

TEAR GAS DESIGN AND DISSENT

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A saleswoman sits at a meeting table, a bright wool sweater draped over her shoulders, hair dyed an unnatural orange. She stands out among the sea of business-suited men. The only other women in the room are dressed in white, handing out purple lanyards and exhibition floor plans to police representatives, military buyers and international dignitaries. All around the room these men chat over champagne, popping breath mints branded with security company logos. The middle-aged woman is alone, surrounded by glass display cabinets. Each holds row after row of cartridges and casings. Orange caps, blue caps, yellow caps – each signifies a different size and strength of smoke or bang or bullet. Above the woman, advertising banners make claims in bold colors: *Innovation. Preferred Supplier. Safe is Smart.*

This is Milipol, Europe's largest internal security expo. Operating since 1984, Milipol is one of the longest-running and most established trade shows in the industry. The 2015 Expo, hosted just days after the Paris bombings took 130 lives, featured 949 exhibitors, drew 24,056 visitors, and hosted 115 official delegations from 77 countries.¹ Each of the exhibition stalls is a compact display unit. Branded backgrounds depict police and military in action. There are live demos of micro-drones and unloaded guns to play with. The display cases are stocked full of riot control of all shapes and shades. Mannequins wear the latest fashion in protective gear. A Chinese exhibitor features a riot cop clad in spiked body armor. Even the boudoir corset on display is made of heavy-duty bulletproof rubber. This is today's riot-control industrial complex, a design show for world leaders in state repression.

Exhibitions like Milipol take place all around the world, from Israel to India, Qatar to Canada. They form part of a growing internal security sector, predicted to expand by 20 per cent by 2020. Investment researchers at Markets and Markets explained in 2013, "*The prevailing uncertain economic circumstances, the complex political situation, and the deteriorating security condition across the globe have given rise to popular unrest and protests.*"² Unlike other parts of the economy that are hit hard by social

1 This essay draws from participant observation research conducted at Milipol in 2013 and 2015. Milipol, "Milipol Paris 2015: High Attendance of Homeland Security Professionals at the 2015 Edition," press release, November 26, 2015.

2 "Global on-lethal Weapons Market report 2018," *iBusiness Wire*, November 26, 2013

unrest, the riot-control industrial complex profits off political upheaval. The Arab Spring uprisings in 2011, followed by mass demonstrations across Europe, the United States, Canada, Chile, and later Turkey, Ukraine, Brazil, and Hong Kong, have generated purchase orders for millions of tear-gas canisters and related riot-control products.

Meanwhile, supplies to East Africa, Thailand, Indonesia, and the Indian subcontinent also grow as struggles for democracy, the effects of climate change, and economic austerity fuel conflict in these regions. In the west, Britain's withdrawal from the European Union, Trump's election as US president, the refugee crisis in Europe, and the rise of the far right provide excellent marketing opportunities. Experts in the riot-control industry carefully track outbreaks of resistance to inform both sellers and buyers of where there are profits to pursue. Their sales force travels the world. Tear gas, internationally accepted as the most humane technology for social control, is a top seller. Carrying a stamp of approval from Western democracies, it travels into other nations with colonial-era promises of "civilizing" their police forces.

Cruel Design

Behind these humanitarian promises of safety is a toxic gas, a chemical weapon designed to attack the senses simultaneously, producing both physical and psychological trauma. In medical terms, tear gas operates on multiple sites of the body at once, primarily affecting the mucous membranes and respiratory system. It can cause excessive tearing, burning, blurred vision, redness, runny nose, burning of the nostrils and mouth, difficulty swallowing, drooling, chest tightness, coughing, a choking sensation, wheezing, shortness of breath, skin burns, rashes, nausea, and vomiting. Tear gas has also been linked to miscarriages and long-term tissue and respiratory damage (Centers for Disease Control and Prevention 2003; Hill et al. 2000; Atkinson/Sollom 2012). This is what researcher and curator Gavin Grindon recently termed 'cruel design,' referring to those objects whose research and development is driven by an objective to cause human harm and suffering.

While in photographs tear gas looks like a cloud of smoke, it actually operates as moisture that sticks to and covers everything it touches – the skin, the soil, the surrounding architecture. The toxicity level of each type of tear gas is determined from the ratio of toxins released per square meter. This means that only a certain number of canisters are meant to be set off in any given space – the smaller the space and the more gas is released, the more toxic it becomes. Protocols for firing tear gas attempt to standardize the distance from which grenades are fired at crowds, accounting for the direction and strength of the wind as well as the locations of barriers and structures that might trap the chemical substance in the air. Firing tear gas into an enclosed space significantly elevates the risk of serious injury and death from inhalation, while invoking trauma and anxiety in choking people in poorly ventilated spaces where there are no clear exits.

Tear gas causes harm in two other important ways. First, tear gas is stored and fired through canisters or grenades that are often made out of aluminum, plastic, or other combustible materials. A major cause of injuries from tear gas is the canisters themselves striking people, particularly on the head. Since the earliest “peacetime” uses of tear gas, there has been a steady stream of reports of lost eyes, cranial damage, and deaths due to direct hits from tear-gas canisters. Many of the grenade launchers and rifles used to fire tear gas were originally designed and promoted for use as short-range firearms. Early models were called “tear-gas guns,” and today’s euphemistically named “multi-launchers” were the “tear-gas machine gun” of the early twentieth century. The most famous of these was made by Manville Manufacturers, the company responsible for bringing the “street-sweeping” Manville machine gun to the market in the Prohibition-era United States.

Another way that tear-gas canisters or grenades cause harm is through their pyrotechnic devices or flammable components. For the tear-gas chemical compound to heat and disperse, other substances must be present. The use of these incendiary forms of tear gas has caused damaging and sometimes lethal fires in homes, vehicles, and agricultural fields. Recent reports on SWAT team raids in the United States document these fire hazards. For instance, in April 2011, a Virginia SWAT team sent a Defense Tech triple chaser grenade (which separates into three parts) inside a trailer using a bomb-squad robot. The house immediately went up in flames, leaving its residents homeless. In other cases, a substance like alcohol mixed in with the tear-gas compound might be flammable, or the propellant in a spray, such as butane. Tear gas can also mix with household items to cause fires, as reported by fire inspectors in Vallejo, California, in 2012 after a SWAT raid caused sixty thousand dollars’ worth of damage to a home and killed two dogs (Owens 2012; Burchyns 2012). Public pressure has forced many companies to stop manufacturing tear gases that contain flammable components; however, there is no comprehensive national or international set of regulations to monitor or enforce this.

Of course, as with all weapons, there are different scales of violence used in deployments of tear gas. If I toss a CS grenade on the ground in front of a crowd where there are clear exit points (as protocol suggests), it is less likely that someone will die than if I lob that same grenade into a car or a prison cell or a subway station. Likewise, if I shoot you in the foot you are less likely to die than if I shoot you in the head. However, this does not mean that the bullet shot into the foot is a “humanitarian agent” and the head bullet is a violent weapon. Unlike other objects that are not normally weapons but can be weaponized (for example, baseball bats or frying pans), tear gas has no alternative, “normal,” or everyday use. And – contrary to what Fox News anchor Megyn Kelly told Bill O’Reilly in 2011 – pepper spray is not “a food product, essentially.” It is, in fact, 1.3 million heat units hotter than the hottest pepper you could eat. As this essay will discuss in detail, tear gas was designed as a poison that causes physical and psychological pain. For the past hundred years it has been modernized to be both more effective and more efficient.

Less Lethal Deaths

On February 14, 2011, two weeks into the Arab Spring uprisings, people in the tiny Gulf state of Bahrain called for their own day of action. Peaceful pro-democracy demonstrators flocked to the streets. Young people, Sunni and Shia, gathered at the capital city of Manama's Pearl Roundabout, many carrying Bahraini flags. They called for a new constitution that would end the royal family's rule. As they marched, the government retaliated with a violent crackdown. Rubber bullets flew and tear gas saturated the streets. The police killed two protesters that day. The BBC reported that the Saudi and US governments might soon intervene.

As the protests continued, the police shot tear gas into cars, homes, and mosques. Hundreds went to the hospital with head trauma, lost eyes, miscarriages, and respiratory failure. Bahraini civilians and independent journalists used social media to distribute and circulate images of canisters bearing the logos of the US companies Federal Laboratories and Combined Systems Inc., along with Brazilian exports from Condor Non-Lethal Technologies. The *New York Times* wrote of "systematic and disproportionate use of tear gas" in Bahrain, drawing international attention (Gladstone 2012). Amnesty International condemned its use and Physicians for Human Rights released a report after the first eighteen months of protests that documented thirty-four tear gas related deaths (Physicians for Human Rights 2012). Among the victims were babies, children, and the elderly (Amnesty International 2012).

Since 2011, tear gas remains the international weapon of choice for riot control. Sales projections are still up, with business booming in the Middle East and markets growing in Africa and South Asia. Hundreds more around the world have died from its effects. People have lost eyes and limbs. They have suffered brain damage, third-degree burns, respiratory problems, and miscarriages. Their animals and their crops have been poisoned.

Disobedient Design

As tear gas goes off around the world, it is met with evermore-innovative practices of resistance and resilience. Facing tear gas, people create, adapt, and share techniques for combatting and surviving tear gas. Caring for each other, they transform this weapon into a collectivizing tool. Aided by social media and mobile technologies, protesters transnationally circulate relief remedies, gas mask designs, and grenade throwback techniques. Displaying what social movement researcher Gavin Grindon has called "grassroots cultural diplomacy," these tips are tweeted from Greece to New York, from Palestine to Ferguson, from Egypt to Hong Kong.

In places like Bahrain and Palestine, widespread and even daily use of tear gas has made this chemical weapon a part of life. As a way of exhibiting and collectively processing this trauma, people sometimes transform tear-gas canisters into other

objects. Acts of anger, grief, and memorializing emerge as artistic practices. For example, in Bahrain, people designed a throne made out of tear-gas canisters to signify their royal family's role in the suppression of democracy protests. In Palestine, tear-gas canisters have been used as Christmas tree ornaments to send a holiday message to the United States about the role of its tear gas and arms manufacturers in the violence of the Occupied Territories. In 2013, images of a Palestinian garden made out of plants potted in empty tear-gas shells went viral, picked up by mainstream media outlets as an image of hope and quiet resistance. Yet, as Elias Nawawieh pointed out in *+972* magazine, absent from the news stories, Twitter photos, and Facebook posts was the grave built as the garden's centerpiece. It bears a translucent photo of Bassem Abu Rahmah, who was killed by the IDF in 2009 after being shot in the chest at close range by a tear gas grenade.

In 2013, Occupy Gezi in Turkey became a site of innovation, a place where people designed, adopted and adapted novel modes of resistance and resilience to tear gas. There was Ceyda Sungur, the woman in the red dress, pepper-sprayed at close range and turned into a movement icon. There were dancing ballerinas in whirling, brightly colored skirts that contrasted against the harshness of the full-cover gas masks they wore as they spun around. Penguins wore gas masks to symbolize the media's failure to cover police violence. Christian Gubar writes that *"As both political commodities and stage props, goggles and gas masks were embraced for their eerie theatricality, speaking volumes to the grotesque banality of living under billows of noxious gas."* (Gruber 2013, 31)

But these objects were as much about material reality as symbolism. Protesters in Gezi borrowed, translated, and reproduced instructions for making a gas mask out of a plastic bottle, and for using Maalox and other household ingredients as remedies for the painful effects of tear gas. Talcid Man appeared after a rumor spread that Talcid (a liquid medicine to relieve stomach inflammation) could help ease the effects of pepper spray. He emerged on site distributing the medicine as an embodied, mobile care unit, and became a symbol of the movement's resilience and generosity, depicted in stencils and sketches that circulated far beyond the occupied park.

In the gas-flooded streets, a variety of shops, sidewalk stands, ground-level flats and even a hotel became makeshift medical field stations, providing remedies and treatments to protesters. At these sites, health workers and those with basic first-aid skills converged. These medical volunteers often have a clearer and more accurate understanding of the real-world impact of "less lethals" than scientists running tests in sterile laboratories. It is here, under the tarpaulins of protest architecture and in the pop-up clinics, amid the chaos these weapons intentionally provoke, that the bruises and bleeding, the choking and vomiting, the inability to breathe, the concussions, and the paralysis are immediately felt.

At the site of protest, pain is not a toxicity count or a threshold percentage. "Less lethal" is no longer a technical term but a vision of how much torment a body can take, of how close someone can come to death without dying. Measured in human experience, the medical field stations of protests can make visible the reality of riot control. Their ways of seeing and knowing medical injury can move us beyond

the flames and smoke of media screens. They can provide far more accurate and detailed on-the-ground accounts than hospital records can. Their testimony can be mobilized to challenge the clinical tests produced by military-paid scientists.

From canister sculptures to the ad hoc architectures of these street medic field sites, all around the world people come together to enact such strategic and creative acts of resistance against the tear gas. But while resilience can keep movements moving, corporate and government accountability for the use of tear gas is hard to come by. Shielded from public view, sealed in secret files, and buried behind the paywalls of export databases, tear-gas sales continue to grow, largely unregulated. With deals made in five-star hotels and exhibition meeting rooms, exposing or inhibiting the sale of tear gas is a daunting task. But even the best PR tactics and corporate cover-ups cannot always outsmart the passion and knowledge of everyday people. Whether at the local, grassroots level or as part of Amnesty International, people are conducting investigative research, leaking documents, sneaking inside arms fairs, and holding sit-ins, die-ins, and kiss-ins to protest against riot control.

The Riot ID Project

In an effort to offer further tactics for increasing corporate and government accountability for tear gas use, in 2015 the RiotID project took shape, inspired by the protests that swept the world in 2011. During the Arab Spring uprisings in Egypt, protestors started a blog identifying the tear gas canisters that turned up on their streets. The *Tear Gas ID* site recorded details such as source information, links to company websites, and close-up images of canisters. The bloggers used Twitter (@tg_id) and the hashtag #teargasID to aggregate information and create chains of accountability. Similarly, when police and National Guard took over the streets of Ferguson, Missouri, journalists and activists on the ground worked to catalogue and identify riot-control weapons and linked this information to that collected in Egypt and Palestine.

Drawing from these projects and our work with journalists in Ferguson, in the summer of 2015, the civic media research team of which I am a part at Bournemouth University partnered with the NGOs Bahrain Watch and Omega Research Foundation, as well as graphic designers at Minute Works, to launch the RiotID project. RiotID (riotid.com) is a civic media project designed to help people identify, monitor, and record the use of riot-control agents against civilians. Making accurate identifications of less lethal weapons can help people medically respond to the effects of exposure and injury, monitor human rights violations, challenge abuses, and identify the manufacturers and countries of origin of the devices.

The main resource that #RiotID uses is a pocket guide for documenting and identifying less lethal weapons that has been translated into seven languages. The ID process has two steps. First, people on location document the riot-control technologies. The #RiotID book provides techniques for recording and documenting all the information needed to do an identification. This includes photographing the

device from all angles and recording all numeric and text information on the sides, top, and bottom of the device. Step two is using the documented features of the weapon to figure out what it is, as well as the supplier and country of origin. We designed a diagram that uses shapes, sizes, and details to help identify different kinds of less lethal impact and chemical munitions. Once a device is narrowed down to its size (i.e., 12-gauge, 37mm, 56mm) and type (flashbang, OC, baton round), it is easier to identify the manufacturer, as different companies make and specialize in different products. For help with identifications, people can tweet their photos to @riotID or use the hashtag #riotID. The RiotID team draw on their expert knowledge to help match photographs of weapons being used on the street and where they come from.

Since RiotID launched in August 2015, we have identified expired canisters being used in Uganda, Zambia, and Mexico. Expired tear gas is unsafe and can be volatile. As tear gas is a toxic chemical waste product, it must be properly disposed of after expiration. In Saint Louis, our identifications exposed the misuse of barricade-penetrating munitions. We also worked with migrant solidarity activists in Calais, France, to help identify and monitor riot-control used in refugee camps there. Incorporating concerns over security and social media into the project, we are now teaming up with Eyewitness Media to utilize their secure documentation app. We are also responding to requests for more introductory information on tear gases and impact munitions. Working with young people, we have also designed infographics that answer basic questions about what these riot-control weapons do.

Conclusion

Tear gas is an object designed to torment people, to break their spirits, to cause physical and psychological damage. No amount of corporate public relations or safety guidelines can hide that foundational truth of chemical design. Tear gas is a weapon that polices the atmosphere and pollutes the very air we breathe. It turns the square, the march, the public assembly into a toxic space, taking away what is so often the last communication channel people have left to use. If the right to gather, to speak out, is to mean anything, then we must also have the right to do so in air we can breathe.

This text is adapted from excerpts in “Tear Gas: From the Battlefields of WWI to the Streets of Today” (Verso 2017).

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