

Turning to auto parts to save newborns

Global health entrepreneurs have built a US\$1,000 incubator out of discarded car parts for developing countries

BY MADELINE DREXLER
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The heat source is a pair of headlights. A car door alarm signals emergencies. An auto air filter and fan provide climate control.

But this contraption has nothing to do with transportation. It is a sturdy, low-cost incubator, designed to keep vulnerable newborns warm during the first fragile days of life.

Unlike the notoriously high-maintenance incubators found in neonatal intensive care units in the US, it is easily repaired, because all of its operational parts come from cars.

And while incubators can cost US\$40,000 or more, this one can be built for less than US\$1,000.

The creators of the car parts incubator — a project being promoted by the Global Health Initiative at the Center for Integration of Medicine and Innovative Technology, or CIMIT, a nonprofit consortium of Boston teaching hospitals and engineering schools — say it could prevent millions of newborn deaths in the developing world.

The main causes of newborn death — infections, preterm birth and asphyxiation — are readily treatable with the right expertise and equipment, said Kristian Olson, principal investigator on the project. He called them the “low-hanging fruit” of global health interventions.

“It’s so frustrating to see these preventable deaths,” he said. “They won’t name babies in Aceh, Indonesia, until they’re two months old. It’s a cultural adaptation to expect a death.”

Mechanically, incubators are simple devices, providing a warm, clean, womblike environment in which a baby can mature (though state-of-the-art models may have accessories like built-in X-ray machines and rotating mattresses). Low birth weight and other problems make it especially difficult for newborns to regulate their body temperature, a condition that can lead to organ failure.

REPLACEMENT PARTS ... VIRTUALLY LIMITLESS

In the car parts incubator, infants born at 32 weeks’ gestation or longer can receive supplemental oxygen while their lungs gain strength, antibiotics if they have infections, and low-lit quiet in which to sleep if their mothers are away or are otherwise unable to hold them. In an emergency, the incubator’s bassinet can be removed and carried to another part of the building or even to another hospital.

In truth, experts say, the developing world doesn’t need more incubators. It needs incubators that work. Over the years, thousands have been donated from rich nations, only to end up in “incubator graveyards” — most broken, some never opened. According to a study from Duke University last year, 96 percent of foreign-donated medical equipment fails within five years of donation — mostly because of electrical problems, like voltage surges or brownouts or broken knobs, or because of training problems, like neglecting to send user manuals along with the devices.

To compensate for this philanthropic shortsightedness, medical staffs either crank up the temperature in “incubator rooms” to 37.8°C or more, or swaddle babies in plastic to hold in body heat.

Such makeshift solutions led the Boston team to ask: How can we make an incubator for the developing world that will get fixed?

One person pondering that question in 2006 was Jonathan Rosen, then director of CIMIT’s technology implementation program. A proponent of sustainable biomedical technology, Rosen, now at the Boston University School of Management, uses the term “organic resourcing” to describe the principle of fashioning medical devices from whatever materials were locally abundant.



An image of the “car parts incubator.” Health professionals hope the inexpensive innovation will help prevent newborn deaths in the developing world. PHOTO: NY TIMES NEWS SERVICE

In his discussions with doctors who practice in impoverished settings, Rosen learned that no matter how remote the locale, there always seemed to be a Toyota 4Runner in working order.

It was his “Aha!” moment, he recalled later: Why not make the incubator out of new or used car parts, and teach local auto mechanics to be medical technologists?

CIMIT then hired Design That Matters, a nonprofit firm in Cambridge, Massachusetts, to design the machine. “The idea was to start with a 4Runner,” said Timothy Prestero, the firm’s founder and chief executive, “and take away all the parts that weren’t an incubator.”

What resulted was a serious-looking gray-blue device that conjures up a cyborg baby buggy, but fits comfortably in hospitals and clinics with few resources. For one thing, the supply of replacement parts is virtually limitless, because the modular prototype can be adapted to any make or model of car.

“Junkyards are great sources for parts,” said Robert Malkin, director of Engineering World Health, a program based at Duke University, who is not affiliated with the incubator project. “We have designs for pumps and a surgical aspirator that are based on car parts.”

And the repair people will be right on the scene. “The future medical technologists in the developing world,” Malkin said, “are the current car mechanics, HVAC repairmen, bicycle shop repairmen. There is no other good source of technology-savvy individuals to take up the future of medical device repair and maintenance.”

Not everyone agrees that the car parts incubator is the best solution for infant deaths. Skeptics cite a 2005 series of articles in the British journal *The Lancet* listing proven interventions — including outreach visits during pregnancy, skilled care at delivery and emergency treatment afterward — that could eliminate up to 72 percent of neonatal deaths worldwide.

THE POTENTIAL TO SAVE LIVES

The car parts incubator has received US\$150,000 in initial financing from CIMIT. The project team is looking for foundation support to develop a working prototype.

Meanwhile, the team is refining its business model and solidifying business partnerships abroad. “The technology is the least difficult part of the problem,” Prestero said. “Manufacturing, financing, distribution, regulatory approval: those are major barriers. There aren’t many examples of a successfully scaled product to serve the poor.”

Olson says his determination to create a cheap, reliable incubator — and medical training to go with it — was reinforced on a trip this year to Cut Nyak Dhien Hospital, a one-story concrete building in the tsunami-stricken city of Meulaboh, Indonesia.

“When I walked in the incubator room,” he said, “a whole family was sobbing around a crib.” Their seven-day-old baby boy, who was born slightly underweight and suffering from infection, had just died, after lying for hours on a cold cot. With warmth and proper care, he would have survived.

Crowding the room were six donated high-tech incubators from the West. None of them worked.

Internet TV shows challenge the tube

With cameos by the likes of Jeff Goldblum and the directing bite of David Lynch, Hollywood know-how is helping the best Web series win audiences to rival mainstream television

BY AJESH PATALAY
THE GUARDIAN, LONDON

It started with a girl named Bree. At least that’s what she said her name was. She was 16, American and girlishly pretty. In June 2006, under the name *LonelyGirl15*, she posted her first video online. It lasted a minute and a half, was shot in her bedroom and showed her talking direct to camera. She namedropped a couple of other video bloggers (vloggers) and pulled a few funny faces. “What you need to know about my town,” she said, “is that it’s really boring. That’s probably why I spend so much time on my computer, I’m a dork.” That was it. Typical of the confessional teenage vlogs circulating the Web at the time.

A few days later, the next video appeared, showing Bree goofing around with a puppet monkey. In the third, she talked about being home-schooled and imparted some trivia about Antarctica. Pretty mundane stuff. It wasn’t until the sixth vlog, titled *My Parents Suck...*, that the tone shifted: in it she complained that her parents had forbidden her from going out with her friend Daniel on account of her “religion.” It wasn’t clear what religion this was. Within hours the video had notched up 50,000 hits. (The previous postings had counted 50,000 to 100,000 hits in the course of a week.) Two days later the tally was up to half a million. Suddenly *LonelyGirl15* was a phenomenon. With each new video, as parental tensions heightened and suggestions of the occult crept in, the buzz grew ever greater.

Then, in September 2006, the *Los Angeles Times* exposed it all as a hoax. Teenage Bree was in fact 20-year-old New Zealand actress Jessica Rose. *LonelyGirl15* was the fictional brainchild of three California-based filmmakers. None of it was real. Curiously, this didn’t deter the fans. To them Bree’s story was still compelling. The vlogs ran until August 2008, by which time the series had notched up more than 110 million views. It was pioneering. *LonelyGirl15* had established a new type of entertainment: a hit online series with content devised

specifically for the Web.

Now, two-and-a-half years since *LonelyGirl15* first appeared, Web series are the hottest new format in Hollywood. No longer amateurish or user-generated in feel, the latest crop of webisodes are slick productions. Many boast celebrity involvement. In recent months, for example, Web series have been launched by Ashton Kutcher (*Blahgirls*, an animated gossip site for girls), Stephen

Colbert (*Children’s Hospital*, a *Grey’s Anatomy* spoof starring *Will & Grace’s* Megan Mullally), and *Family Guy’s* Seth MacFarlane (*Cavalcade of Cartoon Comedy*, a cartoon sketch show). Also in the pipeline are projects from Josh Schwartz (creator of *Gossip Girl* and *The OC*), the Coen brothers and film directors Bryan Singer and David Lynch. In the US, all the leading studios have digital arms (including HBOlab, Warner Bros’ Studio

2.0 and Sony’s Crackle) that produce spin-off Web series from mainstream shows (such as *The Wire* and *Gossip Girl*) as well as original content.

When it comes to Web series, Hollywood can’t afford not to be ahead — particularly given how quickly viewing habits are changing as a growing number of consumers view content online (through streaming and downloaded videos). Already the

most successful Web series can attract audiences of more than a million. Plus, it’s never been easier for a show to reach its audience — posted on video sharing sites such as YouTube and social-networking sites such as MySpace and Bebo (a particular boon for independent producers who don’t have access to traditional means of distribution).

For actors, directors and writers, Web series also mean artistic and creative

freedom. (Indeed, actress Ileana Douglas calls Web series the “new independent film.”) The Web channel StrikeTV, for instance, born out of last year’s Hollywood writers’ strike, showcases a host of new Web projects developed outside the studio system. Even actors and writers working within the studio’s digital outlets talk of the relative freedoms compared with TV.

Webisodes are a new format. There are no established rules for studio execs to follow. Webisodes have no common traits other than brevity (usually they last no longer than a couple of minutes). The initial thinking about what a webisode should look like — the creators of *LonelyGirl15* believed the camerawork should be simple, with a character always filming the action, and each episode no longer than three minutes — hasn’t been borne out.

Scoring a Web series hit, however, is still no cinch. Even shows whose view count passes 100,000 in the first week (a fair index of success) can find it hard to sustain. Studios can at least afford to hedge their bets with lots of shows. The best financial hope for independent producers is still corporate sponsorship or being optioned for television. Which isn’t to say Web series cannot be financially viable and be more than a “laboratory for network” (as one exec put it). The recent Web series from *Buffy the Vampire Slayer* creator Joss Whedon, *Dr Horrible’s Sing-Along Blog*, a musical superhero spoof penned during the writers’ strike and bankrolled by Whedon, premiered online free in July before going on sale on iTunes and grossing more than US\$2 million in the first few weeks.

No doubt as viewing habits evolve, this won’t prove such a singular exception for Web series. It won’t be long, for instance, before all TV sets can readily access the Internet and viewers can watch webisodes as they would regular television. How long then before Web series rival TV in ratings and quality? And how long before we get our first *Sopranos*, *Lost* or *Friends* of the Web?

Top 10 online comedies

1 50 To Death (50todeath.com)

Pitched squarely at members of the baby-boomer generation, this wistful Web series about three fifty-something friends (Norm Golden, Joan Barber and Jon Freda) who become embroiled in various schticks is a comic hybrid of *Curb Your Enthusiasm* and Woody Allen. Cranky and wry in equal measure.

2 9 Blahgirls (blahgirls.com)

This cartoon pop-culture site from Ashton Kutcher’s company Katalyst Media is hosted by three “drama queen” Valley girls called Britney, Tiffany and Krystle. It bills itself as *Beavis and Butt-Head* for girls, with gossip, fashion reports and music as well as interactive facilities for social networking.

3 Easy To Assemble (easytoassemble.tv)

Actress Ileana Douglas (*To Die For*, *Stir of Echoes*) was approached to produce this 10-episode series by Ikea execs after they saw her previous cult Web series *Ileanaarama: Supermarket of the Stars* (about a Los Angeles grocery store staffed by former acting stars). This is like an episode of *Extras* set in Ikea, with cameos by Jeff Goldblum, Ed Begley Jr and others.

4 10 Sanctuary (on YouTube)

After its online premiere last year this Web series was picked up by the Sci-Fi channel for transfer to TV. With

the highest budget of any Web-based series (US\$3.6 million for eight episodes) the show follows Dr Helen Magnus in her quest to round up an assortment of dangerous creatures. A gothic *X-Files*.

5 The Guild (watchtheguild.com)

Now in its second series (having landed sponsorship from Microsoft and US telecom company Sprint), this comic Web series about a band of dorky online gamers had such a local following that the last seven episodes of the first series were paid for entirely by viewer donations.

6 House Poor (on strike.tv)

One of the best offerings on strike.tv (with *Unknown Sender* and *Faux Baby*), this credit-crunch mockumentary sees *The Office* US star Mindy Kaling unable to afford furniture after overextending herself buying a new house. Her answer? Stage a fake pregnancy and throw a baby-shower for gifts.

7 Seth MacFarlane’s Cavalcade of Cartoon Comedy (sethcomedy.com)

Created in partnership with Burger King, the first video in this cartoon sketch series devised by *Family Guy* creator Seth MacFarlane scored 3 million hits in two days. It’s a series of animated comic asides: in one two *Seinfeld*-like ducks watch *Meet the Parents*, in another, Barry Gibb falsetto screams his way over a roller coaster.

Offbeat and very funny.

8 Smart Girls At The Party (smartgirlsattheparty.tv)

Launched and co-presented by Amy Poehler, an alumna of *Saturday Night Live*, this chat show aims to inspire pre-teen girls by celebrating “extraordinary individuals who are changing the world by being themselves.” It’s more lighthearted than it sounds, with guests including a young writer, gardener and all-girl rock group. Incongruously it’s sponsored by Barbie.

9 Kirill (kirill.uk.msn.com and KirillDrama channel on YouTube)

The UK’s first big online drama, a co-venture between MSN UK and *Big Brother* production company Endemol, has more than a million streams to date. A sci-fi series set 50 years into a post-apocalyptic future about a lone video blogger, played by *Gladiator* actor David Schofield, it’s puzzling but nicely sinister and atmospheric.

10 Sorority Forever (on bebo.com)

“The beautiful people have an ugly secret” runs the strapline for this entertaining Web series about a Phi Chi Kappa sorority house with spooky undertones. Developed by Warner Bros digital studio, exec-produced by McG (*Charlie’s Angels*) and starring *LonelyGirl15*’s Jessica Rose, the series has picked up 5 million views.

SOURCE: THE GUARDIAN