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Cinehack: Cape Town

Making High Quality Media by Embracing Informality

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ABSTRACT

Although many common tools of media making such as video cameras have become more accessible in recent years, many remain inaccessible. Cinematography, lighting and sound-recording equipment for example can be prohibitively expensive to obtain, complex to configure, and/or require specialist knowledge to operate effectively. These barriers can prevent non-professionals who *want* to produce high-quality media from being *able to*. *Cinehack* is an ongoing project to research ways to overcome these barriers. In this paper, we specifically report on *Cinehack: Cape Town*, a participatory media making project. By co-producing hip hop videos within a community for whom media making is often a ‘means-to-an-end’, we were able gain insights into the kinds of support needed to enable high quality media making by non-professionals. Specifically, we highlight ways to meet users’ needs by embracing informal codes of practice via experimental making and peer-support.

AUTHOR KEYWORDS

Making; Media; DIY; Africa; Hacking; Hip-Hop

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION

Cinehack is a DIY (do-it-yourself) media making project, which was established in 2012 to explore low-cost, easy-to-use alternatives to specialist filmmaking equipment, which can be expensive to hire or buy, and complex to calibrate and use. Through a website, social media, workshops and public events, we create and share blueprints for DIY filmmaking apparatus (‘cinehacks’), with the aim of supporting low-cost filmmaking and enabling users to progress from ‘pointing-and-shooting’ to more creative media making. ‘Cinehacks’ include cinematography tools (e.g. *sliders* and *dollies* made from recycled timber and remote-control cars), audio tools (e.g. wind guards made from socks), lens filters (e.g. polarizing filters made from broken sunglasses) and lighting tools (e.g. bright, portable lights made from cheap LEDs).

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Means-to-an-end media makers

Cinehack is aimed at *non-professional* media makers. For many people (e.g. hobby videographers or technophiles), media making is done for fun. It has a value that is difficult to quantify (e.g. in economic terms) as, for those involved, the pleasure of making something is *an end in-itself* [4].

For others, media making is *a means-to-an-end*. These means-to-an-end media makers do not necessarily want a career as a professional producer. They are more likely to want to use digital video as a tool for self-promotion, personal reflection, or documentation of their work/leisure activities. Small business owners, for example, might want to make a video to advertise their services on their website. Researchers might use video to communicate their research to peers via publications (many of which now accommodate video figures) or the general public. NGOs might use video to evidence their work as part of their reporting and accountability processes. Performing artists might wish to make a video to represent their artistry to fans, peers or new audiences. Means-to-an-end media makers are therefore those for whom video could be an important aspect of their life, or livelihood but their default option is often to pay a professional to produce a video on their behalf. For many, this is an unaffordable luxury.

Online support for film production, which might enable means-to-an-end media makers to ‘do it themselves’, often derive from pedagogical *film school* curricula [14, 23], and prioritize considerations such as ‘budgeting’, ‘assembling a team’, etc., which presumes access to financial resources. They often presume familiarity with specialist technical filmmaking language and/or social capital with other filmmakers. This limits their appeal to aspiring/semi-professional producers, or *end-in-itself* makers, who might embrace the learning experience and the chance to connect with other (aspiring) filmmakers. However, it makes them less suited to the means-to-an-end demographic.

One aspect of this problem is a semantic differential between *low budgets* in professional filmmaking terms and *low budgets* in the context of non-professional media making. *Monsters* (2010), is a much-cited example of a ‘*micro budget*’ film, yet it is estimated to have cost up to \$500,000 to produce [20]. The resources needed to make a *film* destined for traditional release are different to those needed to make a *video*, so the interchangeable use of these terms is problematic.

Another issue is that research into non-professional and DIY media making has focused on developing *literacies* [7, 31, 38], or *competencies* [17], often in broadcast production contexts [16, 31]. These approaches subtly prioritize and normalize professional codes of media production practice by, for example, treating shot-types as a static dataset [29], or developing algorithms for automatic editing [3]. In each case, the unspoken presumption is that ‘other’ techniques are somehow ‘wrong’. In some areas of HCI (e.g. computing), amateurs are increasingly being acknowledged as unsung ‘experts’ [20, 2], whose creative subversions of the norm are seen as valuable contributions to a discipline. Ames *et al.* critique ‘professionalization’ of amateurs [1] and instead call for new types of tools and literacies to support DIY ‘makers’. It is this kind of affirmative support that *Cinehack* aims to provide.

From “Low-budget” to No-budget

The idea for *Cinehack* emerged while making our own ‘no budget’ film. We were forced to improvise, involve our friends, make our own tools and ‘do it ourselves’. We took inspiration from blogs (e.g. “*Shitty Rigs*”, which documents DIY rigs on professional film shoots) and online videos by independent makers who had built cinematography rigs (e.g. *sliders* and *dollies*) cheaply [9]. We built a number of these rigs using inexpensively-sourced materials and documented them on a simple blog.

To develop this blog into a resource that would be useful to people with no prior knowledge of filmmaking, we described how to make the cinehacks using non-technical language and illustrated them with step-by-step diagrams and clear photographs. We organized a small community of 4-5 ‘cinehackers’ and set up a *Facebook* page, with the aim of growing the community, connecting with others and facilitating contributions from other ‘cinehackers’.

Bridging the Knowledge and Skills Gaps: DIY and Maker Culture

Cinehack’s expansion into the online space was inspired by virtual communities-of-practice [7] such as *Instructables*, *Life Hacker* and Reddit’s *Life Pro Tips* subreddit; DIY resources driven by user-contributions. *Instructables* hosts “user-created and uploaded do-it-yourself projects, which other users can comment on and rate for quality”. It has nearly 600,000 users and 2.4 million new views per month. *Life Hacker* is a similar blog with over 2.1 million likes on Facebook. *LPT*, a forum with over 5 million readers, hosts ‘tips’ that “improve your life in a meaningful way.”

These sites embody the pragmatic logic of DIY making that is sometimes distilled within the axiom, “if you want something doing right, do it yourself”. This applies especially to those who have a clear vision of how something should be done, but are forced to rely on someone else to do it (e.g. outsourcing a video production). Unfortunately, basic barriers to ‘doing-it-yourself’ include the *knowledge* of how to do it, the *skills* to actually do it and access to the necessary *resources*.

Instructables and *Life Hacker* help to fill the knowledge and skills gaps by nurturing large, open, communities via meritocratic, commons-based, peer-support platforms. Although the knowledge and skills shared within these communities are not necessarily what professionals would consider ‘best practice’, their cost/benefit logics are often convincing. For example, if one’s aim is to capture a one-off 360° time-lapse panorama of a garden, why buy an expensive rig when you can gaffer-tape an iPhone to an egg timer?

As social platforms that embrace the diversity of public creativity, there is a *playfulness* to *Instructables* and *Life Hacker* that make them more engaging than straightforward utilitarian or pedagogical resources. This is reminiscent of the British ‘Arts and Crafts Movement’, particularly its idea of taking ‘joy in labour’ [5]. Advocates of Arts and Crafts (e.g. John Ruskin and William Morris) are sometimes dismissed as parochial for denouncing machinery as inferior to the skill of a craftsperson [33] but in developing *Cinehack*, we were attuned to the possibility that *enjoying making* represents a more attractive basis (than pedagogy) for supporting ‘means-to-an-end’ makers.

As well as the subversive and playful nature of meritocratic online peer-support communities, *Cinehack* embraces the “nothing is perfect” philosophy of ‘wabi sabi’ [35] and the low-fi aesthetics of the maker movement. *Make Magazine*, for example, highlights creative DIY projects and ‘*Maker Faire*’ is a series of events where “hackers, crafters, coders, DIYers and garden shed inventors”¹ come together and share ideas. At a national *Maker Faire* we held a stall and gave away paper ‘recipe cards’ of our cinehacks (below).

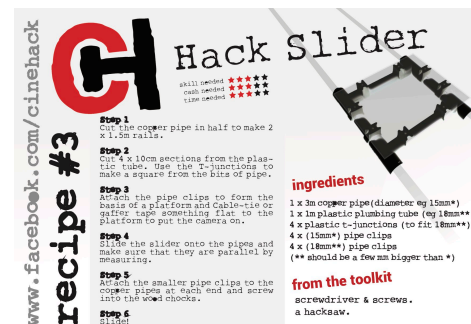


Figure 1. Example of a Cinehack ‘Recipe Card’.

We also demonstrated cinehacks in-action: a *dolly* made trolley wheels and skirting board (cost: \$15 approx.), and a *slider* made from copper conduit and plumbing tubes (cost: \$10 approx.). Using a live monitor, we demonstrated how the tools facilitate creative effects like the *Vertigo effect*, where optically zooming in at the same speed as tracking backwards creates a peculiar sense of spatial distortion.

Interacting with other makers and members of the public revealed a particular enthusiasm for DIY cinematography. Several members of the public showed us photos and videos of their own cinehacks in-action. Many of the techniques used were not commonly used techniques in professional film. Rather they were more “experimental” forms of cinematography, depicting everyday activities from unusual

perspectives, e.g. attaching a *GoPro* (a small camera) to a moving object. Well known examples include a trombone in *David Findlayson's Trombone Silliness* [10] and airport escalators in *All By Myself* [8]. These videos reflect the affordances of lightweight digital cameras and reveal cinematographic practices that differ from standard codes of practice in interesting and unpredictable ways.

Research Aims & Contribution

As an overarching research endeavor, *Cinehack* aims to overcome the barriers that prevent motivated individuals from being *able to produce high quality* videos when they want (or need) to. The aim is to support 'means-to-an-end' producers to *do it themselves*, erring, where necessary, away from 'best practice' towards affordable (and often playful) solutions, which we present in the form of clear, step-by-step instructions that we call 'cinehacks'.

However, there are limitations to this model of support; that is, its focus on *single shots* and *individuals*. High quality media usually involves multiple shots, often from different people, edited together into a coherent artefact. This usually requires a level of organization and planning – a production model – that potentially jars with the spontaneity and playfulness of experimental making.

We therefore set out to explore the extent to which DIY making can feasibly extend into a holistic, start-to-finish production model. We approached this through an in-situ engagement with means-to-an-end media makers in the form of hip-hop artists in Cape Town, South Africa. Our primary lines of inquiry were to establish the extent to which DIY making mirrors professional processes to ensure meaningful, high-quality media, the extent to which it deviates from 'best practice', and whether our framing of DIY media making, *Cinehack*, was a viable and attractive solution for 'means-to-an-end' producers.

As a European research team, our aim was to stimulate inter(-maker)-cultural dialogue and reflect critically upon our own (Western) understanding of D.I.Y / 'making', through the lens of a different culture.

Our findings point to a need for different kinds of support than those derived from professional codes of 'best practice'. A key contribution lies in highlighting the value of a less *formal* approach to DIY media making: one that affirms experimentation by abandoning some (but not all) of the protocols of professional production. We outline how points-of-reference such as genre conventions, influences and visual examples, can help articulate shared aims within social-collaborative structures and how these can function as alternatives to role-based divisions of labor. Finally, we highlight the opportunities for new sociotechnical support structures that could enable DIY production, and highlight some of the potential dangers of an entirely 'DIY' production model.

CINEHACK: CAPE TOWN

Our study was conducted in collaboration with hip-hop artists from Cape Town, South Africa. We had an existing connection with the community in which they created and

performed their music, and, as well as being prototypical 'means-to-an-end' producers, the geographic and cultural context allowed us to explore the potential of DIY media production to exploit local resources that are different to those in the context in which *Cinehack* was originally designed and developed.

Hip-Hop

Musicians are a category of artist for whom video can be an important commodity (e.g. the promotional 'music video'), but they typically lack the necessary knowledge, skills and/or resources to make them alone. Hip-hop is a particularly suitable genre for this study because, like DIY and maker culture, the culture of hip-hop also values improvisation, authenticity and independence. As a genre, hip-hop is also highly conventionalized. Our exploratory content analysis of 50 hip-hop videos (on *YouTube*) revealed a surprisingly small number of shot-types, many of which were derived from the well-known 'four elements' of hip-hop; *emceeing* (a.k.a. rapping), *turntablism* (a.k.a DJ-ing), *b-boying* (a.k.a. breakdancing) and *graffiti art*.

'Making' in Cape Town

Cape Town is the birthplace of South African hip-hop and it is home to a rich and vibrant underground hip-hop culture; a largely non-profit activity conducted in an environment where there are few money making opportunities available to local artists [28].

Concepts such as "*kanju*" ('creativity through struggle') and "*ubuntu*" ('humanity towards others') belie a wealth of thoughtful attitudes towards creativity and co-creativity within African cultures. However, such concepts and associated practices have had little impact on a predominantly Western, official 'maker movement'. Of 107 official (i.e. organized by, or franchised from O'Reilly Media Inc) *Maker Faires* (23) and *mini-Maker Faires* (84), only 1 has been held in the Southern hemisphere (Sydney, August 2014). None have been held on the African continent. An unofficial derivative, *Maker Faire Africa*, was held annually between 2009 and 2012 in Accra, Ghana (2009), Cairo, Egypt (2010), Nairobi, Kenya (2011), Lagos, Nigeria (2012) and then in Johannesburg, South Africa (2014) but these were not endorsed by (or supported by) O'Reilly Media Inc. A blog, *Afrigadget*, with the strapline, "*solving everyday problems through African ingenuity*" is a pan-African response to the *LifeHacker* model, however. *Afrigadgets* range from those involving microcontrollers ('You Are What You Breathe') to relatively lo-fi hacks, including a portable whiteboard ('A Tablet for Africa') and a "tippy-tap" ('The Mukombe'; a handwashing device made from a hollowed-out fruit). *Maker Faire Africa* and *Afrigadget* illustrate how the global diversity of attitudes to improvisation and ingenuity are misrepresented by *Maker Faire's* predominantly European/North American presence.

STUDY DESIGN

We designed the study in the model of participatory action research (PAR) [21]. This was selected over, for example, an ICT4D (ICT for development) approach [13, 32], which

might have run the risk of appearing more *interventional* than we aimed to be. We drew particularly upon Hayes' description of PAR in HCI [12], applying the *action research spiral* of 'planning', 'acting' and 'reflecting' to a process of iteratively *handing-over control*, over the course of five video productions.

Our field-study team consisted of; **R1** (a filmmaker), **R2** (a digital artist) and **R3** (a social scientist). R3's previous research includes a long-term ethnography of Cape Town hip-hop [27] and, through R3, we were able to recruit participants for the study. Their local knowledge and social capital facilitated the formation of co-operative working relationships and mutual trust between the artists and the research team. R1 and R2 acted as executive co-producers (i.e. provided creative and technical support). Our collaborators were five hip-hop artists/groups from Cape Town (we refer to them using their real identities).

- A1. *Mingus***: Amsterdam-based emcee, who emigrated from South Africa to the Netherlands in 2013.
- A2. *Archetypes***: Three-piece emcee group based in Gugulethu, their home township, East of Cape Town.
- A3. *BFK***: An emcee from Firgrove, close to the Eastern Suburb of Somerset West who collaborates closely with two childhood friends; a producer and a DJ.
- A4. *Die Skerpste Lem***: a resident of central Cape Town, originally from Paarl in the North of Cape Town.
- A5. *AA Meetings***: a collaboration between The Archetypes and emcee Khobs (also from Gugulethu).

Over a period of two months, including one month in Cape Town and three days in Amsterdam (to make V1 as a pilot study), we set out to produce a music video with each of the five groups. In accordance with our PAR methodology, in the progression from the first video (V1) to the last video (V5) we sought to hand-over control to the artists, such that we played highly active roles in the production of V1 and mostly reactive roles in the production of V5. In doing so we sought to explore the different values brought by each party: ourselves (as DIY makers with professional media production experience) and the artists (creative makers in their own right). Our aim from the outset was to develop the videos in dialogue with the artists, but to defer increasingly to their initiatives. As such we were careful not to exert creative pressure on the artists; rather, our intention was to scaffold an otherwise 'independent' production on their part, with 'cinehacks' and our own DIY skills.

Developing the study, we were sensitive to the sociocultural and the socioeconomic context. South Africa is classified as an *Upper Middle Income Country* with a GDP per capita of \$11,500, and has high levels of income inequality [24]. Our approach was guided by previous work [27] and our particular concern was whether the artists could *replicate the DIY production process without all the resources assumed by the existing hacks*. The apparatus we deployed and the techniques we used were selected on this basis. 'Low-budget', in this context, meant financial outgoings in the 'tens' of dollars at the most.

As part of our engagement with the local community, and as an inducement to our participants, we organized an event at the end of our stay, entitled 'Cinehack: Support Local Hip-Hop' (CSLHH), where we presented the videos as 'premieres', and the artists had an opportunity to perform live. We also produced a 'zine' entitled '*how to make a music video*' (in both print and pdf form), which the artists could easily reproduce and share (see video figure).

Study Production Model

Traditionally, media production tends to be a linear process. For instance, once a project is 'initiated', various 'pre-production', 'production' and 'post-production' activities occur (usually in roughly that order). A final process, 'distribution' connects a finished artefact with audiences. Although our study aimed to test the flexibility of this model within a DIY context, there were some limitations to the extent to which this was possible; a result of both practical and ethical considerations. Firstly, for all but the last production, we 'initiated' the process (by virtue of initiating the project as a research study). Secondly, we completed some pre-production tasks such as organizing transport and borrowing camera equipment (including a *Canon EOS 5Dmkii* DSLR camera, a *GoPro* and basic tripods) to facilitate the project. We also provided materials (e.g. wood, brackets, screws, etc) and a 'toolkit' containing items such as gaffer tape, basic hand tools and an electric drill, to enable ad-hoc cinehacking, where required. Other pre-production tasks were our ethical responsibility as researchers. Specifically, the provision of refreshments and sustenance, conducting risk-assessments and checking restrictions on filming at specific sites to ensure we were operating safely and within the law.

Data Collection & Analysis

During the fieldwork, we (the research team) kept detailed fieldwork diaries that we triangulated during informal debriefs every 3-4 days. The intention was to collect subjective interpretations during 'planning' and 'acting' and, through 'reflections', rationalize them into a more rounded impression, which would then inform how we handed-over control in the next video. We kept receipts to quantify expenses incurred during each shoot. On the completion of each video we conducted semi-structured interviews with the artist(s), during which we asked them to reflect on their aims at the outset, the challenges, the support they received from us, the extent to which their ambitions for the videos had been met, and their ambitions for the future (e.g. whether they planned to make more videos). The videos themselves also constitute a rich source of empirical data (see video figure). However, in this account we have focused our analysis on the qualitative data: the fieldwork diaries and interviews, which all relate to the 'making' process.

The Videos

V1: 'Stay' by Mingus

As this was our first video in the deployment, we adopted active, co-producer roles. While our aim was to defer ownership to Mingus, we provided as much support as was



Figure 2 - Left-to-right: V1, V2, V3, V4.

required to ensure the resulting video was of as professional-quality as possible.

We began by choosing filming dates, checking the legalities of filming in Amsterdam and organizing transport. We sent blank storyboards and ‘call sheets’ (a document that outlines who is responsible for what) but Mingus replied with links to music videos and *Instagram* photos of locations. We realized the aesthetic he favored was partly achieved by shooting at sunset, so we factored this into our planning. We met with Mingus the night before the shoot to finalize plans.

We filmed over two days in Amsterdam; outside, and at several small businesses. We used Mingus’ list of locations to structure the shoot. Amsterdam does not require permission to film outside, but we obtained verbal consent from the business owners at the time of filming. The video was shot on a DSLR, which we operated, as Mingus was performing in each shot. The setup and framing for each shot was decided in dialogue with Mingus on a shot-by-shot basis, in situ. We built several cinehacks and used a number of *ad hoc* hacks such as an internal light fixture, repositioned as a light source, a white t-shirt as a reflector, and a saucer as a makeshift ‘slider’. Mingus also cut a discarded plastic bottle in half, and placed it over the speaker of his mobile phone, enabling it to function as an effective acoustic amplifier (to help him lip-sync).

We uploaded the rushes to both *Dropbox* and *WeVideo* so Mingus could view and/or edit the video himself. However, Mingus encountered usability problems with *WeVideo* and did not have his own editing facilities, so R1 edited the video using *Adobe Premier*. In consultations via *Facebook* and *Skype*, Mingus expressed concerns that he didn’t have the right language to describe exactly what he wanted.

We showed the finished video at the CSLHH event (in Mingus’ absence) and also used it as an example for the other artists. Mingus uploaded the video to his *YouTube* account and embedded it on his (then-new) artist’s portfolio website. At the time of writing it has had >2,300 views. It has received 10 (positive) comments, and 41 ‘thumbs up’ votes on *YouTube*.

V2: ‘Black or White’ by Archetypes

The second video of the study was the first to be produced in Cape Town. We again adopted active roles and provided comprehensive support. We took a step back from the (non-vital) planning activities and let the artists ‘call the shots’ in terms of where we went, when, and with what equipment.

We had limited contact with the group (T.O.P., Sole and Lolo) before our first meeting; an evening ‘braai’ (BBQ) at our rented house in Cape Town. The artists showed us various videos that inspired them but distractions (music, food and drink) resulted in crosstalk and unfocused, overlapping discussions. Although the direction and

aesthetic for the video was unclear, we allocated days for filming and agreed to improvise at locations where the artists had ideas for specific shots; a railway bridge and Lolo’s home township (Langa). T.O.P. was relaxed about the exact locations to be used, and confident in his ability to improvise.

The shoot took three afternoons and was characterized by high levels of spontaneity; new locations were decided during filming and we eventually filmed in 7 locations including our rented house, two home studios, a beach, Langa, and a restaurant.

We used an additional camera to document the project, but after showing this footage to the artists, they decided to use it in the video. Sole agreed to shoot some of this documentary-style footage in return. The artists took turns operating the cameras, with some assistance from us. Several tangential activities were suggested by the artists during the filming days, including an impromptu ‘photo shoot’, meetings with friends and family, and demonstrating the quadcopter to groups of local children, which reduced the amount of time spent filming. Maintaining focus on the task at-hand was challenging and this resulted in a low ratio of time-spent to media-collected.

Nonetheless, the video was edited over two afternoons; Sole took charge of the editorial decision-making and R2 provided guidance and eventually edited the video, using *Adobe Premier*. After the CSLHH event, Lolo uploaded the video to his *YouTube* account. At the time of writing it has had >1,500 views and 25 ‘thumbs up’ votes.

V3: ‘Anyway’ by BFK

Here we began to adopt a more ‘reactive’ support role. We encouraged the artists to decide on a strategy for the production and provided less proactive guidance. Our plan was to use prosumer cameras, but the artists had other plans.

We were connected with BFK and his two collaborators, J-Beatz and Evo, by Anonymous, one of R3’s connections who dropped-out and recommended BFK as a replacement. BFK had an online following and some self-published albums of music, but it would be their first music video.

Our first meeting was a face-to-face lunch meeting at our rented house. It was sociable, yet focused, and the artists expressed gratitude for what they perceived to be an opportunity to produce a ‘professional’ music video. We began by showing them V1. We discussed influences but the artists already had a clear idea for a narrative based – again – on locations: a ‘journey’ from their hometown of Firgrove to the stage of a live performance: a metaphor for their journey as artists. Again, the artists brought photographs to show us on their smartphones. We visited the locations with the artists a few days before the shooting day and discussed specific shots and planned some ‘site-specific’ cinehacks, (e.g. a dolly to run on the tracks of an unused railway line).

We did not suggest planning documents, as part of our stepping-back methodology but the artists themselves scheduled an ambitious shooting day.

Shooting took place on a single day, which began at 9am and finished after 11pm. We insisted on taking breaks, including a lunch break and a long break for dinner, but the artists' enthusiasm meant they were keen to re-start. We started by using consumer camcorders, however, after obtaining like-for-like shots and comparing the quality (with V1 as a point of reference), the artists expressed concerns about the quality of the consumer camcorders, so we used our DSLR exclusively thereafter. The shoot took place at 5 locations: a derelict building; a street corner; a railway tunnel; a beachfront promenade; and a nightclub. At the derelict building, we used 'found materials' as props, including graffiti walls and an abandoned television. At the street corner, BFK invited approximately 40 neighbors to feature as 'extras' and Evo used an improvised 'steadicam' using a camera strap around his neck and two tripod legs (as grips) to obtain smooth hand-held footage. A neighbor's car was used to get a smooth tracking shot as the artists (and several neighbors) walked down the street, with Lee lip-syncing to the car stereo. We arrived at the beach in the evening and obtained some shots of b-boys (friends of BFK who had volunteered to feature in the video) silhouetted against the sunset. The nightclub scene was filmed at the artists' local venue, where Lee performed a short live set and Evo filmed from on-stage.

The editing process was completed entirely by Evo, using a laptop on-loan from us, with *Adobe Premier* installed. Evo had experience of digital music production, but relatively little experience of video editing. Nonetheless, he was able to edit the video with very little support. The only exception was a special effects shot that we produced in *After Effects*, based on his specifications. After the CSLHH event, BFK uploaded the video to their official *YouTube* account, where at the time of writing it has had >2,400 views and 49 'thumbs-up' votes.

V4: 'Sterk op Hede' by Die Skerpste Lem

In this video, the artist, Lee-Ursus Alexander (a.k.a. Die Skerpste Lem), co-ordinated the production entirely on his own terms. We did not provide any camera equipment.

Our first meeting was an informal dinner at Lee's flat. We chose the track to work on together. Like the other artists, Lee was inspired by certain locations, including some historical 'whites only' and 'non-whites only' benches in Cape Town. We planned the shoot around three locations; the benches, Lee's hometown of Paarl and Table Mountain, which reflected the three verses of the track.

The shoot was a focused, 1-day shoot. Lee's iPhone was used as the main camera (with a \$4.99 clip-on lens kit). We used many cinehacks, including taping the iPhone to a lamppost for a static shot. In Paarl, we met with several of Lee's friends who made ad-hoc cameos in the video. At Table Mountain, Lee 'directed' us to take shots of Table Mountain (using his phone), including a time-lapse shot. At the end of

the shoot, Lee described the video as 'a journey', so we suggested attaching the camera to the front of the car and obtaining some 'journeying' shots. We gaffer-taped the iPhone to the bonnet of our car and drove carefully back to Lee's place to review the footage.

Editing took place over a single day at Lee's flat. Lee asked about converting the video to black and white, which we did using a built-in filter in *Adobe Premier*. Some basic adjustments were made to the contrast and brightness of each shot for consistency and visibility (e.g. the faded text on the 'whites-only' bench was illegible in our initial shot). Again, despite encouragement, the opportunity to control the editing process was not attractive. R1 carried out the manual editing process, with Lee making editorial decisions through discussion and prompting. After the CSLHH event, Lee invited other members of the hip-hop scene to a screening at his apartment. In July 2015, we asked permission to upload the video to *YouTube*, which Lee was happy to consent to.

V5: 'Unknown' by AA Meetings

In this video, we adopted an almost entirely 'hands-off' approach. We encouraged the artists to be autonomous, although we helped them when asked.

This video was proposed by the artists during our stay in Cape Town. We had already worked with 3 of the 4 artists (Archetypes) during V2 and Khobs, the older member of the group, had been present while filming V2 as well. We met first in Gugulethu, where a planning discussion quickly turned into impromptu performance. Afterwards, we visited an Eco Village, which the artists had been invited to use as a location for filming.

Despite planning to shoot on mobile phones, the artists' own mobile phones were either not charged-up or unavailable so we loaned our spare (DSLR) camera to the artists for the shoot. Creative differences were discussed at-length by the artists and, although the shoot took a full day, only a few shots were captured. At the end of the shoot, we gave the artists a portable hard drive containing the materials, which they wanted to edit. At the time of writing, however, the footage has not been edited. The hard drive containing the footage remains with the artists.

FINDINGS

Our findings take the form of two sets of reflections. In the first, we reflect on the challenge of disentangling the DIY approach from the structures of professional media production. In the second, we reflect on the opportunities suggested by the artists' own initiatives.

Disentangling DIY from Professional Production

Despite our aim to test the limits of the production model, we were limited from the outset by both our ethical commitments as researchers, and our desire to give value back to the participants. Specifically, we conducted a number of preparatory activities, which corresponded to typical 'pre-production' (planning) duties. Thereafter, the shape of each production aligned broadly with a professional media production process. 'Production' (of the video materials) was

followed by ‘post-production’ (editing), which was then followed-up by different kinds of online and offline ‘distribution’.

Despite having the high-level structure of a professional production, we observed a number of different and emergent activities. Some professional activities (e.g. sound recording) were designed out of the study. Some (e.g. shot logging) were not used because our aim was to explore alternative approaches (rather than imposing professional techniques). Others (e.g. storyboarding, scheduling, distribution via mainstream channels) were rejected by participants. As we became more ‘hands off’ the variety of the activities diminished and V5’s non-completion from the post-production stage onwards suggests that support in that area is particularly important.

Figure 3 (top) depicts a breakdown of the activities we observed; with the primary responsibility highlighted in each case (or combined where responsibility was shared). Figure 3 (bottom) collapses this data in a plot designed to highlight trends: a productivity ‘peak’ in V3 (A), and our stepping-back method (B).

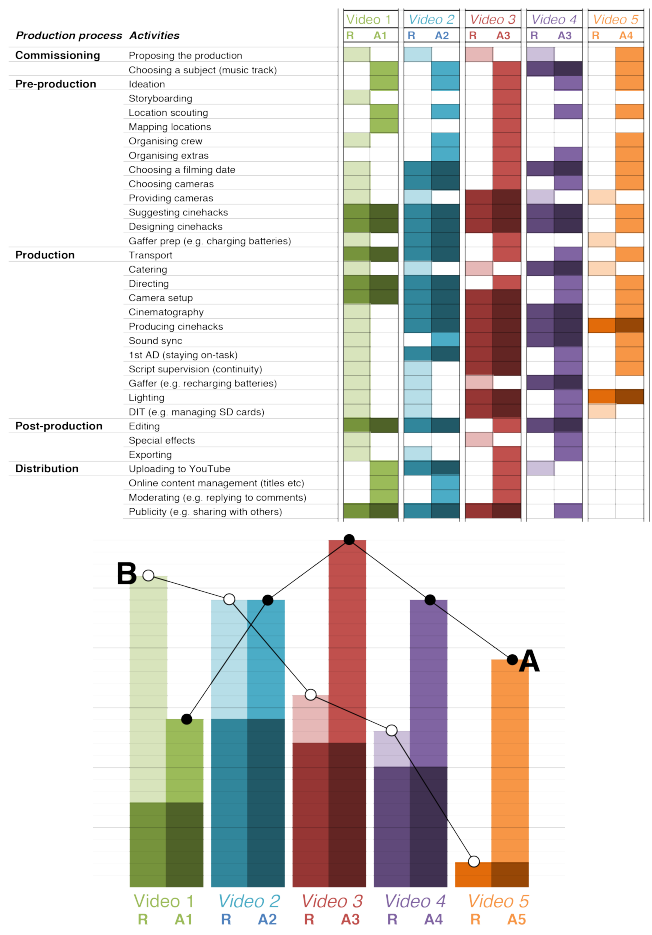


Figure 3, Distribution of activities and responsibilities across the 5 videos.

Low Budget: High Quality

The financial outlay for each video (not including our research costs, but including materials, transport,

refreshments etc.) was in the order of the tens of dollars per video; arguably within the reach of most means-to-an-end producers and certainly more affordable than hiring or buying equivalent equipment. Although we used DSLRs in V1, V2, V3 and V5 (despite only planning to use them in V1 and V2), shooting V4 exclusively on a mobile phone demonstrated that we *can* enable the production of a high-quality music video at a significantly reduced cost.

Production Challenges

Overall, the artists had a clear idea of how individual shots should be composed, drawing on a tacit awareness of hip-hop videography conventions such as those we encountered in our content analysis. Production tasks such as setting up cameras, composition, cinematography and lighting all came naturally to the artists.

The artists struggled to focus on individual tasks during production. Ironically, in many cases, the excitement of producing good-quality footage would result in a loss of focus and momentum as footage was replayed. A knock-on effect of this was that some of the shooting days became very long (often requiring us to insist upon breaks). By the time we assumed an observational role in V5, long discussions about the creative direction of the video led to an increasingly unstructured shoot and basic errors (e.g. in focus, lighting and framing, batteries were left uncharged, etc). As we withdrew support, production activities began to fragment, despite evidence of the artists possessing the necessary technical competencies.

Post-Production Challenges

Post-production (editing) was considered to be too complex by most of our participants to achieve alone. The only exception was Evo, who was able to transpose his digital music production skills to digital video post-production and cut and color grade V3 alone, achieving some complex visual effects. In the other cases, despite taking time to demonstrate editing techniques to the artists, R1 or R2 eventually carried out the majority of the technical implementation of the edit, with the artists often struggling to articulate what they wanted without using examples.

Resorting to a Visual Vocabulary

In discussing the subtle dimensions of editing such as tone and pace, color grading, special effects and transitions, etc. specialist vocabulary was often an obstacle. One participant talked about feeling disempowered by the need to engage with an unfamiliar technical vocabulary:

“That’s where I’m helpless because I don’t know the terms of how to say, ‘It should be like...’ You know what I’m saying?” [Mingus]

We overcame this barrier exclusively by resorting to visual examples from the genre (e.g. other professional hip-hop videos) and beyond (e.g. Instagram images).

Bespoke Cinehacks for Individual ‘Auteurs’

A disparity was readily apparent between the outcomes of those videos made by groups of artists (V2, V3 and V5) and those made by individual artists (V1 and V4). In V1 and V4,

the artists (Mingus and Lee-Ursus, respectively) approached the project with a clear vision of what they wanted to achieve. Once we understood the vision, tailoring support was straightforward. As a result of the clear sense of purpose, the cinehacks we produced for V1 and V4 in particular were often highly specific and were therefore improvised in-situ (e.g. the saucer slider and white t-shirt reflector in V1, and the car mount in V4).

Generic Cinehacks for Collective Co-Authors

In the group contexts, there was a tendency towards much more *ad hoc* ideation, which was sometimes difficult for us to respond to. It was often less clear (to us) what the needs of the artists were, since they would deliberate this amongst themselves and move onto something else before reaching decisions.

BFK (the youngest artist we worked with) approached the project with a highly professional demeanor. Evo quickly assumed the role of producer and director, taking the lead in most of the planning and editing decisions. Jovan assumed a co-directorial role, as well as assisting with everything from translating ideas to setting-up equipment and rounding up extras. As with the individual artists, the clear sense of purpose led to the deployment of some ad-hoc bespoke, cinehacks (e.g. the train track).

Archetypes and AA Meetings were less enthusiastic about establishing traditional filmmaking hierarchies and patterns of work, favoring instead a more discursive and relatively egalitarian approach, tempered only by a shared respect for Khobs (the elder of the group). The cinehacks produced for Archetypes and AA Meetings were relatively speculative and drew largely upon our existing catalogue of generic multipurpose cinehacks.

Reflections on the Artists' Approaches.

Influences as Impetus

Although 'normal' pre-production techniques, such as storyboarding, call-sheets and shot lists were discussed with (some of) the artists, a more ad-hoc, improvisational approach was favored in all five videos. Planning discussions focused primarily on stylistic influences (e.g. the *Instagram* aesthetic, other music videos and other artists' styles). With the exception of A3, 'pre-production' activities (i.e. logistics, timescales, allocation of resources and allocation of roles) were all configured fluidly, in-situ.

One element that was universally considered important was *locations*. V1 was structured around locations in Amsterdam; in V2, the locations mentioned in-passing during our first meeting were revealed to be important to the artists; V3 and V4 were both structured around locations that reflected the narrative of the songs. The *only* pre-conceived element of V5 was its location. The importance of locations was initially surprising, but as the project progressed and we began to discuss the trend with the artists, it became clear that home is an integral part of their identities and an important element of their 'realness' as hip-hop artists, hence it helped give the project *impetus*.

Reflexivity and Realness

'Realness' and 'authenticity' were important to all of the artists. Locations, costumes, props and extras were carefully chosen with reference to the artists' values, their roots in a neighborhood or their personal artistic trajectories:

"One of the themes that I wanted to have running in the background to the video is basically how far we've come."
[Lee-Ursus]

"You can see that there's a start or new beginning in terms of, I'm here now. At the same time I would look at it as a communication tool where a lot of people wonder now what I'm doing, what's happening, where am I, that type of thing."
[Mingus]

A striking connection between all the videos was the presence of a reflexive narrative. In some cases, this became *self-reflexive* (i.e. the reality of the production context was present within the video itself). For example, in V2, the Archetypes all wore their Cinehack t-shirts (which we gave them as gifts upon arrival). Sole and T.O.P. described being motivated partly by the desire to express gratitude (for the t-shirts and the support), but also as a way to reflect the social context of how the video was produced. The value some of the artists placed on social connectedness was another key point of reflection.

Socializing as an Integral Activity

Despite the limited timescale of the project, four of the five artists/groups insisted upon getting together socially during the project. This was informed, in-part, by existing friendships with R3. However, Lee-Ursus, who insisted on cooking for us before we began shooting, described this as an important part of the work – ensuring the process was social and enjoyable and there was trust between all parties:

"Sometimes you need to break bread with people and just get to know people first. I don't like that, "Oh. Let's get down to business" type of thing...I can get down to business, but I also like business to be, not mixed with pleasure, but to be pleasurable... real." [Lee-Ursus]

The artists took the time to enjoy the social aspects of the creative process and through this, we observed high-levels of *ownership* over the process and the resulting videos.

Social Collaborative Structures

The social collaborative structure of the artists' existing musical collaborations was reflected in their approaches to the productions. In V3, Evo, the group's sound engineer, also took control of the equivalent technical aspects of the video production (e.g. editing). In V2, the 'anarchic' nature of the trio's relationships translated into an equally anarchic production structure that was, nonetheless, ultimately highly productive. Both V2 and V5 were shaped to a large extent by the presence of Khobs, whose strong personality and creative dynamism was simultaneously a driving force and a source of frustration to the younger artists. Respect for elders is an integral part of African culture. Hence, Khobs' ideas were the basis for V5, and much of V2, in spite of resistance from

the artists, who would assert their differences of opinion, yet often defer to Khobs' authority.

Familiarity Affords Flexibility

The artists' detailed knowledge of their local area, its transport infrastructure, local customs and idiosyncrasies, simplified a number of processes that often take time in professional contexts, from location scouting to scheduling. In this case, despite the ad-hoc-ness, the artists were able to adapt to unforeseen circumstances with aplomb.

The artists' local contacts were also highly accommodating, from providing refreshments to helping out with errands and acting as extras. This was particularly apparent in V3, where the artists' friends and neighbors arrived to take part in the video and spontaneously arranged themselves in the background of each shot with no direction. The social connections, and the widespread familiarity with the genre, eased the whole process and facilitated greater flexibility than one might factor into a 'typical' video shoot.

Confidence and a Perception of Reduced Risk

Although we went to Cape Town advocating a DIY approach, the artists still identified with us as *professional experts*. This had a positive impact on their confidence. On several occasions, participants commented that our presence reduced their perceived risk of failure – especially compared with past attempts to organize video shoots:

"[we'd] always get like a block because we weren't always sure if we would be able to firstly get the shots that we wanted, and then create what we wanted to happen..." [Evo]

That our presence gave the artists confidence to implement their ideas suggests there is a need for external support, but that the focus of this support is not necessarily (or, at least, not exclusively) material support. The challenge was as much about enabling participants to find their own voice by giving them the confidence to experiment.

DISCUSSION

Our study presents evidence of the potential for *Cinehack* to help overcome some of the cost barriers to producing high quality media materials. In a relatively controlled PAR study, yet entirely in-the-field, we enabled participants to make media that was as *professional-looking* (i.e. stable, in-focus, evenly-lit, etc.) as professionally-produced media, with minimal support. However, just as media production requires materials and skills, 'cinehacking' also requires materials and skills (albeit different skills). Our findings indicate that *Cinehack* circumvents a cost barrier but introduces a skills barrier (DIY making/hardware hacking). However, our contention is that in a middle income country such as South Africa, a skills barrier is invariably easier to overcome than a cost barrier, particularly when one has a combination of a support network and knowledge resources (e.g. *Cinehack*).

Over the course of five video productions, we collaboratively improvised low-cost solutions to a variety of complex production challenges. Some were bespoke cinehacks, developed in-situ (e.g. the railway track dolly in V3). Others were based on pre-existing ideas (e.g. using sunglasses as a

polarizing filter in V2) or cheap pre-fabricated materials (e.g. clip-on lenses in V4). Other solutions were improvised by the artists (e.g. Mingus' improvised amplifier in V1). Our self-imposed constraint was that cinehacks must be simple enough for the artists to replicate without us. None of the cinehacks required specialist skills or complex tools to make.

We found that the more *focused* productions (V1, V3 and V4) required, and gave rise to, more *creative* and *bespoke* cinehacks. The *less* focused (more collective) productions (V2 and V5) used more *generic* cinehacks. Overall, the extent to which we could tailor our support to the artists' intent was based on two factors: the presence of a (shared) vision, and the ability to communicate this vision to us. Communication of their visions was achieved through activities that are *not* part of existing models of 'best practice'. This included referencing well-known genre tropes (e.g. "rapping to camera"), using examples as a way to articulate specific techniques or effects, and recognizing the importance of locations to the artists. As outsiders, we did not foresee the importance of locations in particular. This calls for systems that are highly sensitive to the core values of a community, and that facilitate ways of translating these values into forms of support that help users articulate their creative visions, as well as enabling them to enact them.

De-Isolating 'Production'

All the artists we worked with were able to produce high-quality video materials (using the cinehacks we co-created), which could then be used to create high-quality music videos. Our aim was to de-isolate 'production' from other processes like 'pre-production' (e.g. planning) and 'post-production' (e.g. editing).

The artists circumvented the need for pre-production by *improvising* at specific *locations*. Improvisation and locations were revealed to be core aspects of the artists' identities. We can learn a lot from their improvisational approach. However, to circumvent pre-production in other contexts, we need to find more general ways of configuring meaningful activities without formal planning. A starting point is to consider the relationship between *culture* and *genre* (since the two values above are shared with hip-hop culture). Alternatively, we might consider other aesthetic *influences* (e.g. Instagram filters). Our findings suggest a shared *identity* and a DIY approach allow media making activities to be reframed in familiar language. Drawing on this, we may imagine forms of support that take aspects of a shared identity (e.g. 'researchers', 'small business owners') and frame planning activities in relatable language.

The other major obstacle we encountered was *post-production*. Just one of the artists was confident enough to edit the video on their own. This was not due to a lack of creativity; rather it resulted from a lack of familiarity with specialist vocabulary, and a lack of specific technical skills. The fact that most of the highly motivated, genre-literate, creative artists we worked with required high levels of support to edit a short video in a highly conventional genre corroborates evidence in other studies [18, 11] that have

found untrained users disengage with video at the editing stage. Video editing is now a well-known barrier to high quality media making by non-professionals. Our contention is that one element of the solution lies not in the perpetuation of outdated metaphors (we still hear of ‘cutting’ and ‘splicing’), but rather in sociotechnical systems that ground editorial decision-making in familiar language.

Embracing Informality

The ‘*Cinehack*’ approach was easily understood and readily embraced by the artists. Our proposal to collaborate was immediately recognized by all the artists as an opportunity to make a high-quality, low-cost music video.

The knowledge, skills and material support we brought to the project were well-received by the artists. However, our plan to gradually shift to reflect the artists’ initiatives was accelerated from the outset by a strong resistance to formal, structured activities (e.g. storyboarding) and we were forced to improvise forthwith. Our “radical” DIY approach was quickly exposed to be relatively conservative by the artists, for whom improvisation, experimentation and more sophisticated DIY approaches (e.g. *kanju* and *ubuntu*) were a part of their culture and way of life. This corresponds to Dayo Olopade’s account of the pitfalls of “*formality bias*”, or *the West’s strong preference for the formal sector* [25]. Olopade critiques the tendency to leave critically unexamined the kinds of ‘foundational myths’ upon which big decisions are often based.

Critically unexamined foundational myths, in the context of media making, include the presumption that formal, professional production structures represent the *correct* way to make media, potentially at the expense of social structures that help sustain a shared identity and a shared sense of purpose. The proliferation of pedagogical systems that seek to configure production activities around formal roles attests to the tenacity of this myth. Technical standardization and role-based divisions of labor might be more ‘productive’ in professional production contexts, but they undervalue the ‘joy’ of making in favor of values such as efficiency, scalability and value-for-money, which are arguably most applicable at-scale. Through this research, we hope to have called these priorities into question anew.

Abandoning professional notions of ‘best practice’ entirely, however, is neither feasible nor desirable. As researchers working in this area, we must emphasize the importance of advocating safe, legal practices, even within unlegislated, DIY media making. In our study, the combination of enthusiasm and novelty might have resulted in dangerously long hours had we failed to adhere to certain protocols. At times, our (professional) experience was vital to operating productively and safely (e.g. insisting on breaks, checking legalities). Systems to support DIY making would benefit from bearing these considerations in-mind. There are still many ways that we might safely and responsibly ‘untie the workings’ [37] of professional media production practices to make them more accessible and appealing to ‘means-to-an-end’ producers. One way is to ground them within existing

social practices that make *making* more enjoyable. “Breaking bread” with others came up within our study, for example.

Returning to the idea of challenging ‘best practice’, our findings suggest that there is an inherent value in – and an enthusiasm for – the kinds of subversive ideas that come from online communities of DIY makers. Now that affordable video cameras (e.g. *GoPros*) are capable of capturing legible, high-definition video with little ado, we should nurture the creativity of individual users by celebrating creative effects resulting from novel cinematography, novel lighting, novel editing, etc. In doing so, we might champion metrics of quality that are alternative to ‘professional-looking’. A complementary approach is to question the value placed on *high technical quality*. Professionals (e.g. Zach King) are already beginning to emulate non-professional content and capitalize on lo-fi qualities such as ‘realness’ and ‘authenticity’. *High technical quality* media is not the same as *high quality* media. Media making is a creative, expressive act, even when it is done as a means-to-an-end. We therefore call for a re-assessment of ‘best practice’ in the context of non-professionals, and even advocate a defense of the poetry of (some) ‘bad practice’, such that means-to-an-end media making is grounded in peoples’ realities, rather than abstract pedagogy.

Extending our Method

In our study, teaming up reflexive practitioners with means-to-an-end makers was successful in drawing out insights from complementary perspectives. We suggest this approach could be equally revealing in other areas of HCI. For example, future work might team up (professional) interaction designers with (several) means-to-an-end makers and, using a similar ‘DIY’ approach, explore areas such as health, polity or other areas of creative making.

CONCLUSION

Cinehack supports high quality, low-cost media production, particularly by those with a clear vision, and especially when aligned with a particular genre. Nonetheless, three forms of additional support were required to complete our study. One was material support, which we provided in the form of *cinehacks*. The second was post-production support; editing was too complex, and although the artists had a clear idea of what they wanted, they were unable to realize it because they couldn’t describe it. The other was moral support; affirmation that their creative vision was worth realizing.

Olopade argues that, “*it’s easy to focus on the formal things that are going on and not the things that matter to people’s lives*” [26]. In this case, the important thing was to make something *authentic* and *real*. By embracing the informal initiatives of our participants, we were able to tailor our support to their vision, frame it in a shared language, and ultimately enable them to make high quality media.

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