fields in Madagascar in the hope of finding an income for their families, have been unsuccessful and, not having the funds to return home, have died of starvation.

## Women miners' identity

Critical feminist insights into the oppressed position of women miners and into their identity have been provided in the work of feminist geographer Lahiri-Dutt, who published on ASM in Asia in 2004. More recently, she has reframed the field by referring to peasant miners rather than artisanal miners (Lahiri-Dutt 2014)—this is particularly pertinent in rural Madagascar. Bryceson's work in East Africa on rural women's livelihoods began to reference ASM in the mid-1990s (Bryceson 1996). Scholars and international aid agencies began noting how deteriorating farm conditions were forcing women into ASM, and the unequal and unfair remuneration women were receiving (Yakovleva 2007). Bryceson's most recent work on ASM in Tanzania (Bryceson et al. 2014), in particular, has provided unique insights into the broader impacts of ASM—its democratising impacts, and its impacts on gender relations, marriage and casualised sex.

Questions about the identity of women miners are explored in a recent critical paper based in the Democratic Republic of Congo (DRC) (Bashwira et al. 2014). Gender-based violence towards women miners in conflict zones in the Eastern DRC led to non-government organisations attempting to move women from ASM into alternative livelihoods; in turn, the DRC Government banned pregnant women from ASM, despite the fact that there was little other work (ibid.). As Lahiri-Dutt notes, ‘popularist and universalist conceptions of femininity and womanhood tend to normalise contested gender roles through protective legislation that operates against women’s interests’ (Lahiri-Dutt 2013: 224). It is vital that policymakers listen carefully. It is time to move beyond a stereotypical homogenous view of women in ASM to ‘a far more real picture of diversity, opportunism and agency’ (Mahy 2011: 61).

Jenkins (2014), in the most thorough review to date of women in mining (both large- and small-scale), argued that the role of women in ASM has generally been under-theorised and under-recognised, and that this is a key issue in terms of understanding the role of the mining sector in relation to development of poor communities in the Global South. A challenge for researchers is to go beyond factual accounts and single case studies of women’s activities to ‘develop strong critiques of the gendered dynamics and power relations at work’ (ibid.: 32). Also, few studies make any connection between the broader question of feminism and women at work, or the impact of climate on rural livelihoods such as ASM.

Some of the most promising methodological approaches can be found in research on male small-scale miners, which considers small-scale miners’ decision-making and ‘career trajectories’ (Bryceson and Jønsson 2010: 382). Bryceson and Jønsson (2010) addressed many of these concerns in a study of the lives of Tanzanian gold miners. They describe a ‘coalescing career formation arising almost entirely from the small-scale miners’ own organizational constructs and individual decision-making’ (ibid.: 387). The research contains valuable and vivid detail and, although the sample did not include women miners, its comprehensive research design provides the kind of detail needed in future studies of women miners’ work–life courses.

## Women ‘help the men’

‘Women? They help the men.’<sup>2</sup>

In Madagascar, there are just a handful of scholarly publications that have investigated ASM (Walsh 2003; Canavesio 2011, 2013; Cartier 2009; Cook 2012), and only Walsh (2003) and Canavesio (2011) consider women’s role in any detail, even though it is known that women are involved throughout the supply chain. Anthropologist Andrew Walsh’s (2003) ethnographic studies of ASM miners in Northern Madagascar found that while young male miners often considered money earned from sapphires to be ‘hot’ money that had to be spent quickly on hedonistic pursuits, women miners tended to use ‘cool’ money, which was destined for buying houses and cattle. The women interviewed stated that the only way to get ahead was ‘to put their money to work’ (Walsh 2003: 294), spending their money wisely on long-term investments. A typical comment was that they were motivated to do this because men ‘have made them suffer’ (ibid.: 294), and that careful management of sapphire earnings would enable them to live independently of men. This resonates with Canavesio’s (2013) comments about the women of the southwest that ‘migrate in order to become richer, but they also look for a new life in a society where gender inequalities are smaller than in the other parts of the country’ (Canavesio 2013: 1). This desire for emancipation also led some women to strategically marry foreign traders; such ‘mine marriages’ have also been noted in gold ASM communities (Bryceson et al. 2014) and in diamond trade communities in Angola, where De Boeck comments that ‘mine marriages’ tend to ‘serve an economic, purely utilitarian purpose in the short term, with the woman involved oftentimes for advantageous financial outcome’ (cited in Walsh 2003: 302).

## Methodology

The methodology used in this study aims to give women, who have rarely had their voice heard, an opportunity to tell their story in their own words. This fits with the feminist theoretical framing of the project, as ‘oral interviews are particularly valuable for uncovering women’s experiences’ (Anderson and Jack 1991: 11). It also fits with the vibrant oral tradition

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2 This comment came from a prominent gemmologist working in the region.

of storytelling in Africa, and Madagascar in particular. The methodology draws on two research approaches: the Panos Oral testimony project (Panos Oral Testimony 2014), with its detailed method for collecting stories outlined in *Listening for a Change* (Slim and Thomson 1993) and *Methods of Life Course Research* (Giele and Elder 1998).

## Life course research

Life course research is widely used across a range of disciplines, such as medicine, social sciences and development studies, and was elaborated by Janet Giele and Glen Elder (Giele and Elder 1998). The research approach grew out of an outstanding series of twentieth-century longitudinal studies of American life, such as Elder's painstaking and ground breaking study, *Children of the Great Depression* (1974), which followed the lives of 167 people born in Oakland, California, in the 1930s into the late 1960s (Elder 1974). From such research, Giele and Elder (1998) identified central themes that determine the shape of the life course—for example, location in time and place (cultural background)—and heuristics such as life transitions. This multifaceted data is collected primarily in the form of life histories through interviews; instruments such as life event calendars (Drasch and Matthes 2013) or diaries may be used. The life course research paradigm has been used successfully in the development context to investigate gender, the work–life course and livelihood strategies in a South Indian fish market (Hapke and Ayyankeri 2004).

## Analysis of data from the interviews

Data from the interviews was translated, transcribed and analysed using content analysis. The categories used to analyse the data were both inductively derived—that is, allowed to emerge from the data in relation to the research question and scoping visits<sup>3</sup>—and deductively and iteratively determined based on insights from theory and literature, principally life course research (Giele and Elder 1998). The thematic categories were location in time and place, and climate (cultural background); linked lives—for example, family (social integration); human agency (individual goal orientation); and the timing of lives and climate change (strategic

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3 For example, a category related to climate change emerged. ASM and climate change are not often linked in the literature; however, in interviews a number of women spoke of changes in rain patterns, which meant that they were no longer able to grow enough rice to feed their families, and this was a factor in their decision to take up sapphire mining.

adaptation). The heuristics to explain work–life course were life transitions or turning points, trajectories, sequences and life events (based on Giele and Elder 1998).

## Research questions

Based on the literature and the theoretical and methodological orientation, the following research questions were constructed: What does the work–life course of a woman in gemstone mining look like? What motivates women to take up ASM? How have they learned their skills? What have been the turning points in their work–life course? How do they manage family? How has this work activity impacted on their health? Does it provide a reliable source of income?

## Research process

Two preliminary scoping visits were made to the Ilakaka–Sakaraha region in 2014. Twelve women found working by the streams as miners of sapphires in the Ilakaka–Sakaraha region were interviewed in the field, with the assistance of a Malagasy research assistant. Photographs and participant observation were also used. For this study, we chose to concentrate on the interviews of women whose only livelihood was sapphire mining. Of the 12 women approached, seven were working full-time as miners and their interviews were selected for detailed analysis.

Extended semi-structured interviews were used to elicit narratives of work–life course history, and participants were asked to comment on specific questions in relation to the research question for each case.

## Work–life stories of women sapphire miners

### Alvine

‘The four of us work together.’

Alvine is 17 years old, she is married and has a nine-month-old baby, and works in a group with her husband and cousins in a team. She has been mining for three years across different mine sites in a 50 km radius from Ilakaka, and is now working at Bekily.

Before I came to mine I used to grow rice, but because there was not enough rain and no harvest I started sapphire mining. Sometimes I find something, sometimes I don't. Some days I earn 10–20,000 Ar<sup>4</sup> a day but often I earn nothing. I use everything I earn on my daily expenses.

The four of us work together (my husband and cousins), the boys dig, the girls sieve. I like doing this because we might find something. I can earn much more from sapphires than from gold.

I have a problem with my back. If I get sick I just keep working, I can't afford to see a doctor.

## Ravao

'But unfortunately God hasn't given me yet.'

Ravao is 20 years old and she came from the south. She has been mining in this area at Bevilany for six months. She has one child who is with her parents in Fort Dauphin, as she goes to school. Her husband is away working on the new site.

My mother grows rice in Fort Dauphin but it did not provide enough to sustain us. My mother paid for my husband and I to come here to mine. I will keep mining until I have enough, but I haven't found anything big yet. I chose sapphires because I don't know how to do gold. My brother taught me how to sieve for sapphires. I get a bit of money from sieving—sometimes 500 Ar<sup>5</sup> a day, but not every day. If I can't find anything, I go to bed with an empty stomach. If I find a big stone, I will buy a sewing machine and some gold jewellery. But unfortunately God hasn't given me yet.

## Harena

'I mine because I want my children to have the same as others who have value, that have a better life.'

Harena is 24 years old and her family are from Androy, west of Fort Dauphin. She is married with three children aged between five and two-and-a-half. She kept sieving until she was seven months' pregnant. She went and had the baby with her parents, and after two months she came back to mining, breastfeeding the baby at the same time. She used to grow rice and manioc, but with no rain there was no harvest, so she

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4 US\$3–6.

5 US\$0.16.

took up mining. She had been at Bekily just one week, but she had been mining for six years at places like Antsoha and Amboalano. She works for a ‘boss’, and sometimes they earn 10,000 Ar <sup>6</sup> for three days for three people.

The children live with her husband, who also mines sapphires about 10 km away. They only see each other when they find a sapphire. When asked if it was safe for her to live alone on the rush site she said, ‘I do it because of poverty. We are both looking for money’.

She has a large sieve and she gives it to the men to use; she then sorts the second wash. Her brother died when the earth caved in on the mine when he was underground.

I can live on sapphires. I prefer to mine sapphires rather than gold as they are more valuable and also I do not know how to pan for gold. I can get more for them to buy gold jewellery and cattle. The cattle I have bought are with the family. I have found a few small stones and sold them to the businessmen. I will continue to mine until I find a large sapphire. I mine because I want my children to have the same as others who have value, that have a better life.

## Titae

‘They belong to me, I bought them with my own money.’

She comes originally from Amboasary (60 km from Fort Dauphin). She doesn’t have any children, and she has been mining for eight years in many locations around Ilakaka, but she has decided to stay in Bevilany on the Maninday River as she no longer wishes to move. Her husband works with her; he digs and brings stuff down for her to sieve. They have found one good stone. They bought four cattle with it. The money they earn is for both of them. If her husband finds, he shares what he finds.

It’s hard. We only do it because we are poor. If we can’t find anything we sleep hungry. I will keep mining until God gives us enough. Then I will do many things—buy gold jewellery, dresses, cattle. The sieve cost 8,000 Ar<sup>7</sup> and the spade 3,000 Ar.<sup>8</sup> They belong to me, I bought them with my own money. It is me who will work using them and make money from them.

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6 US\$3.

7 US\$2.60.

8 US\$1.

## Vola Julienne

‘I want a sapphire for myself.’

She is 46 years old. She comes from Ilakaka where her parents had a hotel. She lived there from 1980, and she was there when the sapphire boom started. She started mining then. She has moved around at least five mine sites around Ilakaka and Sakaraha. She is now mining at the Ambarinakoko mine at Bevilany, on the Maninday River. She is married with two children. One is finishing school, and one is married.

I mine because I am looking for money. I found a sapphire in 2004, I built a house and bought cattle and paid for my children’s schooling.

I want a sapphire for myself. The father of the children is dead, this husband is their stepfather and I need my own money to look after them. I will continue mining until I find something. I want to build another house to rent for my old age.

## Golden Smile

‘I have been mining for a long time.’

Golden Smile is 46 years old, and she works with her two sons, who mine underground. She lost one of her sons, and used the sapphire money to bury him.

She sieves by the river. At 11 o’clock she goes up to where her sons are working and collects soil to take and sieve by the river. It is a 200 m steep walk on slippery ground, and it is hard to keep her balance. She is barefoot. She has been mining for eight or nine years. She has worked at least five mine sites around Ilakaka and Sakaraha. She lives on the money from sapphire mining and is bringing up her granddaughter.

Sapphire mining is an activity for men. I do it because I don’t have a husband. No one taught me but I watched my sons. I watched, I watched, I watched and then I did it. I have found some stones and bought food and medical treatment. If God wants to tell me to stop, I will do it. As you see I cannot dig but I have no money. No one else gives us money. If I had money, I would start a second-hand clothes business.

I don’t feel good, but if I find some sapphires I’ll buy some jewellery.

## Oly

Oly is 25 and has four children under four. One has died. Oly is a Bara woman, one of the main ethnic groups living in the southwest. It is a group that has worked traditionally with cattle. She works with her husband; he digs for sapphire-bearing soil and stones, and she sieves by the river, either the soil he has mined or directly from river stones. They mine all year, but in the wet season they also grow rice.

We have two rice crops a year. When the rice is ready we harvest and stock and then go back to sapphires. We get 20 big bags each year. We store it and resell when the prices go up we buy zebu. I don't want my kids to go to school, I want them to work with me. We want to buy a car and a gun.

## Discussion

‘Women are like a thread passed through the eye of a needle.’

– Proverb from Masikoro (an ethnic group found in this mining region).

I have framed this discussion with the Masikoro proverb, which reflects the position of these women, who against enormous odds are seeking ‘to make change happen for better’ (Cornwall and Edwards 2014: 2). Each woman speaks of using sapphire money to do something for herself, to help her children, to buy a business or personal items. Their spades and sieves are their own. There is a sense of agency and some pride in what they have achieved. However, the opportunities are very constrained by the eye of the needle of these women’s circumstances in a society where, structurally and culturally, they often have little power. ASM mine sites are typically portrayed as masculine frontiers where women ‘help the men’. By talking to these women and hearing their life stories, it is noticeable that these women do not identify themselves as just ‘helping men’; some are working alongside men in work that may be identified as ‘men’s work’, but they have very clear and diverse work–life trajectories. As Canavesio (2013) has argued, the rush sites of this region offer opportunities for women to find economic and personal emancipation.

Andrea Cornwall’s (2003) work has been significant. She has investigated the failure of development projects, even those that claim to be using participatory approaches to listen to and incorporate women’s voices. In her comprehensive review and critique of gender and participatory development, she argued, ‘what is needed is strategies and tactics that

take account of the power effects of difference, combining advocacy to lever open spaces for voice with processes that enable people to recognize and use their agency' (Cornwall 2003: 139). Despite extremely difficult circumstances, there is no way these women can be constrained into some kind of 'average Third World Woman' leading an 'essentially truncated life' (Mohanty 1988: 56). Mohanty argued that many well-meaning feminist development researchers emphasise the needs of third-world women, and fail to analyse the work they do, both in the formal and informal sectors. The analysis in the following section attempts to address this gap.

### Location in time and place, and climate

The women in this study find themselves on the edge of a sapphire mining boom that began some 18 years ago, and is strongly controlled by foreign buyers of valuable stones. The buyers and those with control are predominantly, but not all, male. The easy-to-find stones—'grass' as they are called in Malagasy—have long gone, and younger, more mobile miners have moved to other areas. These women have not progressed to becoming stone traders, nor are there any opportunities for beneficiation or formal employment. They aspire to buy cattle, businesses and property, and to have some control of their circumstances. The ethnicity of the woman miner also emerges as a factor in relation to her motivation for mining. Madagascar has 18 different ethnic groups and, as is evoked in the proverb, many are oppressive to women. In particular, Bara women like Oly have few rights in relation to cattle and land ownership. Her comments seem unlike the others. She alone does not want to send her children to school, and instead of wanting to buy jewellery or a sewing machine, she wants to buy cattle and guns.

### Turning points and strategic adaptation

A turning point in the work–life trajectory of all the miners, leading to the decision to start sapphire mining, was the persistence of poverty and drought. Changing climate patterns seem to be a significant catalyst to take up mining. Three women had moved from the south and southeast, because the rains there had failed, and they were no longer able to support the family by growing rice and manioc. This region of the south is dry and particularly prone to changing climate; food insecurity is extreme and

sending family members to find work elsewhere is one strategic approach to survival (Harvey et al. 2014), and is an example of Elder's strategic adaptation.

Strategic adaptation is also seen in the way they have all moved across many different sites when new sapphires were discovered. The older women have moved across at least five different sites. They live in makeshift tents, with their only tools a shovel and sieve. They all hoped to move on from mining and wanted to buy cattle, a potent symbol of wealth in Malagasy rural life. Some hoped to establish other businesses such as second-hand clothes stalls, dressmaking or farming. They hoped for better lives for their children. Harena's comment sums it up: 'I want my children to have the same as others who have value, that have a better life.'

## Linked lives

A strong factor influencing change in work–life trajectories are social and personal factors—the linking of other lives with our work decisions. For these women miners, there are a complex array of personal relationships at play in their work–life decisions. A number have very young children, and have given birth at a young age. In our sample, only Titae, Alvine and Oly are living and working alongside their partners, and Golden Smile does not have a partner but works with her sons. In the other cases, the husband and wife are hedging their bets by each working on a different site, and only seeing each other when they find a stone. Vola Julienne is using sapphire mining in a very strategic way to manage complex family issues—she needs to provide for her children from her first marriage as her second husband will not, and also to provide for her retirement.

Oly's case is different. She was working an area close to the original sapphire town of Ilakaka, not one of the more chaotic rush sites where the other women were found. Despite the great hardship of losing a child, she and her young family are moving ahead using a combination of mining, rice growing and cattle. She is a Bara woman, the cattle-based ethnic group of the southwest grasslands, and the original owners of the sapphire country around Ilakaka. They have been particularly impacted by the breakdown in law and order, and ruthless cattle rustlers. This is reflected in her wish to buy guns and transport. She is also very protective of her children and does not wish them to go to school, but wants them to work with the family.

## Human agency (individual goal orientation)

All women display great courage and human agency to provide for themselves and their families. Women in this part of Madagascar are not in a strong position, ‘especially the Bara women—they don’t have a place’ (personal communication, Mayor of Ambrinany and local doctor Alain Randrianirina, February 2014).

It has been remarked that artisanal mining provides an opportunity for women to have their own money, to use money more wisely than some of the male miners and to gain some independence in a system that is quite oppressive for women (Walsh 2003; Canavesio 2013). This is evident in some of the comments of the more mature women, Vola Julienne and Harena, who asserted quite forcibly in these relatively short interviews that mining could support them: ‘I can live on sapphires’; ‘I want a sapphire for myself. The father of the children is dead ... I need my own money to look after them.’

Likewise, Titae is proud that she has her own tools and of the personal power that they give her: ‘The sieve cost 8,000 Ar and the spade 3,000 Ar. They belong to me, I bought them with my own money. It is me who will work using them and make money from them.’

Age and time spent mining are also significant. The younger women had begun mining in their mid-teens and were working as a family team, with men collecting sapphire-bearing gravel from under the ground.

Older women like Vola Julienne are a little different, as she had found a large stone earlier in her life and this had permitted her to buy a home and cattle. However, she had married again and needed to make money to look after children from her first marriage, and also to provide for herself in retirement.

Mining of sapphire was both a means of survival in extremely precarious circumstances—a number of women spoke of going to bed hungry if they didn’t find a stone—but also a means to finance other livelihoods in the future: to buy a sewing machine or to sell second-hand clothes. Almost all women made reference to God, a typical comment being, ‘I will keep mining until God gives us enough.’

## Conclusion

Andrea Cornwall (2003) investigated the failure of development projects to listen to and incorporate women's voices. In her comprehensive review and critique of gender and participatory development, she argues, 'what is needed is strategies and tactics that take account of the power effects of difference, combining advocacy to lever open spaces for voice with processes that enable people to recognize and use their agency' (Cornwall 2003: 139). Development agencies are returning to Madagascar after the four years of political instability, and there is interest in development activities for women in ASM. They would do well to heed this advice.

Cornwall and Edwards's (2014) recent work is a response to such critiques. It aims to explore in a more holistic way how women in different cultures experience change and empowerment in their lives and, in the spirit of true feminist research, it seeks to discover 'hidden pathways, the otherwise invisible routes that women travel on to empowerment' (Cornwall and Edwards 2014: ix).

Using the work–life course framework (Giele and Elder 1998) provides an in-depth and respectful basis from which to better understand the lives of women sapphire miners, and their 'hidden pathways' to empowerment. The diverse motivations of women and their individual agency it reveals are striking.

A predominant theme that emerges is of rural women from different ethnic groups, often from the south of Madagascar, taking up artisanal mining in response to deepening rural poverty and food insufficiency, caused by the failure of crops and changing climate. This is particularly significant in Madagascar, where the impacts of changing climate on small farmers are expected to be severe, and where preservation of its unique biodiversity is crucial. The issue of climate change and ASM has not been widely explored in the literature. The intersection on the pathway between women miners, food insecurity and changing climate in this research warrants further investigation.

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