



Decolonising the Finnish Baby box: A sociomaterial approach to designing interventions for infant and maternal health and well-being in Zambia

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ABSTRACT: The global spread of the Finnish baby box without empirical evidence to support initiatives raises concern that the concepts of the box are being introduced uncritically in a diverse number of countries, spaces and places without concern for local historical, social, cultural and material understanding. Such appropriation of a significant cultural and social tool for infant health and well-being risks the material object – the box and its contents – being used to develop western, normative parenting practices whilst maintaining power relations between children, parents, expert others and between the Global North and South. To explicate these concerns this article explores potential problems of the box that empirical research is yet to explore including the promotion of westernised parenting practices and child development theory. This gives rise to concerns about colonisation and the need for ethical research practices in a project in Zambia seeking to meet the aims of the UN sustainable development goal 3 – for good health and well-being for all. We draw on sociomaterial understanding in a design project to develop a culturally sensitive and particular concept of the baby box for use in Zambia. One possible local solution is a ‘chitenge’, a multi-purpose garment, rather than a box.

Keywords: *Baby boxes, chitenge, human-centred design, frugal innovation, materiality, SDGs, Zambia.*

Childhood and the materiality of everyday things

This paper is based on our experience of working with colleagues, particularly St John, Zambia, on a pilot project focused on adapting and adopting the Finnish baby box in low and middle income countries (LMICs). Funding was provided by the University of Huddersfield and Research England to form a transdisciplinary, multinational project team to explore the potential of the baby box in meeting a number of the UN Sustainable Development Goals (SDG). The team involves partners from universities in the UK, Finland and Zambia. In particular, we were interested in SDG 3 that seeks to ensure 'healthy lives and promote well-being for all at all ages' (United Nations, 2015). More specifically, the goal raises concern about maternal and child health (MCH) with the aim by 2030, to:

- Reduce the global maternal mortality ratio to less than 70 per 100,000 live births.
- Increase the proportion of births attended by skilled health personnel.
- End preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births.
- Reduce by one-third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being.
- Ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes.

In developing the project team we built on existing links with colleagues in Zambia who were directly involved in MCH care. While infant mortality rates in Zambia have fallen from 110.5 per 1000 live births in 1990 to 29.9 in 2016, the probability of dying aged under five was 63.4 per 1000, the maternal mortality ratio was 224 per 100,000 births and only 63.3% of births were attended by a qualified health practitioner (World Health Organisation, 2018). This compares with an infant mortality rate in the UK of 4.0 per 1000 live births in 2017, with Scotland having the lowest rate of the four UK jurisdictions at 3.3 per 1000 (Office for National Statistics, 2018). In 2017, the number of infant deaths per 1000 live births in Finland was 2.0 (Statistics Finland, 2019). The specific challenges facing Zambia include inadequate levels of funding, the number and distribution of qualified health workers (with particular deficits in rural areas), inadequate infrastructure and resourcing including for clinical facilities, equipment and pharmaceuticals. The impact of this is particularly felt by women and children (World Health Organisation, 2018).

Our knowledge of baby boxes developed because an increasing number of schemes, based on the Finnish product were generating significant interest in the UK and beyond (Koivu, 2017) with claims being made for a link between the boxes and reductions in infant mortality (Scottish Government, 2017). At the beginning of 2016 the Scottish Government developed a trial for the boxes on the island of Orkney and in Clackmannanshire, whereas in England a small number of hospitals in London and the south east of the country entered into a partnership with a US commercial baby box provider. This company has provided over 250,000 boxes across the Canada, UK and USA and has been involved in similar schemes globally, including Africa. Following the trial, the Scottish Government announced in 2017 universal provision of boxes for all newborn children and the number of projects involving partnership with the commercial supplier in England has grown. Both schemes involve free provision of boxes alongside a package of maternity and antenatal care that mothers in particular are required to take part in; raising questions about how the boxes might mediate women's experiences (Watson and Reid, under review). Yet, there is no comprehensive empirical evidence to support the spread of baby boxes as a health and wellbeing tool and while Kela, the Finnish social welfare agency responsible for the boxes, undertakes an annual evaluation this is primarily focused on consumer feedback.

Our wider research focuses therefore on a number of areas including developing evidence of the historical, cultural and social significance of baby boxes in Finland and the UK. The discussion in this paper however highlights the need to avoid colonisation in seeking to adapt the concept of the baby box in Zambia. In bridging the empirical gap and associated conceptual and theoretical messiness, we drew on an understanding of the relation between people's doings and the things, or stuff, of everyday life (Miller, 2010). Our research involved scoping visits with MCH staff and volunteers and focused on the concept and design of an artefact for use in Zambia. We drew on Pahl and Roswell's (2011) positing of 'artifactual literacy' and the significance of material objects, not traditional texts, for learning and the mediating of people's experience between public services, home and the community. Specifically, the box is replaced by a chitenge (a cloth wrap) with visual communication opportunities to become a wearable public health education/ training tool. The universal chitenge has uses such as a skirt, a barrier (sun, insects), carrier and a blanket. Our exploratory engagement in Zambia (also to Kela, the Finnish social insurance agency) showcased a proof of concept demonstrator to stakeholders to explore its potential, transferability and acceptability. Our initial work proposed the advancement of three design interventions addressing global public health concerns: reducing malaria in pregnancy, safeguarding support for homeless children and APGAR (Appearance, Pulse, Grimace, Activity, and Respiration) education to reduce neonatal mortality. To explore this outcome discussion is developed over two parts. We

begin with a discussion of the problem of baby boxes in Zambia, including concern about the lack of empirical evidence of their efficacy and consequently the danger of continuing colonisation in importing western ideas of parenting and child development through the material artefact of the box. The paper then highlights a culturally specific intervention based on the potential of health and wellbeing messages being printed on a garment.

Conceptual and theoretical messiness

Adopting a baby box for a project in Zambia might immediately seem inappropriate since, in the majority of western contexts, they are free to all mothers no matter what their capital as long as the mother signs up to a programme of MCH education and care. While primary health services in Zambia are free, wider welfare provision does not provide similar MCH services (Ministry of Community Development and Social Services, 2019). In 2019, the baby box provided to families in Finland contained 63 items of baby clothing, hygiene and sleep items at an estimated monetary value of between EUR 300-400. Affordability and sustainability of this type of intervention would be significant challenges in Zambia and while the earliest versions of the box were focused on loaning essential items of bedding, clothing and basic hygiene equipment such as a baby bath to the poorest mothers (Kela, 2018a), financing a loans package in Zambia is unsustainable. Furthermore, the baby box is one part of a wider maternity and benefits package in Finland that includes access to health facilities, immunisations and monetary support parents that is not replicated in any other country (Kela, 2018b).

Questions about sustainability also arise because of gaps in knowledge including a lack of scientific study of how the boxes are utilised or the material and conceptual processes through which they are being popularised. The Finnish experience is unique, yet political and commercial interests outside Finland are uncritically appropriating the historical decline in infant mortality in Finland and foregrounding the boxes as useful, if not necessary, in meeting the requirements of professional MCH practitioners (Royal College of Midwives, 2018). Our initial scoping highlighted concerns (Watson and Reid, under review) about the appropriation of public finances in Scotland to pay for the universal provision of boxes without empirical evidence to support their purpose and efficacy (Rimmer, 2017; Ross, 2017). The Scottish Government (2017) emphasised the Finnish experience, yet Kela disputed their claims (Carrell, 2018), thus raising concerns about the political construction of the baby box through the mediation of governmental rationality (Foucault, 2007). The appropriation of ideas by government and commercial interests, for example that the boxes are a safe sleep space without causal evidence to

support their relation in reducing sudden infant death (Blair et al, 2018), is of moral concern. The Scottish government's (2018) evaluation of their baby box scheme involved a descriptive analysis and could have been more scientifically rigorous, yet it secured the knowledge generated by 'research' and incorporated it in the political arguments for continuing the policy of universal provision of the boxes, and consequently into MCH practice. A particular aspect of the appropriation of scientific knowledge involves claims made that baby boxes scaffold good parent-child attachment (Scottish Government, 2017). However, attachment theory has been criticised for being parochial and essentialist (Burman, 2008). The embeddedness of the theory in developmental psychology and its relation to normative parenting practices particularly treats mothers' every day experiences of childcare as an aspect of individualistic ability and cognition. There is a danger of pathologising those women and groups who do not meet the idealised requirements of the theory as 'other' (Buchanan, 2013), rather than developing an understanding from their experience of their capacity and the social, cultural and material milieu in which it is mediated. The concern is that the evidence to support attachment theory is particular, is being used for the purpose of supporting a policy initiative and of strengthening the theory's own claims; it comes from a weak ontological position (Smith, 2005).

Care should be taken as it is possible to frame mothers, including African mothers, as potentially harmful to their child's development through western epistemological claims and interpretative work that reduces the mother to an essentializing and individualizing 'I' (Tronto, 1993; Burman, 2001). While the boxes are offered to families, this typically means mothers since women are historically engaged as the primary carer and implicated in forming attachment with her children (Contratto, 2002). As an aspect of material culture, baby boxes can be utilised to implicitly condition women and, in their primary use, become a means by which mothers are socialised as social beings (Bourdieu, 1977). This, ironically, is contrary to the claims of equality and social justice of Finnish welfarism (Homanen, 2017). The boxes are therefore not just a health and wellbeing tool but are socially, culturally and materially framed from western child development standpoint that draws on particularly masculinist theory and concepts (Walker, 1998). This approach to rationality is also indicative of the ethical ambiguities and transgressions of colonial health and wellbeing interventions (Tilley, 2016), it risks continuing colonisation (Ashcroft, 2017) in repeating the legacy of colonial practices in health and wellbeing in sub-Saharan Africa (Tilley, 2011). In several baby box projects, local practices, including for breastfeeding, are in danger of being replaced by new interventions based on a particular western innovation of solitary infant sleep and commercially mandated, scheduled bottle-feeding with cow's milk-based formula (Bartick, Tomori & Ball, 2017).

Concerns about the transfer of normative parenting guidance and practices between geographical and differing cultural contexts is amplified if we assume that the concepts and approaches inherent in the materiality of the box are immediately apparent to others, or that the politics is the same (Grimes, Sayarath & Outhaithany, 2012). This is also relevant in our work with partners in Zambia since we should not assume that understanding of research, including research ethics is shared (Israel, 2017). To do so risks developing a form of ‘cargo cultism’ (Lindstrom, 2004) where both the object of research and the researcher attain iconoclastic status. Instead, it is necessary to develop our work from the standpoint of the everyday practices and experiences of the mothers, practitioners and colleagues (Smith, 2005) who live and work on the margins with limited resources.

Understanding the Zambian Maternal Child Health context

Schatzki (1996, 2002) argues that people’s everyday practices are understood in relation to other people, objects, organisms and the natural world. While health and discipline specific ontologies provide insight into the well-being benefits of the boxes, they do not always provide cultural, social or political analysis. People, their doings, history, intersections with other people, their things and material properties, and the social contexts, spaces and places in which they are actually used are all of interest. It is outside the scope of this paper to explore these in detail however it is important to highlight aspects of the prevailing practice-material arrangement nexus (Schatzki, 2002).

Following a rise in the incidence of maternal and infant mortality, in May 2019 President Lungu of Zambia declared a public health emergency in MCH, with a particular concern for younger mothers. It is clear that efforts over time have not had the desired outcome of addressing MCH outcomes. Health financing remains a challenge with declining economic growth and increasing fiscal deficit for Zambia in 2019. This is allied to declining donor support and current per capita health sector expenditure of approximately \$35.71 (Unicef, Pers. Com.). Although not directly comparable, it is important to note that in 2016, Finland’s per capita expenditure on social welfare (not including health expenditure) was EUR 12,508.00 (National Institute of Health and Welfare, 2019). While there is a public health need, in sub-Saharan Africa there is continuing evidence of the harms done through colonisation, philanthropy and the foregrounding of westernised forms of medicine and socio-economic reform (Tilley, 2016). Simply importing a western style baby box into Zambia without understanding the colonial legacy or working from the experiences of those who might use such an

artefact risks continuing colonisation (Grimes, Sayarath and Outhaithany, 2012). Public health emergencies have both a historical and epidemiological foundation for their occurrence since sub-Saharan Africa had received relatively little local, international or philanthropic investment from the colonial elite (Tilley, 2011).

The 1970s, however, saw efforts to address concerns in MCH in developing countries, including Zambia, when the International Confederation of Midwives (ICM) funded by USAid and supported by the International Federation of Gynaecologists and Obstetricians, developed the *Expanded Involvement of the Midwife on Reproductive Health* project. The purpose was to reveal harmful traditional birth practices, to acknowledge the work of traditional birth attendants (TBAs) and to train them in the knowledge and approaches of western MCH care. The project report (ICM, 1979) highlights fourteen harmful cultural and traditional practices for pregnancy and birth and one for childcare that the ICM sought to address, for example use of traditional medicines. However, while considered a success by the ICM, the report also highlights significant social and cultural resistance to the new western founded practices. Not all TBAs completed the training because of their wider work within their own family as wife, mother and in providing food and other resources. Furthermore, there were significant resource constraints, particularly in rural areas, where there were few trained midwives, poor clinical facilities, limited supplies, power and transport, and no finance to provide the tools required by the TBA in her birth kit when assisting at a birth. Socioeconomic circumstances were such that expectant mothers were also expected to supply a number of items to facilitate the birth, a practice that continues today since women are expected to provide; six pairs of surgical gloves, two cord clamps, two metres of plastics, sanitary pads (or old clothes), baby clothes and mother's clothes, and a bucket.

Importantly, TBAs and volunteers continue to be a significant aspect of MCH provision in Zambia and while trained midwives do not assist over a third of births, advice and assistance is received from other local women. This resource has been approached as both a problem, since traditional birthing practices can be harmful to expectant mothers (ICM 1979), and as an opportunity because community based volunteers, known as Safe Motherhood Action Groups (SMAGs), have increased the likelihood of a pregnant woman accessing available health facilities (see for example, Jacobs, Michelo and Moshabela, 2018). Significantly, SMAG provision has developed since 2003 as government has worked with community based resources, for example St John, Zambia who are sensitive to local culture and traditions, to significantly engage in recruiting, training and equipping over 100 volunteers in clinics across Zambia. Tilley's (2011; 2016) analysis

highlights that colonisation is not just about concepts but also about how concepts are taken up and put into action. Consequently, an ethical approach to developing an intervention utilising the concept of baby boxes starts with the actuality of the everyday lives of the local people who might use them (Tronto, 1993; Smith, 2005). In seeking to meet the aims of SDG 3 we aimed to avoid promoting western ideas of good parenthood while disregarding local cultures, conventions and needs; turning local mothers easily into postcolonial others and as mere targets of interventions.

Working with St John Zambia, we were able to explore the potential of adapting the concept of the Finnish maternity package for local use. In these scoping visits we learned that local concerns were not those for safe sleep, rather they are similar to those in Finland when the boxes were first introduced – disease, nutrition, understanding what to do when assistance is not immediately affordable or available. There was also concern about the physical qualities of the box, in particular related to their durability and resemblance to a child’s coffin. Concerns were raised about the practicality, affordability, sustainability and cultural acceptance of a box as a sleep space and of the diminution of local parenting practices. We were able to understand the potential of the boxes and to consider local material culture and significant objects in social life; in particular, we observed use of the ‘chitenge’, an everyday piece of printed cloth with multiple uses. As a known, affordable, culturally acceptable proposition they are printed with culturally specific symbols, patterns and / or public information. As an everyday object used at home, in the community and in health settings we were able to draw on Pahl and Roswell’s (2011) understanding of ‘artifactual literacy’ to compare the chitenge with a baby box as a material MCH concept. All versions of the baby box convey symbolic messages. The exterior motif of the Finnish box, for example, is in colour and is always a theme based on nature representing the Finnish social and cultural connection to exterior spaces and places and the importance of the natural environment. The use of cardboard is also significant in transmitting the principles of a Nordic welfare system for social justice and equality (Kettunen, 2001), so that ‘the package has a deeply symbolic meaning (Turrini 2017, p.1689).

Significantly, in thinking outside the box, we were inspired by Professor Johann Friedrich August von Esmarch, a Surgeon-General to the German army, who is widely acknowledged as an early innovator in battlefield first aid. His empathic concern for wounded soldiers led him to develop the Esmarch bandage. Crudely cut out, this three-pointed cotton bandage measured 130cm (length) by 96cm (height) with printed illustration depicting how this bandage could be used in 28 different configurations to treat battlefield injuries. Critically, it educated and empowered both literate and illiterate soldiers to autonomously administer their own healthcare intervention when

none was available. The underlying principles of frugal design are eloquently embodied within this 150-year artefact (Figure 1).



FIGURE 1 Esmarch triangular bandage 1873

Thinking out of the box

While Tilley (2011; 2016) provides a postcolonial analysis, Perry and Malkin (2011) and Howitt et al. (2012) provide valuable insights to the challenges associated with parachuting technological solutions designed for the Global North into the Global South. Both studies cite the obstacles related to the deployment of donated or procured medical devices and equipment for low resource setting. Perry and Malkin's detailed analysis of hospital inventory reports in sixteen countries identified 112,040 items of equipment with 38.3% recorded as out of service. The commonly cited causes for out of service were: scarcity of trained professionals, poor maintenance schedules, reparability issues such as a lack of spare parts or the reliance on costly consumables and infrastructure issues: technical and environmental.

Howitt's study also investigated the potential for simple technological interventions to have a significant impact on global health challenges for resource-constrained settings arguing that such interventions do not necessary have to be complex devices. To validate this claim, Howitt cites several case study examples to demonstrate the humanitarian and financial benefits associated with adopting a frugal approach to developing innovative healthcare solutions, specifically: ColaLife project in Zambia, the

kinetic powered ShakerScope, and Unicef's bed net programme. Howitt concludes that Ministries for Health in low-resource settings should not try to replicate expensive models of intervention as used in high-income settings, but allow for local context to be the driver for innovation, and for high-cost providers to recognise the reciprocal benefits from taking such an approach.

But what is frugal innovation? Weyrauch and Hersatt's (2012) conducted a systematic literature review to identify the attributes and characteristics intrinsic to frugal innovations. Their study reviewed 62 papers and conducted interviews with 45 managers from a range of multi-national companies that operated globally, including Europe, North America, Asia, Australia and the Middle East. They initially identified nine primary attribute categories: functionality, lower purchase price, reduce ownership costs, economical using of physical and financial resources, user-friendly, robust, high value and quality, scalability and sustainability. Further analysis, identified that these noted characteristics could be further integrated into three thematic categories: cost reduction, core functionality and optimised performance. They argue that all three characteristics must be evident for a product to be considered frugal.

Through this lens the baby box merits closer scrutiny. Clearly, it is a product introduced for social good and use of a cardboard box primarily as a functional safe sleep space suggests that it satisfies all three criteria. However, its qualification is considered superficial. Its materiality misdirects our senses into believing that this is a frugal solution that can be transposed into alternate geographies. While this cardboard object has the hallmarks of frugality, the system solution it resides within disqualifies it. The box itself is only one component. As these boxes are often supplied with comprehensive maternal packages (EUR 300-400), this makes the implementation and scaling of such an initiative costly for any provider. The four-year contract to roll out of the Scottish Baby box scheme nationally to all expectant parents was reported to be £35.7 million (Scottish Government, 2018).

In a global healthcare context, the United Nations Committee on Economic, Social and Cultural Rights (2008) outlines four important assessment indicators in relation to the minimum standards of health service delivery: availability, accessibility acceptability and appropriateness (quality). More commonly known as the 4As, these like Weyrauch and Hersatt's attributes are consistent with the priorities of healthcare providers from LMICs. Critically, these determinants have a significant influence on the success and traction of interventionist projects with stakeholders while providing useful terms of reference for global healthcare innovators. Furthermore, the process of design is participatory by its very nature the delivery of a global healthcare project often involves a multitude of stakeholder perspectives, involving economic, social, cultural and political

considerations. This democratic process for achieving a design consensus often leads to a 'satisfice' solution- a minimal viable solution that satisfies the functional requirement sufficiently to achieve the desired goal (Simon, 1956).

Zambian chitenge

The practicality and versatility of Esmarch's bandage echoes the traditional *chitenge* found in Zambia. Here, the traditional chitenge is popular and inexpensive garment consisting of a single piece of waxed cotton measuring 108cm (height) x 175cm (length). Hansen (2015) provides insights to the cultural dress practices and attitudes of both male and female Zambians, and reflects feedback to us from women during our pilot. A series of interviews revealed that regardless of occupation and location, there was a mutual concern for colourfastness and fabric quality to ensure that the visual presentation of the garment has permanence. Additionally, Hanson also identified a cultural desire for uniqueness when dressing. To meet this market demand, chitenges are mass produced in a wide range of colours, patterns and decorative prints, as well as commemorative designs and political or conversation slogans. Gronsdahl (2014) describes the adaptability of this garment within Zambian daily life. These applications include the chitenge being used a bed sheet; rain jacket; beach towel, tablecloth, curtains, headscarf, pillow; a mat for produce at markets; a handkerchief; dish towel; apron; fabric for a cushion; a wall-hanging; head cushion; an improvised change-room in the market and a baby carrier.

The chitenge also serves an important role in the cultural practices of Zambian childbirth Maimbolwa (2003). This study investigated birth practices, beliefs and the role played by traditional birth assistants known as *mbusas*. In a rural context, during labour and delivery, *mbusas* will reconfigure a chitenge to form a pressure ring of fabric for the mother to sit on. Chitenges are also used as a medical tool. For example, a village *mbusa* will tie them around the abdomen of the labouring mother where they are pulled from behind to instruct the mother to push at the appropriate moment. In healthcare facilities where resources and supplies were scarce, Schatz (2008) study recorded the improvised use of chitenges by nurses as a protective garment. All of which resonates with the early concept of the baby box.

The coalescence of these two products, Esmarch's 1873 handkerchief bandage and the contemporary chitenge have steered the cultural reimagining of the baby box for Zambia- not as a device for transportation of consumables for new borns but as a social messenger to support the communication of neonatal and post-natal education and care.

An innovation strategy that is acceptable, affordable and responsive to the changing health priorities of providers and mothers.

Chitenge as a tool for public health education

Mother's in Zambia value the chitenge, understand its use and cultural significance and practicality. This understanding of the relation between mother and object is crucial since the mesh of practices and arrangements is particular to context. It also offers opportunities for innovation and we began to consider the potential of the chitenge, like the baby box, as an educational tool. While the garment has historical and social relations to the mediation of women's work as parents we sought to explore wider practicality in meeting the challenge of parental and infant morbidity and mortality in areas identified by all stakeholders, including mothers.

To further explore the creative and educational opportunities that an info-graphic-chitenge concept could offer, a six-hour design challenge was instigated with a small group of final year students studying BA Product Design, BA Graphic Design and BA Illustration students at Sheffield Hallam University. The creative approach for this design challenge observed the principle stage-gates defined by the Design Council's double-diamond model: discover; define; develop and deliver (Design Council 2019). With the challenge open to creative interpretation, we hoped that this activity would lead to conceptual proposals that speculated alternative fashion/image/ textual equilibriums. To accelerate the process for the participants, three thematic areas identified from consultation with partners in Zambia were distributed to three interdisciplinary teams. The themes chosen on the day also responded directly to the objectives outlined in the National Healthcare Strategy for Zambia 2017-2020 and the United Nations' Sustainable Goal 3. These three themes were:

- Prevention of malaria during pregnancy
- Reducing neonatal mortality through APGAR education
- Safeguarding vulnerable street kids

Students on the day worked collegiately, systematically and imaginatively to produce three design propositions. The first proposal conceived by Block and Dlugosz responded to the issue of reducing malaria during pregnancy. This design consisted of a vibrant repeat pattern featuring citrus fruit and dragonflies. A green vertical band provided an area where preventive information for the wearer was located: wear bright colours; cover yourself; presence of dragonflies deter mosquitos; avoid pools of stagnant water;

addition of lemon juice when washing clothes can be effective. Furthermore, it was proposed that chitenge would also be impregnated with mosquito repellent (as applied to interagency bed nets) to provide a newborn with an added level of protection when being used as a baby carrier (Figure 2).



FIGURE 2 Block and Lugosz's chitenge design

Koppel and Sumner conceived a second proposition. Similarly, they too adopted a very decorative and illustrative approach to their theme. Their chitenge consisted of five prominent features representing each APGAR assessment element: appearance, pulse, grimace, activity and respiratory. Figuratively, the main feature symbolised the mother and baby with the image formed by intertwining green shoots, buds and the native protea flower. The design also included a vertical band that was designated space for detailed APGAR information for the wearer (Figure 3).



FIGURE 3 Koppel and Sumner's chitenge design

Marriott and Stocks conceived a proposition that responded to the challenge of safeguarding of street children in Lusaka. From the outset their chitenge was specifically designed with the anthropometrics of young children in mind. By splitting the print area horizontally they cleverly produced two chitenges for the price of one, with the print design repeated. Their striking orange design depicted an accurate but abstract representation of the major arterial roads found in Lusaka and identified safe locations where help, assistance and medical care could be found (Figure 4). The rationale for the abstraction of information was intentional as it served a specific purpose. Envisaging that these chitenges would be distributed by local agencies, their design discretely camouflaged safe providers of care thereby not explicitly drawing the attention of those individuals who seek to exploit and profit from them.

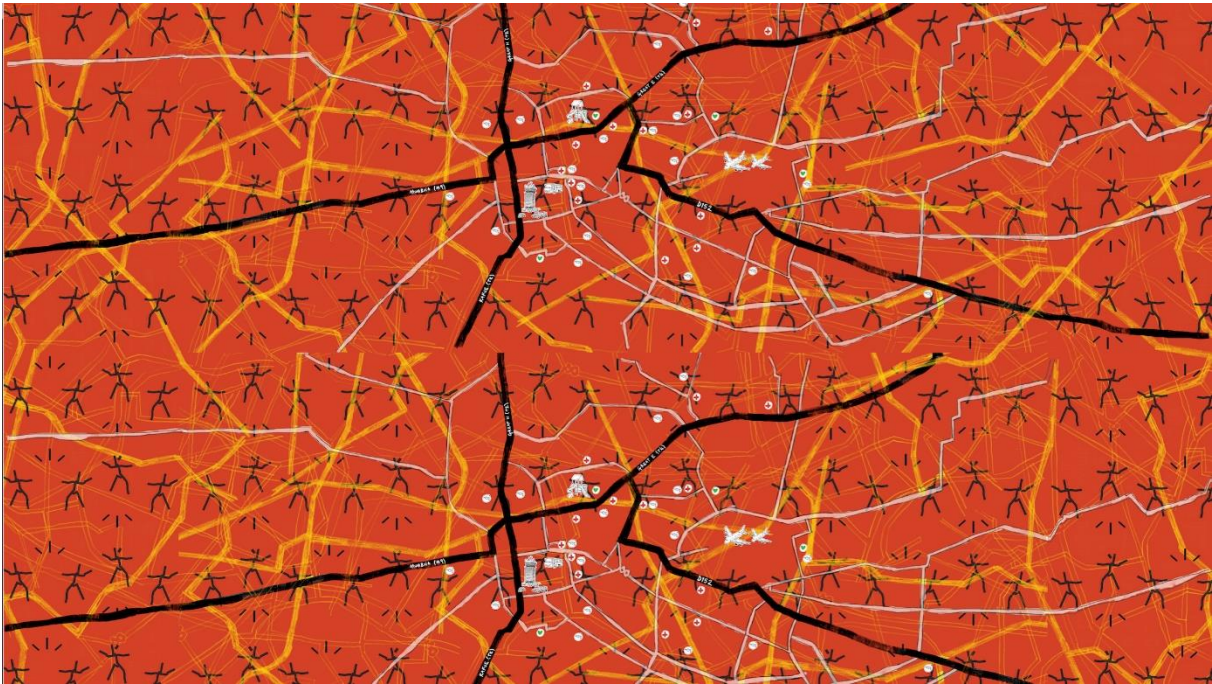


FIGURE 4 Marriott and Stocks' chitenge design

In our initial planning we agreed with Zambian partners that the initial design of the speculative chitenge propositions would be undertaken in the UK, however we were acutely aware of the potential working from a powerful colonial position should this focus be maintained. Consequently, it was clearly understood by all project partners that the designs were not definitive but created to initiate discussion and to aid our learning and understanding of the 'artifactual literacy' (Pahl and Roswell, 2011) potential of these significant cultural artefacts. Importantly, these chitenges were understood as material objects in achieving active and routine inclusion of all stakeholders into the vital social and iterative design processes of discover, develop, define and deliver (Liebel and Saadi, 2010). To advance our postcolonial approach, we translated all three speculative propositions into physical demonstrators to work towards participatory parity with our colleagues St John Zambia and their MCH teams and volunteers from Matero and Chunga MCH clinics.

Conclusions

The developing discourse of baby boxes as a safe sleep space and an essential tool in addressing concerns about infant mortality ignores that knowledge and understanding

are relative to historical and social contexts and is derived from a particular ontological standpoint (Alanen, 2017). The assumptions about the potential of the box being used to underpin its introduction outside Finland are based on notions of western child development theory and normative standards for attachment, growth and well-being. The argument is not that baby boxes are of benefit, it is that this needs to be based on empirical evidence and an understanding of how needs are being identified, assessed, met and by who to what ends. This includes explicating both ontological and empirical claims. In her critique of western developmental psychology, which includes attachment theory, Burman (2001) raises concerns about the power of scrutiny and judgement based on narrow definitions of what is required. This she argues is of moral and political concern since it is typically those in positions of power and privilege, not the child or the mother, developing the moral position. This 'morality of exclusion' deals in partial or 'fictional fantasies of childhood' which normalise 'the heteroerotic character of intimate physical caring between parents and their small children' (Burman 2001, p.19). This is because of the focus on the individual child and on individual relationships when child development and developmental psychology involve an historical array of knowledge and learning from a myriad of sources and places, although particularly western in origin.

We have therefore raised concerns about the political and commercial misappropriation of the baby box, arguing that approaches that fail to consider the social, cultural and material context of the boxes risks framing mothers as 'other' and continuing colonisation. One danger is that poor infant wellbeing outcomes is situated within the mother and her practices and not with in wider structuring forces that don't consider complexity, diverse ways of doing things and people as experts in their own everyday lives. A second significant concern is to simply import baby boxes as they are currently used in the Global North would be to promote western, normative parenting practices, repeating colonising practices that ignore the specific social and cultural context of Zambia.

In developing a project with St John Zambia that meets the needs of women, children and society it was important to understand the needs of all stakeholders (Tronto, 1993). Infant sleep practices is not of immediate concern to Zambian mothers living in poverty but disease, nutrition and access to safety and healthcare are. More acceptable than a box with a mattress is the everyday chitenge, which is adaptable, familiar affordable and practical. We have produced some speculative designs in order to enable partnership with and feedback from Zambian mothers. Indeed, at the time of writing, we are undertaking co-production workshops with stakeholders in Zambia. Our aim is to test the appropriateness of the chitenge as an intervention based on the concept of baby

boxes but in a context where the 4As (op cit.) are a consideration. Conversely, as Howitt (2012) implies, the satisfice solution we co-create for Zambia may have a reciprocal benefit for a European context where the baby box is displaced by an educational blanket. Significantly, working with the chitenge enables us to understand and reveal people's everyday practices and their relation to other people, objects, organisms and the natural world. Therefore, people, their doings, history, intersections with other people, their things and material properties, and the social contexts, spaces and places in which they are actually used are taken into account. We aim to involve mothers and practitioners in the production and to develop designs that answer to their needs as both mothers and women; local material solutions designed by and for local communities.

Acknowledgements

The authors wish to thank the contributions made by the following Sheffield Hallam University design students: Louis Block, Pati Dlugsoz, Keili Koppel, Shannon Marriot, Ellie Stock and Cal Sumner.

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