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## Getting it On Gets Faster ...and that's a good thing

by Amanda Williams

Roelf Mulder's condom applicator looks deceptively simple, and that's how it's meant to be. Its simplicity belies both the intricacies of the engineering process and the complexities of a social landscape that this design hopes to alter. In both cases, the devil is in the details.

The intent behind making and marketing a condom applicator is to reduce barriers to condom use by making it quicker and easier, while at the same time eliminating common mistakes in application. Condoms have a failure rate of 2 to 3 percent when used perfectly, but in typical use, that failure rate rockets to 15 percent. A condom applicator can't force people to put condoms on earlier, or pull out as soon as they should, but it can begin to close that perfect-typical gap by addressing other mistakes. Most condoms that break are put on incorrectly. With an applicator, one can apply a condom

quickly and correctly with no experience, no education, and no memory of the rules. For men it's meant to smooth the transition from foreplay to intercourse. For women, especially those who don't have a lot of first-hand experience with applying condoms, it promises more control over condom use. It's a two-pronged attack: make condom use more reliable and get people to use them more often. The hope is that an easy applicator—and the public visibility of a high-profile product design—will do just that.

In the midst of an AIDS epidemic, even a modest increase in condom use and effectiveness translates into lives saved. Mulder lives and works in South Africa, where the HIV prevalence rate for adults is estimated to be at around 18 percent. It was not simply for its good looks, then, that the design was declared the “Most Beautiful Object” last year by Design Indaba, South Africa's premier design conference.

The applicator works like this: the rolled up portion of the condom is contained inside a sort of plastic trough with handles. The handles are textured in a way that makes it clear which way is up. As you pull, the condom unrolls through a 0.3 mm gap in the applicator's trough. The disposable handles (which are also recyclable) snap off easily once the condom is unrolled.

Commercialized under the name “4:secs condoms,” it is sold in packs of four for about 20 South African rand—a little over two dollars. A prior version, also designed by Mulder, used hooks and relied on tension in the rubber to pull down and unroll. It is also commercially available, sold as “Pronto condoms.”

The applicator is visually appealing: sleek, simple, and cheerful. But in the dark, the feel of the applicator is more important than the looks. The design requirements of making condom application faster, easier, and more reliably correct are fundamentally tactile. Mulder points out that “it can be pretty difficult to feel

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the condom in the dark and know that it's going in the right direction." Accidentally beginning to apply a condom backwards, and then flipping it inside out, compromises its effectiveness. An applicator can add tactile indicators that the condom is going on the right way, free fingers from pinching off the reservoir tip, and keep fingers from slipping on lubricant.

Tactile affordances are not the whole story. The interaction here involves several different materials—plastic applicator, thin rubber condom, and a sensitive bit of skin and erectile tissue—all sliding against one another. Such sensitivity allows for an experience that might range from erotic to excruciating. For an example of the latter, consider that the original proposal for the applicator proved unworkable because it required excessive pressure between condom and penis to unroll the condom. One rough edge or the slightest difference in texture can significantly affect the tactile experience, or compromise the effectiveness of the condom. In a prototype, a small textural difference might make it a poor test of the design, more prone to ripping the condom, or make the unrolling of the condom more difficult.

The iterative prototyping process was suffused with concern over the texture of the material. Sketches can't demonstrate how materials will slide against one another, and neither can many rapid prototyping materials. "You can make a rapid prototype in a resin or even extrude it in a plastic," says Mulder, "The problem here was... we couldn't make something through the rapid prototyping process because

it had to be smooth." Resins normally used in rapid prototyping processes weren't smooth enough, so prototypes were molded in polyethylene and then flame polished, which required Mulder and his fellow designers to make some of their own equipment, including three injection molding tools.

Throughout the prototyping process the applicator was tested—could it be applied from many angles without slipping? Did it roll out smoothly? How much pressure does it take to unroll? The designers used an analog scale (and later a digital one with logging capabilities) to measure the force used to apply a condom to a model. Once it was determined to be human-usable and non-injurious, they found volunteers to test the product.

Mulder's continual refinements to the design seem geared towards respecting all the materials involved. Some of the original requirements—like that the applicator be no larger than a typical condom package—were later softened in order to create an applicator that was kinder and gentler both to condoms and to penises. The new design has more robust packaging that doesn't stretch the rubber inside the package. It also requires less pressure on the penis during application.

To Mulder the essence of design is in the details of its execution, details that can mean the difference between commercial success and failure. And the promise of design is that changing a detail of everyday life just might make an equally significant difference. Mulder's condom applicator is touted in the media as a device that can help quell South Africa's AIDS crisis by encouraging the use of condoms. Whether or not such a small device can have a significant effect won't be measurable right away, but the process by which it was created reminds us that small differences can snowball into big differences, and the high hopes that the designer, judges, and media have for this device rest on that belief. 🖐️

