

## A cracking idea



**When I stumbled across a crack in the floor of one of London's art museums I was shocked to find that no one is to blame.**

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Cracks are the vultures of the materials world. Discover one, and you know something bad is about to happen. Spot a crack on your favorite teacup, and you know its days are numbered. Locate even a tiny imperfection on the windshield of your car and you'll need to get your credit card handy. Such is the nonlinear impact of these defects. So when I stumbled across a 167 m crack stretching from one end of London's Tate Modern to the other, I felt physically ill. "Someone will be blamed for this," I thought, "and it will probably be an engineer".

How wrong I was. It wasn't someone's fault, it was someone's triumph! A Columbian artist, in fact, called Doris Salcedo. And although it is disturbing and unnerving – creating the impression that an earthquake has hit the art gallery – everyone loves it. It has the majesty, power, and ruthlessness of a lightning strike. The work, entitled *Shibboleth*, is part of a series of Unilever commissions that have also included a giant synthetic sun by Olafur Eliasson and a huge set of urban slides by Carsten Höller, all housed in the Tate Modern, a decommissioned power station located on the banks of the Thames.

Although cracks are meaningful to everyone, in that they are a constant presence in our lives, they are a special obsession for scientists, engineers, and artists. Materials scientists, for instance, spend a huge intellectual effort trying to find ways to prevent crack formation. This quest is most succinctly expounded by J. E. Gordon in his incomparable book, *The New Science of Strong Materials*: "The worst sin in an engineering material is not lack of strength or lack of stiffness, desirable as these properties are, but lack of toughness, that is to say, lack of resistance to the propagation of cracks."



*Doris Salcedo, Shibboleth 2007, The Unilever Series, Tate Modern, London. (© Tate Modern.)*

Artists, on the other hand, tend to be quite fond of cracks. Gordon Matta-Clark, for instance, once embarked on a series of works in which he cut buildings in half, dissecting and converting them into disorientating sculptures in the urban cityscape of the Bronx and elsewhere. Lucio Fontana was another artist interested in cracks and exhibited them in perhaps their purest form in his slit paintings. While these works may be thought of as approaching cracks conceptually, the control of cracks at the microscale has historically brought art and science together through their physicality.

In particular, the mastery and control of the fine crazing in glaze opens up an enormous range of visual effects in ceramics. Such crackle glazes require complete mastery of composition and thermodynamics. Equally technical but perhaps not as ethical, the manufacture of a cracked surface is one of the keys to counterfeit the provenance and

origin of antiques such as furniture. Imitating this property, called *craquelure*, is also the key to faking an old master or a French impressionist painting, and it is big business.

Salcedo's crack at the Tate Modern is another example of a faked *craquelure*, albeit on a massive scale. Although her direction and reputation were the drivers for the project, it is clear that engineers were involved both practically and creatively in producing this exhibit. The result is not entirely convincing, notably the lack of fractal quality at small scales, so characteristic of this type of crack. Also, the steel wire reinforcement is awkwardly smoothed down inside the crack and so there is no crack bridging evident as would be expected. Nevertheless, the work is a huge success with the public of all ages. But on this point, since the engineers were so crucial creatively, why are they not coauthors of this work? Why in fact does Salcedo claim in interviews that, "What is important is the meaning of the piece. The making of it is not important". Does she not realize how insulting that is to the engineers? You only have to wander around the crack for a few minutes to realize that almost everyone is talking about how it was made. There is muttering and scratching of heads by anyone who has ever laid a patio.

No art at this scale is done by one person and for an artist to claim sole authorship is just wrong. But this is not an isolated case, engineers and scientists are just as vital but invisible in much of culture. There are many reasons for this but one of them is undoubtedly about image. Even Apple, which is basically a science and engineering company, defines itself the purveyor of great 'design', such is its aversion to the geek image. But if the iPhone doesn't turn out to be all it's cracked up to be, my guess is that they will blame the engineers.