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Tobacco Control Is a Wicked Problem: Situating Design Responses in Yogyakarta and Banjarmasin

Abstract Tobacco use is a persistent social issue worldwide. The World Health Organization has found that policy change and regulation are the clearest paths to resolution. In Indonesia, where smoking is increasingly common, tobacco control has become a wicked problem, plagued by conflicting stakeholder interests, public mistrust of science and government, and the lack of a clear path to a nationally applicable approach. At the local level, however, social change can take many forms, and involve diverse communities, individual citizens, businesses, NGOs, and multiple levels of government in dynamic stakeholder configurations. By treating tobacco in Indonesia as a wicked problem, and taking an iterative, collaborative approach to resolution, we demonstrate how locally-organized, youth-focused anti-tobacco campaigns are less about finding a single solution to tobacco use and more about identifying, connecting, and supporting local stakeholders working together towards preferred futures. We argue for the inclusion of locally-focused design research programs when rethinking complex issues such as tobacco control in places where national regulation is failing.

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1 “Tobacco,” Newsroom: Factsheets, World Health Organization, last modified July 26, 2019, <https://www.who.int/news-room/fact-sheets/detail/tobacco>.

2 Ibid.

3 Tan Yen Lian and Ulysses Dorotheo, *The ASEAN Tobacco Control Atlas*, 4th ed. (Bangkok: Southeast Asian Tobacco Control Alliance (SEATCA), 2018), 30, available at <https://seatca.org/?p=11931>.

4 Menglu Yuan et al., “Nicotine and the Adolescent Brain,” *The Journal of Physiology* 593, no. 16 (2015): 3397–412, DOI: <https://doi.org/10.1113/jp270492>.

5 Lian and Dorotheo, *The ASEAN Tobacco Control Atlas*, 27.

6 Meika Atkins, “Australia’s Restrictive Tobacco Laws: Are Australia’s Trade Agreements Going up in Smoke,” *International Trade and Business Law Review* 21 (2018): 333–60, available at [7 Putu Ayu Swandewi Astuti and Becky Freeman, “Protecting Young Indonesian Hearts from Tobacco,” *The Conversation*, June 7, 2018, <https://theconversation.com/protecting-young-indonesian-hearts-from-tobacco-97554>; “WHO Member States \(by Regions\) That Are NOT Parties to the WHO Framework Convention on Tobacco Control,” World Health Organization, last modified December 7, 2010, \[http://www.who.int/tobacco/framework/non_parties/en/\]\(http://www.who.int/tobacco/framework/non_parties/en/\).](https://heinonline.org/HOL/LandingPage?handle=hein.journals/itbla21&div=18&id=&page; The Royal Australian College of General Practitioners, “Tobacco Smoking: The Scope of the Problem,” accessed October 9, 2019, available at https://www.racgp.org.au/clinical-resources/clinical-guidelines/key-racgp-guidelines/view-all-racgp-guidelines/supporting-smoking-cessation.</p></div><div data-bbox=)

8 Horst W. J. Rittel and Melvin M. Webber, “Dilemmas in a General Theory of Planning,” *Policy Sciences* 4, no. 2 (1973): 155–69, DOI: <https://doi.org/10.1007/BF01405730>.

9 Astuti and Freeman, “Protecting Young Indonesian Hearts.”

10 Alexandra Crosby, “Design Activism in an Indonesian Village,” *Design Issues* 35, no. 3 (2019): 50–63, DOI: https://doi.org/10.1162/desi_a_00549.

Introduction

The international tobacco problem is one of the greatest global threats to public health.¹ Every year, tobacco products are directly responsible for the death of 6 million smokers and approximately 890,000 non-smokers exposed to second-hand smoke worldwide.² In Indonesia, 66% of adult males smoke, and most Indonesian smokers are very young, falling within the 10–19 age bracket.³ Research shows that adolescents who have smoked more than monthly are likely to continue through to adulthood despite persistent attempts to quit, while those who do not start smoking during adolescence are much less likely to ever embark on the path to lifelong addiction.⁴ It is estimated that smoking-related diseases kill nearly 250,000 Indonesians every year, and yet the tobacco industry in Indonesia recruits 16.4 million new smokers each year, more than replacing those who have died.⁵

While the annual increase in tobacco use in Indonesia is well documented, the pathway to reversing or even slowing this trend is not so clear cut, even though countries such as Australia and Thailand lead by example in the region.⁶ Indonesia stands out as the only country in Asia that has not yet signed and ratified the World Health Organization Framework Convention on Tobacco Control, a global tobacco control treaty.⁷ The deeply ambiguous benefits the tobacco industry affords to Indonesian society, the conflicting interests of stakeholders, a public distrust of science and government, and the lack of any clear path to national action all characterize tobacco control as a wicked problem,⁸ according to Horst Rittel and Melvin Webber’s classic definition.

Much important work has been done on the particularities of the Indonesian tobacco problem. Some have cited preventative education, retail zoning, and restrictions on advertising as key strategies if the government is to “combat the future cardiovascular epidemic.”⁹ Interestingly, the roadblocks standing in the way of government measures that will effectively combat the tobacco industry’s stronghold on citizens have not yet been explored from a design research approach, nor have they been connected to creative community action and local government initiatives. This article focuses on design activism that brings together diverse stakeholders to consider tobacco control in Indonesia as a wicked problem.

In Indonesia, the connection between design activism and policy change is always complicated by its complex layers of local, regional, and national governance, as well as the diversity of cultures and languages across the country.¹⁰ While national change and regulation are essential to addressing the public health issue of tobacco use in the long term, at a local level much work is already underway to inspire change at the social level by rejecting the influence of the tobacco industry in cities and neighborhoods across the archipelago. When considering the challenges of tobacco control at the local and regional level in Indonesian communities from a design activism and design research approach, policy change alone is not enough to create societal change in regards to this wicked problem – as others have pointed out – and social marketing by itself is also not enough to create societal change.¹¹

Our research takes a range of forms and involves dynamic stakeholder configurations that bring together diverse communities, individual citizens, businesses, non-government organizations (NGOs), and multiple levels of government. By treating pervasive tobacco use as a wicked problem and taking an iterative, collaborative design research approach, we show how creating an impactful creative anti-tobacco campaign is less about finding a single solution to reduce tobacco use and more about identifying, connecting, and enabling local stakeholders to work together towards preferred futures.

To demonstrate, we present an ongoing collaborative project that includes design researchers from Australia and a team from the Jakarta Office of Vital

Strategies, a global NGO who “partner with governments to rapidly design and implement public health initiatives that bridge the gap between public health needs and solutions, especially in low- and middle-income countries.”¹² Vital Strategies incorporated our efforts as design researchers and professionals into their campaigns over three years. We conversed both in person and via the Internet, attended and took notes at meetings, provided strategic design advice and campaign input, initiated and joined in conversations and events, and helped stakeholders to map out and clarify for themselves the relational context of anti-tobacco work. During this process, we also researched tobacco policy in Indonesia, the culture and history of tobacco, and the role of design in the growth of the industry. In our research methodology, we used a mix of Indonesian and English. Finally, we contributed to a number of site-specific design solutions for anti-tobacco public campaigns. For these, we situated tobacco in Indonesia within local-global politics, bringing to light dimensions that were both typically Indonesian, and immensely varied from location to location across this diverse nation. In the words of the late Doreen Massey, esteemed scholar of place, such situated work reveals how “a local-global politics would be structured differently from place to place.”¹³

This article is divided into four parts. Firstly, we provide a cultural-historical background to the tobacco problem in Indonesia, and introduce the work of Vital Strategies. Next, we outline our methodological approach, known as research through design, which involved analyzing the issue through the lens of the wicked problem and focusing on stakeholder engagement via mapping and design activism. We then weave this background research together to make the case for excluding the tobacco industry as a stakeholder in the problem space. In the third part, we present design research conducted at two sites including stakeholder maps and examples of public outcomes in Yogyakarta (Central Java) in February 2017, and Banjarmasin (South Kalimantan) in January 2018. These sites were identified by Vital Strategies¹⁴ for their existing anti-tobacco momentum at the community or local government level. Finally, we discuss the impact of our interventions at these two sites, and discuss the limitations and implications for future design research on this issue.

A Distinctly Indonesian History of Tobacco

The Design Innovation Known as Kretek

In this section we outline some of the specificities of the tobacco issue in Indonesia, drawing attention to the ways the invention and history of the *kretek*, or clove cigarette, is closely tied to colonialism and nationalism. In what is now known as Indonesia, tobacco was introduced by Dutch colonists around the middle of the 19th century, and its rise in popularity – as in many parts of the world – was due to its purported healing properties, as well as its taste and fragrance.

Invented in Kudus, Central Java in the 1870s, *kretek* was named for the sound it made when it burned.¹⁵ In an extraordinary act of design innovation, *kretek* combined an ordinary cigarette with *cingkeh*, or clove, a plant native to the island of Ambon, located in what were known at the time as the spice islands of Maluku.¹⁶ Clove was already used locally for its antibacterial and anesthetic properties, but combined with tobacco, it was soon (ironically) being promoted as a medicine to alleviate asthma and coughing.¹⁷

A range of sources point out the designed association of *kretek* with Indonesia’s national identity.¹⁸ The coffee table-sized tome *Kretek*, written by former banker Mark Hanusz, lays out the material culture of *kretek* after a heartfelt introduction by Pramoedya Ananta Toer, Indonesia’s most famous literary author.¹⁹ The book links smoking *kretek* to local rituals and spiritualism, traditional medicine,

11 Ann Marie Kennedy and Andrew Parsons, “Macro-Social Marketing and Social Engineering: A Systems Approach,” *Journal of Social Marketing* 2, no. 1 (2012): 47, DOI: <https://doi.org/10.1108/20426761211203247>.

12 Vital Strategies “combines evidence-based strategies with innovation to help develop and implement sound public health policies, manage programs efficiently, strengthen data systems, conduct research, and design strategic communication campaigns for policy and behavior change.” “About Us,” Vital Strategies, accessed October 8, 2019, <http://www.vitalstrategies.org/about/about-us/>.

13 Doreen Massey, *For Space* (London: Sage, 2005), 103.

14 Enrico Aditjondro and Rachfiansyah, employed at Vital Strategies, were key decision influencers in the selection of the two sites, with approval by the global head office.

15 Hans Freek and Max Colombijn, “Kreteks Crackle in Children’s Hands: The Impact of Advertisements and Peers on Smoking Behaviour of Adolescents in Bandung, Indonesia,” in *Reading Asia: New Research in Asian Studies*, ed. Frans Hüsken and Dick van der Meij (London: RoutledgeCurzon, 2001), 49–63.

16 Adrian Vickers, *A History of Modern Indonesia* (Cambridge, UK: Cambridge University Press, 2013), 10–11.

17 Monika Arnez, “Tobacco and Kretek: Indonesian Drugs in Historical Change,” *ASEAS—Austrian Journal of South-East Asian Studies* 2, no. 1 (2009): 49–69, available at <https://nbn-resolving.org/urn:nbn:de:0168-ssoor-362761>; Nuran Wibisono, “Kretek Dan Budaya Nusantara,” *Wacana: Jurnal Transformasi Sosial* 34 (2014): 145–61, available at <http://insistpress.com/katalog/kretek-sebagai-warisan-budaya/>.

18 Putu Ayu Swandewi Astuti and Becky Freeman, “‘It Is Merely a Paper Tiger’: Battle for Increased Tobacco Advertising Regulation in Indonesia: Content Analysis of News Articles,” *BMJ Open* 7, no. 9 (2017): e016975, DOI: <https://doi.org/10.1136/bmjopen-2017-016975>.

19 Mark Hanusz, *Kretek: The Culture and Heritage of Indonesia’s Clove Cigarettes* (Sheffield: Equinox Publishing, 2000).

20 Stein Kristiansen and Purwo Santoso, "Surviving Decentralisation?," *Health Policy* 77, no. 3 (2006): 247–59, DOI: <https://doi.org/10.1016/j.healthpol.2005.07.013>.

21 Aaron Sklar and Sally Madsen, "Global Ergonomics: Design for Social Impact," *Ergonomics in Design* 18, no. 2 (2010): 4–21, DOI: <https://doi.org/10.1518%2F106480410X12737888532921>.

22 Anna Lowenhaupt Tsing, "Inside the Economy of Appearances," *Public Culture* 12, no. 1 (2000): 115–44, available at <https://muse.jhu.edu/article/26191/summary>.

23 Tsing, "Inside the Economy of Appearances," 115–44; Alexandra Crosby, "Remixing Environmentalism in Blora, Central Java 2005–10," *International Journal of Cultural Studies* 16, no. 3 (2013): 257–69, DOI: <https://doi.org/10.1177%2F1367877912474535>.

24 Alexandra Crosby, "Festivals in Java: Localising Cultural Activism and Environmental Politics, 2005–2010" (Doctoral dissertation, University of Technology, Sydney, 2013), 89, available at <https://opus.lib.uts.edu.au/handle/10453/21805#>.

25 Stephen Grenville, "Quitting Cigarettes in Indonesia," *The Interpreter*, May 23, 2018, <https://www.lowyinstitute.org/the-interpreter/quitting-cigarettes-indonesia>.

26 Campaign for Tobacco-Free Kids, "Indonesia Tobacco Giant's Shameful Billboard Says 'DON'T QUIT,'" *Tobacco Unfiltered* (blog), June 10, 2013, https://www.tobaccofreekids.org/blog/2013_06_10_indonesia.

27 Campaign for Tobacco-Free Kids, "Phillip Morris International Suggests Cigarettes Are 'a Cool Friend' for Indonesians," *Tobacco Unfiltered* (blog), August 30, 2011, https://www.tobaccofreekids.org/blog/2011_08_30_indonesia.

28 Nathalia Tjandra, "'Disneyland for Big Tobacco': Indonesia's Lax Smoking Laws Are Keeping People Hooked," *The Conversation*, June 1, 2018, <https://theconversation.com/disneyland-for-big-tobacco-how-indonesias-lax-smoking-laws-are-helping-next-generation-to-get-hooked-97489>; Mimi Nichter et al., "Reading Culture from Tobacco Advertisements in Indonesia," *Tobacco Control* 18, no. 2 (2009): 98–107, DOI: <https://doi.org/10.1136/tc.2008.025809>.

defiance against colonization, cultural heritage, and economic development. Nowhere in the book does the author mention the negative health consequences of smoking, despite it being published in 2000 when that data was readily available in both English and Indonesian. Another example is "The House of Sampoerna," the museum of Indonesia's largest tobacco company, located on Sampoerna Street in Surabaya, East Java, which we visited in 2018. The exhibits on the ground floor of the large edifice focus on the design of *kretek* as distinctly Indonesian. It houses carefully conserved original printing machines and showcases the now famous graphic design of Sampoerna packaging. On the upper floor of the museum is a viewing platform to the factory floor, where 400 women hand-roll "Indonesia's very own King of Kretek, *Dji Sam Soe*," as a plaque nearby announces. On another information plaque titled "Sampoerna Untuk Indonesia," or "Sampoerna for Indonesia," the company outlines its corporate social responsibility (CSR) program, divided into four categories: access to education; women's empowerment; disaster preparedness and response; and economic opportunity. While in OECD countries, seeing pro-tobacco propaganda so closely aligned with grand narratives of nationalism might seem unusual, it is important to understand the omnipresence of such cultural artifacts in Indonesia. Each make the compelling argument, through the design of a text and a space, that smoking is a cultural tradition linked to the development and prosperity of Indonesia that is irreplaceable as a social practice.

Adding to this complex issue of national identity is the regionalization of political power in Indonesia, in effect since 2001. Dramatic reforms followed the severe economic crisis that began in 1997, the fall of the Suharto regime in 1998, and the introduction of free elections and democratic governance in 1999. These developments have affected tobacco messaging in two ways. Firstly, the administration of health services in Indonesia has declined dramatically with managerial and financial responsibilities for public health care decentralized to the district level, and health care increasingly privatized.²⁰ This includes public health messaging about being physically active, eating well, wearing motorbike helmets, and not smoking. Secondly, with a political ideology that emphasizes bringing power and responsibility closer to the people, regulation of global harm-causing industries like tobacco have proved increasingly difficult. Within such a weak regulatory framework, big tobacco advertisers continue to capitalize on and exploit Indonesian culture, traditions, and social norms,²¹ and the message that *kretek* – and smoking more generally – is fundamentally Indonesian continues to pervade public space and media channels.

Youth-Targeted Advertising

Ever since Indonesian independence, the narrative that smoking is part of being Indonesian has been exploited through youth-targeted messaging that links smoking to adventure, independence, and a local cosmopolitanism. Anna Tsing details the way two tobacco giants, Gudang Garam and Phillip Morris, borrowed the trope of America's "Marlboro Man" to create the virile, risk-taking image of nature loving Indonesian adventurers in their advertising of the 1980s and 90s.²² However, billboards of young men conquering mountaintops was only the backdrop to more targeted youth marketing that penetrated early social networks. By sponsoring student *Mapala* (nature lovers) organizations at universities across Indonesia, tobacco companies also began weaving environmentalism into national sales campaigns.²³

Increased involvement of private enterprise in cultural activity since the end of the New Order in 1998,²⁴ combined with limited regulation of tobacco sales, advertising, promotion, and sponsorship has meant that the tobacco industry has continued to make such associations and market their products through both

traditional channels – on sprawling, unregulated advertising hoardings, via sensational music concerts, and at slick sporting events – and across both mainstream and new media.²⁵ Messages such as “Never quit,”²⁶ “Don’t quit – let’s do it!”²⁷ and “Better to die than leave a friend. Sampoerna – an awesome friend”²⁸ are targeted at young Indonesians. While the tobacco industry claims it is not marketing to children and youth, the focus on education in CSR programs and the prevalence of humor, adventure, and aspirational masculinities²⁹ in messaging suggest otherwise.³⁰

Design and Indonesia’s Tobacco Industry

The boundaries between design, education, CSR, and the tobacco industry are often blurred in Indonesia. One company opened a 3D animation studio within an existing vocational senior high school in Kudus, Central Java,³¹ with the intention to train animators and designers to produce feature-length films similar to the likes of Pixar and Disney³² – and perhaps, we wonder, slick and sophisticated 3D animations for tobacco *videotron* hoardings at Indonesia’s busiest traffic intersections? The first short film released by the studio in 2017 was a fairytale about a small but brave boy who conquers a monster,³³ appealing to deeply-embedded cultural themes and targeting children. Another example of the tobacco industry showing interest in young designers is how one Indonesian company launched a limited-edition package in 2016 that was developed via a high-profile online design competition where more than one million votes were cast for the final four designs selected. Since 2007, young industrial designers and product innovators from the country’s leading universities have been lured into competing for generous cash prizes to promote the cigarette brand “Djarum Black” in the annual Black Innovation Awards – “Indonesia’s biggest innovation competition.”³⁴ Talented designers – and financially-disadvantaged youth who want to become designers – are caught in a conundrum of professional ethics. For whom shall one work as a trained designer to make a living – and how shall one pay for one’s design education? The designers working for the tobacco industry must create compelling campaigns inducing young people to smoke against the interests of their health.

Design, then, is not inherently on the right side of tobacco control. Designers clearly play a role in the success of the tobacco industry, with the major players attracting the best talent in visual communications, brand experience, point-of-sale design, and packaging design. On the other end of the spectrum, the design researchers and activists working with Vital Strategies have made a conscious choice – or have the privilege and agency to make such a choice – to advocate for public health against corporate interests and the tobacco industry.

This section paints a clear picture of the specificity of Indonesian tobacco history, with its designed association between *kretek* and Indonesian culture, the targeting of Indonesian youth by tobacco companies since the 1980s, and the involvement of design and designers on both sides of tobacco control. These facts reveal how Indonesian public health campaigns need design strategies that are culturally and geographically specific as well as mindful of the national, and nationalist, dimensions to the sale and use of tobacco in Indonesia.

Methodological Approach: Research through Design

This paper takes a research through design approach:³⁵ we developed our findings through a collaborative design project that produced knowledge relevant to a scholarly research context. As Nigel Cross points out, “there are things to know, ways of knowing them, and ways of finding out about them that are specific to

29 Nawi Ng, Lars Weinehall, and Ann Öhman, “‘If I Don’t Smoke, I’m Not a Real Man’—Indonesian Teenage Boys’ Views about Smoking,” *Health Education Research* 22, no. 6 (2006): 794–804, DOI: <https://doi.org/10.1093/her/cyl104>; Mohan J. Dutta and Josh Boyd, “Turning ‘Smoking Man’ Images Around: Portrayals of Smoking in Men’s Magazines as a Blueprint for Smoking Cessation Campaigns,” *Health Communication* 22, no. 3 (2007): 253–63, DOI: <https://doi.org/10.1080/10410230701626901>.

30 Luke Johnson, “Conscience and the Business of Addiction,” *Financial Times*, may 20, 2014, <https://www.ft.com/content/83534b98-df53-11e3-86a4-00144feabdc0>.

31 It is perhaps no coincidence that Kudus is the birthplace of the *kretek* industry in Central Java, and now a drought- and poverty-prone agricultural district.

32 Gopis Simatupang, “Djarum Foundation Bangun Studio Animasi Kelas Internasional Di Kudus” [Djarum Foundation Builds International Class Animation Studio in Kudus], *WARTAKOAlive*, March 7, 2016, <http://wartakota.tribunnews.com/2016/03/07/djarum-foundation-bangun-studio-animasi-kelas-internasional-di-kudus>.

33 Adli Hazmi, “Film Animasi Dongeng Indonesia Buatan Siswa SMK Dari Kudus” [An Indonesian Fairytale Animation Made by High School Students from Kudus], *WARTAKOAlive*, March 7, 2017, <https://www.goodnewsfromindonesia.id/2017/02/25/film-animasi-dongeng-indonesia-buatan-siswa-smk-dari-kudus>.

34 “About,” *BlackInnovation 2016*, accessed October 9, 2019, <https://blackinnovation.blackxperience.com/about>.

35 Wolfgang Jonas, “Research through DESIGN through Research—A Problem Statement and a Conceptual Sketch,” in *WONDERGROUND: Proceedings of the Design Research Society International Conference 2006*, ed. Ken Friedman et al. (Lisbon: CEIADE—Centro Editorial do IAD, 2006), paper 0230, available at <http://unidcom.iade.pt/drs2006/wonderground/proceedings/fullpapers.html>; Christopher Frayling, “Research in Art and Design,” *Royal College of Art Research Papers* 1, no. 1 (1993/94): 1–9, available at <http://researchonline.rca.ac.uk/384/>.

36 Nigel Cross, *Designerly Ways of Knowing* (London: Springer Verlag, 2006), 5–6.

37 *Ibid.*, 101.

38 C. West Churchman, “Guest Editorial: Wicked Problems,” *Management Science* 14, no. 4, (1967): B141, available at <http://www.jstor.org/stable/2628678?origin=JSTOR-pdf>.

39 Terry Irwin, “Wicked Problems and the Relationship Triad,” in *Grow Small, Think Beautiful: Ideas for a Sustainable World* from Schumacher College, ed. Stephan Harding (Edinburgh: Floris Books, 2012), 232–59.

40 Joanna Boehnert, *Design, Ecology, Politics: Towards the Ecocene* (London: Bloomsbury Academic, 2018), 98.

the design area.”³⁶ Our findings regarding the role of stakeholders in the wicked problem of tobacco, and how these roles shift in particular local contexts, emerged during the design processes we undertook – in the tactics and strategies of designing.³⁷

Since 2014, Vital Strategies has been working closely with Indonesia’s Ministry of Health in conjunction with various mass media and social campaigns. However, since 2016, the organization and its partners have also begun to focus on exposing tobacco industry tactics and debunking myths about the economic benefit the industry is bringing to the nation. Several cities – Yogyakarta, Bogor, Banjarmasin, Surabaya, and Ambon – had similar agendas, and Vital Strategies started to pour its resources into local as well as national and regional campaigns.

The approach is complex. It involved four broad research stages at each site, which the research team conducted iteratively and collaboratively.

1. Approaching tobacco control in Indonesia as a wicked problem, and accepting that it may not have a solution, while also situating the problem within a particular context (site, location) including its attendant design possibilities;
2. Scoping research through interviews, site visits, focus group discussions, and stakeholder meetings to determine the political, cultural, and geographical context of that site;
3. Planning and implementation of place-based design interventions using participatory design approaches; and
4. Evaluation and discussion to determine key findings.

The fourth stage feeds back into the first stage. The stages of this design process each produce research through design results, by creating new knowledge about the problem and testing creative ideas. At the third stage, we brought design students into the project, to contribute ideas and energy to the campaigns. Even though their learning experience was an important aspect of the project, it is not within the scope of this article to include them as stakeholders. The research through design interventions are rich and complex, generally lasting about two weeks and involving several hundred people and several connected events and workshops. They exist within long-term national, regional, and global campaigns. In order to highlight the contributions made at the two sites of research, in the next section we present the first two overlapping stages of our research approach: situating the wicked problem and stakeholder mapping.

A Wicked Problem

Wicked problems are well defined in design literature as “a class of social system problems which are ill-formulated, where the information is confusing, where there are many clients and decision makers with conflicting values, and where the ramifications in the whole system are thoroughly confusing.”³⁸ Terry Irwin³⁹ takes Rittel and Weber further by updating ten key characteristics of wicked problems. More recently, Joanna Boehnert points out that wicked problems call for interdisciplinary collaboration, because individualist and instrumental approaches have a limited capacity to address emergence.⁴⁰ We draw on a synthesis of these definitions to frame tobacco control in Indonesia as a wicked problem. The purpose of this framing is to find openings for situated design interventions.

1. **Every problem is unique.** What has worked for tobacco control internationally, and in other parts of Asia, might not work unless adapted to Indonesia due to social, cultural, and political factors. Each local context in Indonesia also has unique dimensions (language, culture, religion, policies,

economies, and relationships to national and international strategies). A unique combination of challenges particular to the Indonesian context makes tobacco control a wicked problem. As one stakeholder explained, “There are many factors that make tobacco control efforts very difficult. Firstly, in Indonesia, tobacco industries are a giant industry that dominate the markets. Big Tobacco and their front groups, such as ‘Clove communities’ or ‘Tobacco farmers’ groups supported by Big Tobacco, intervene in many sectors, especially by influencing decision makers and governments from the national to the district level – even to community leaders. The message that Big Tobacco and their front groups deliver to the community is that tobacco and cigarettes are Indonesian heritage and culture. Some communities, especially people in villages, and those who do not have tobacco control regulations, are accepting of these messages. They are trying to counter all the tobacco control regulations. Their intervention of government absolutely effects the tobacco control efforts in Indonesia.”

2. **There is no clear problem definition.** Who is to blame? *Kretek* is a colonial invention, yet is seen as a part of the national, social, and cultural fabric. One stakeholder described the existence of a “traditional event where one of the offerings is a cigarette that anyone may draw on.” Another interviewee based near Surabaya mentioned how “the Sampoerna museum in Surabaya has a beautiful heritage building that is part of our history – they (the company’s founders) were Indonesians who were extremely successful at business and that is something for us all to be inspired by and aspire towards.” Yet, the family divested, and the company was acquired by the US-based foreign multinational Philip Morris in 2005. Only a few local politicians and communities have recognized and defined tobacco control as a local problem.
3. **Problems are multi-causal, multi-scalar, and interconnected.** One stakeholder described this multifariousness thusly: “There is an absence of regulations that bind the cigarette industry. Indonesia is the only country in Southeast Asia that has not yet ratified the FCTC. Therefore, the government is not strong enough to regulate cigarette taxes or cigarette advertisements. In Indonesia, small children are allowed to buy cigarettes in small shops, while abroad these conditions are not permitted. Exposure to cigarette smoke in public places is also one form of ‘example’ set by adults illustrating that smoking is a habit in society. There are public places that should be non-smoking but still there are many people who smoke carelessly. This can happen because there is no assertiveness from the institutions or leadership of such public spaces to give sanction to smokers. Consequently, smokers can continue their smoking activities without feeling guilty.” Tobacco companies understand the deeply ingrained core values of a sympathetic Indonesian audience, which makes them all the more insidious. For example, one interviewee – a housewife in a middle-class non-smoking household – said, “I don’t like smoking or seeing people smoking, but I like the Djarum Foundation and the Djarum brand because they do many good things, they support our national sport badminton by sponsoring competitions and the players, and sponsor a lot of music concerts which are part of our entertainment culture. They also give out so many scholarships to students – how will they get an education otherwise?”
4. **Multiple stakeholders have conflicting agendas.** Tobacco giants are driven by profits and are also employers and event sponsors. Governments (especially at the national, and key regional levels such as in East Java) fear backlash from the industry, the agricultural sector (farmers), and workers. Mosques risk losing followers when declaring anti-tobacco Islamic law

41 Kenneth E Warner, "The Economics of Tobacco: Myths and Realities," *Tobacco Control* 9, no. 1 (2000): 78–89, DOI: <https://doi.org/10.1136/tc.9.1.78>; Wardie Leppan, Natacha Lecours, and Daniel Buckles, eds., *Tobacco Control and Tobacco Farming: Separating Myth from Reality* (London: Anthem Press, 2014); Adriana Appau et al., "Why Do Farmers Grow Tobacco? A Qualitative Exploration of Farmers Perspectives in Indonesia and Philippines," *International Journal of Environmental Research and Public Health* 16, no. 13 (2019): 2330, DOI: <https://doi.org/10.3390/ijerph16132330>.

rulings (*fatwa*). Local activist groups, student groups and community groups share some goals with international NGOs but may also have some conflicting agendas. As one stakeholder from a regional health department described, "The Government is still not serious in issuing regulations related to cigarettes. Commitment from various parties is needed to overcome the problem."

5. **Problems straddle organizational and disciplinary boundaries.** The science is clear; the path to change is not. While policy change and enforcement would be the best solution, it is a long path, requiring consideration by creative, compassionate, and courageous collaborators. Indeed, one stakeholder confirmed that, "In the local and regional government context, there are still many areas that have not passed smoke-free regulations. And if they have, on average the implementation is still suboptimal. This needs to be encouraged and followed up. The role of the central and regional governments must be synchronized, supporting each other. And this collaboration requires cross-sector cooperation, not just the Ministry of Health." Yet another stakeholder observed, "The public is not fully aware of the dangers of smoking ... due to a fairly low level of socialization. Therefore, so that the use of cigarettes can be reduced, it is necessary to make a collaborative program including all parties: government, private sector, NGOs, organizations, and groups within the community to lead to better understanding of the impacts caused by smoking."
6. **Every wicked problem is connected to others.** Tobacco is closely linked to dire problems in healthcare, disease, poverty, sustainability, nutrition, education, agriculture, export economy, productivity, religion, culture, gender, sports, and many more. One stakeholder explained how "there is basically no regulation to rein in the tobacco industry and so they get to do as they please, from sponsoring and branding concerts in sacred Indonesian spaces to painting towns to look like ... ad[s]. All this marketing has an effect, and the result is people die prematurely, needlessly, and painfully from cancers and lung diseases that might not otherwise be their fate. As it's mostly men who smoke and become ill, families are left without breadwinners and go hungry. And people waste their money on an addictive product instead of using the money for educational fees or clothing. This means children go without and this affects development."
7. **Every solution ramifies throughout the whole system.** One policy change can reverberate across the entire socio-political landscape if enforced as intended. The long term objectives of tobacco control are noble but require a lengthy and well planned transition and adjustment period. For example, "only a small number of regional leaders strictly enforce the rules of cigarette sales and advertising in their area, because they are afraid of losing city revenue" – especially the passive income derived from roadside advertising hoardings, which means they have to consider how to raise city revenue in other creative ways.
8. **Solutions are not right/wrong but better/worse.** While stakeholders observe that "the price of cigarettes is too cheap," increased taxes, as an example of a solution, may have unintended consequences for the most vulnerable, and require significant adjustment from those who currently directly and indirectly benefit from tobacco profits. Tobacco farmers,⁴¹ factory workers, salespeople, musicians, cultural acts, sportspeople, scholarship recipients who are at the bottom of the pyramid, or direct/indirect beneficiaries of the tobacco-driven economic ecosystem will require support during a transition away from tobacco. The regions of East Java,

Central Java, and West Nusa Tenggara – which supply 90% of Indonesia’s tobacco leaf – would temporarily be the hardest hit by a downturn in tobacco farming, while a downturn in manufacturing would mostly affect East Java, with two thirds of tobacco manufacturing occurring in this region providing 2.9% of total full time employment.⁴² However, “tobacco farming and manufacturing do not rank high ... in terms of overall economic output, employment, and wages” and therefore studies have shown that raising tobacco taxes will have an overall net benefit to the economy and employment.⁴³ Yet, implementing such change without social support may place even more financial stress on extremely vulnerable families seeking to satisfy basic daily needs such as food, which in turn may exacerbate other health problems. The long-term effect of not raising taxes is worse. For example, the combination of poverty and having a chronic smoker in a family has been linked to stunting in children in a longitudinal research conducted by the University of Indonesia’s Department of Social Security Research.⁴⁴ Evidence-based measures to reduce overall tobacco consumption on a household level include increasing taxes and freeing up more of a household’s budget to enable expenditure on nutritious food, after an initial adjustment period.

9. **Solution evaluation can be slow.** While there are successful precedents from different contexts, evaluating these is a situated process. It is important to consider how to demonstrate and evaluate both short term as well as long term intervention impacts. Evidence of the impact of solutions such as Australia’s plain packaging laws are only emerging after nearly a decade.⁴⁵
10. **Problems are never completely solved.** Although some countries with low rates of smoking are talking about a tobacco endgame, technologies such as vaping present new problems requiring different approaches. Likewise, the challenge of dealing with emerging pro-tobacco conspiracy theories particularly on social media is part of a wider problem requiring myth-busting and lie-dispelling. The evidence from our fieldwork suggests that manufactured controversies⁴⁶ are still playing out in modern-day Indonesia via rogue researchers, clinics, and interest groups both on- and offline.⁴⁷

For globally positioned stakeholders such as the World Health Organization, tobacco use is not necessarily understood as a wicked problem. It is a very well formulated public health issue with plenty of evidence and one solution: tobacco control. However, when charged with implementing this solution, Vital Strategies time and time again finds little room to maneuver in Indonesia. The idea of a single, standardized, universal solution does not sit well with stakeholders. When considering the complexities of tobacco use and the challenge of tobacco control in Indonesia in national political contexts and across local government, as well as in relation to households and neighborhoods, the need for interdisciplinary problem-solving methods and design-led advocacy becomes blatantly clear. As others have pointed out *vis-à-vis* the wicked problem of global climate change, understanding the various social contexts of policy, individual material practices, and community relationships is essential before we can find pragmatic steps to address the problem.⁴⁸

Stakeholder Mapping

In this section, we look at the local contexts and focus on the presence of multiple stakeholders with conflicting agendas. In policy discussions designed to address

42 Sarah Barber et al., *Tobacco Economics in Indonesia* (Paris: International Union Against Tuberculosis and Lung Disease, 2008), 35, available at https://www.tobaccofreekids.org/assets/global/pdfs/en/Indonesia_tobacco_taxes_report_en.pdf.

43 Ibid., 35.

44 Muchammad Egi Fadliansyah, “PKJS UI: Konsumsi Rokok Akibatkan Anak Stunting” [Department of Social Security Research, University of Indonesia: Cigarette Consumption Causes Child Stunting], *Gatra.Com*, June 25, 2018, <https://www.gatra.com/rubrik/kesehatan/328599-pkjs-ui-konsumsi-rokok-akibatkan-anak-stunting>.

45 See Australian Government Department of Health, “Tobacco Plain Packaging,” last modified April 19, 2019, <https://www.health.gov.au/health-topics/smoking-and-tobacco/tobacco-control/tobacco-plain-packaging>.

46 David Michaels and Mindy Jones, “Doubt Is Their Product,” *Scientific American* 292, no. 6 (2005): 96–101, available at <https://www.scientificamerican.com/magazine/sa/2005/06-01/>; David Robert Grimes, “A Dangerous Balancing Act,” *EMBO Reports* 20, no. 8 (2019): e48706, DOI: <https://doi.org/10.15252/embr.201948706>.

47 Angela Dewan, “Indonesia’s Griya Balur Clinic Touts Smoking as Cure for Cancer, Autism and Emphysema,” *news.com.au*, April 12, 2011, <http://www.news.com.au/world/indonesias-griya-balur-clinic-touts-smoking-as-cure-for-cancer-autism-and-emphysema/news-story/0266b081b8bf81795c6c981365b1380d>; Aliansi Masyarakat Tembakau Indonesia, “Rahasia Tembakau Kretek” [Kretek Tobacco Secrets], YouTube video, 5:59, August 31, 2014, https://www.youtube.com/watch?v=TS0h9_Ofko; Andrew Barclay, “In Marlboro’s Last Frontier, a Smokers’ Rights Group Is Defending the ‘Human Right’ to Light Up,” *Quartz*, February 18, 2017, <https://qz.com/913404/in-marlboros-last-frontier-a-smokers-rights-group-is-defending-the-human-right-to-light-up/>.

48 Reiner Grundmann, “Climate Change as a Wicked Social Problem,” *Nature Geoscience* 9, no. 8 (2016): 562–63, DOI: <https://doi.org/10.1038/ngeo2780>; Matthias Dietz and Heiko Garrelts,

eds., *Routledge Handbook of the Climate Change Movement* (Hoboken: Taylor and Francis, 2014); David Schlosberg and Romand Coles, "The New Environmentalism of Everyday Life: Sustainability, Material Flows and Movements," *Contemporary Political Theory* 15, no. 2 (2016): 160–81, DOI: <https://doi.org/10.1057/cpt.2015.34>.

49 Mary Assunta and Ulysses Dorotheo, "SEATCA Tobacco Industry Interference Index: A Tool for Measuring Implementation of WHO Framework Convention on Tobacco Control Article 5.3," *Tobacco Control* 25, no. 3 (2016): 313–18, available at <https://tobaccocontrol.bmj.com/content/25/3/313.info>; Aditya Kalra et al., "Inside Philip Morris' Push to Subvert the Global Anti-smoking Treaty," *Reuters*, July 13, 2017, <https://www.reuters.com/investigates/special-report/pmi-who-ftcl>.

50 Kate Hodal, "Indonesia's Smoking Epidemic—An Old Problem Getting Younger," *The Guardian*, March 22, 2012, <https://www.theguardian.com/world/2012/mar/22/indonesia-smoking-epidemic>.

51 Joachim Halse and Laura Boffi, "Design Interventions as a Form of Inquiry," in *Design Anthropological Futures*, ed. Rachel Charlotte Smith et al. (London: Bloomsbury Publishing, 2016), 89.

the problem of tobacco, every other stakeholder is at a significant disadvantage because of their relatively small size when representatives of the powerful and influential tobacco industry – the root cause of the problem – are in the room.⁴⁹ As such, when framing the tobacco problem in Indonesia as a situated wicked problem, we opted for an alternative to casting the tobacco industry as a stakeholder. We eliminated the tobacco industry from our list of stakeholders at the local level, and recast it as part of the *problem*. The definition of a *stakeholder* became *any individual or agent (whether government or non-government) who is directly or indirectly affected by the problem*: tobacco's adverse health, economic and societal effects. Stakeholders must collaborate if they are going to overcome the problem.

By framing the tobacco problem in Indonesia as a wicked problem, situating it in specific places, and mapping out stakeholders and stakeholder relationships, it becomes apparent that tobacco companies cannot be stakeholders in local design advocacy campaigns. The tobacco industry clearly has commercial interests that "are diametrically opposed to the aims and objectives of public health."⁵⁰ In Indonesia, tobacco companies are often involved when tobacco control is on the national policymaking agenda. However, given our problem definition, the tobacco industry *could not* contribute to addressing the problem. For this reason, the local design processes that led to the solutions in each location excluded the tobacco industry entirely.

In considering tobacco control at a local level, some stakeholders remain consistent across regional campaigns, but more often stakeholders change depending on the location of the design intervention. Here we focus on the most relevant stakeholders to the two sites of this research, which means that some other stakeholders (such as tobacco farmers) are left off these maps. Stakeholder relationships are the most important aspect of the Vital Strategies approach to design advocacy.

Initially, Vital Strategies and partners always targeted smokers – and in Indonesia's case, adult male smokers – in its campaigns. However, in the findings that emerged from their post-campaign evaluations, the organization found that the "silent majority" – non-smokers – were a source of support for them. Since these findings emerged, the mass media target has remained adult male smokers, but organization has shifted its social media and mass mobilization targets to non-smokers, and often times youth groups and activists in local contexts. Simultaneously, as Vital Strategies has evaluated the successes and failures of its programs and partnered with design researchers, the organization has increasingly shifted its focus from traditional media and advertising channels to staging live public engagement events combined with a multipronged online social media and traditional media strategy.

In light of these conclusions, the design research team – including members of the Vital Strategies team – formed co-design partnerships with multiple local stakeholders to situate their work. The goal was to effectively communicate anti-tobacco messaging, while carefully managing the complexities of social and environmental factors, as well as sensitively managing the conflicting agendas of national and global stakeholders. In each location the design interventions evolved as stakeholders discovered new information and shared it with design researchers, so there was no logical endpoint for the design process. Drawing on the work of Joachim Halse and Laura Boffi, we used design intervention as a form of inquiry, "particularly relevant for investigating phenomenon that are not very coherent ... because they are still in the process of being conceptually and physically articulated."⁵¹ While the design research was carried out over three years, the public aspect of the design interventions played out over a week in Yogyakarta and two weeks in Banjarmasin – meaning the design teams had to rapidly iterate their ideas – a process culminating in fast, on-the-ground implementation. In the words

of Tau Lenskjold, Sissel Olander, and Joachim Halse, “some types of contemporary co-design practices embody a different form of activist agency – one that is experimentally and immanently generated only as the design project unfolds.”⁵²

Designing out Tobacco

This section presents two anti-smoking campaigns produced during this design research project. The first was in a neighborhood on the banks of the Kali Code (pronounced *CHOH-day*) river, Yogyakarta, Central Java, and the second on the banks of the Martapura River running through the center of the city of Banjarmasin, the capital of South Kalimantan.

Yogyakarta is a city located in a special region within Central Java between an active volcano and the South Java Sea; it is considered the epicenter of Javanese culture. From Hindu-Buddhist beginnings in the Mataram Kingdom from the 8th century onwards, and with many rich royal and colonial histories playing out throughout the centuries, the special region is, to this day, still governed by a sultanate that dates back to 1745. Yogyakarta, with a population of around half a million people and an Islamic majority, is now mainly known for tourism and education. The city is home to over 25 state and private universities and institutions, hosting many tertiary students from all over Indonesia.

The specific social, political, human rights, and architectural history of the Code site in Yogyakarta makes it a peculiarity, and of interest even prior to tobacco industry exploitation in 2015. The village was redesigned and redeveloped by sympathetic Catholic priest and architect Romo (Father) Mangun (born Yusuf Bilyarta Mangunwijaya) from 1983 to 1985.⁵³

The Kampung Code community, and the unique design of its buildings, have been the focus of ongoing attention and admiration since the architectural redevelopment. In 2017, around 60 low-income families, both Catholic and Muslim, lived in the Kampung Kali Code, governed by a village head. They enjoy a slightly better socioeconomic outlook than neighboring riverside settlements due to the steady trickle of visitors, including sightseers and volunteers.

Banjarmasin – derived from the words *bandar*, or “port” and *masih*, meaning “Malay people” – is located on a delta island near the junction of the Barito and Martapura rivers. It is the closest city to one of Indonesia’s largest coal loading anchorage ports and has its own deep water harbor port in the Barito basin. Apart from coal, exports include timber, petroleum, rubber, pepper, gold, and diamonds. Islam was formally recognized in Banjarmasin during the first quarter of the 16th century and gradually spread from the palace to the people over the following centuries – the religious influence is strong to this day. Its almost exclusively Muslim population totals over 700,000, and is mainly Banjarese (descending from the Malay people of Sumatra and the Dayaks of Borneo), with ethnic minorities of Javanese and Madurese. In Banjarmasin, one can see not only the effects of dire poverty and environmental degradation (deforestation, mining, water and air pollution) but also the existence of comfortable, middle-class wealth. By Indonesian standards, the city is uncrowded, low-rise, very walkable, and also sprawling, due to the meandering Martapura River that snakes through the city center, and its thousand meandering tributaries. Two defining features of the city are the *ulin* ironwood houses on stilts built along the waterways, and boats of all varieties as a major mode of transportation. The site of the Banjarmasin design intervention, on the boulevard and boardwalk along the southern bank of the Martapura, was chosen as it was a vibrant community public gathering point, featuring a floating produce market on weekends mainly for the benefit of tourists, and pop-up night markets including fluorescent-lit street food vendors, inexpensive knick-knacks,

52 Tau Ulv Lenskjold, Sissel Olander, and Joachim Halse, “Minor Design Activism: Prompting Change from Within,” *Design Issues* 31, no. 4 (2015): 67–78, DOI: https://doi.org/10.1162/DESI_a_00352.

53 Tarko Sudiarno, “Kampung Code: A Colorful Urban Corner,” *The Jakarta Post*, August 11, 2015, <https://www.thejakartapost.com/news/2015/08/11/kampung-code-a-colorful-urban-corner.html>; Sukma Indah Permana, “Mengenang Romo Mangun, Pahlawan Kampung Code Yang Warna-Warni” [Remembering Romo Mangun—the Hero of Colourful Code Village], *Detik Travel*, November 11, 2016, <https://travel.detik.com/travel-news/d-3342719/mengenang-romo-mangun-pahlawan-kampung-code-yang-warna-warni/2/#news>.

54 Jon Emont, "Antismoking Coalition Gives Big Tobacco a Fight in Indonesia," *The New York Times*, June 1, 2016, <https://www.nytimes.com/2016/05/01/world/asia/antismoking-coalition-gives-big-tobacco-a-fight-in-indonesia.html>.

55 Visit @koma_idn at https://www.instagram.com/koma_idn/ for more information.

56 Doreen Lee, "Anybody Can Do It': Aesthetic Empowerment, Urban Citizenship, and the Naturalization of Indonesian Graffiti and Street Art," *City & Society* 25, no. 3 (December 2013): 304–27, DOI: <https://doi.org/10.1111/ciso.12024>.

fashion accessories, dancing buskers, and cultural performances every Friday and Saturday night. The local Department of Tourism are caretakers of the *Menara Pandang* building on site, with its free public viewing platform on the roof offering views of the city and river. The area is frequented by families in the daytime on the weekend and early evening, and as the families gradually go home, the city's youth are left hanging out on mats crouched around low tables, sipping non-alcoholic drinks, smoking, laughing, taking selfies, and eating street snacks through to the early hours of the morning. However, unlike most Indonesian cities, the public area along this stretch of river is completely absent of cigarette advertising hoardings.

These two sites are chosen because they demonstrate the diversity of Indonesia and therefore of situated approaches. Other sites where design interventions have been similarly carried out by the research team include Surabaya, Jakarta, Ambon and Bogor.

Yogyakarta, February 2017

In 2015, houses in a community on the banks of the Kali Code River in Yogyakarta were exploited as the centerpiece of a massive promotional campaign by one of the biggest tobacco companies in Indonesia. Using the slogan "Show Your Colors," nearly every building along one section of the river (located directly under the Gondolayu Bridge) was transformed by Philip Morris International into a harlequin pattern of color visible from a massive frame installed on the bridge above. A giant air balloon was strategically positioned above the village and over the river. With its striking brand colors of red, blue, yellow, and white, the stunt gained national and international notoriety.⁵⁴ According to estimates by Vital Strategies, the tobacco company enjoyed brand exposure worth US \$220,000 for each month the neighborhood remained branded, while the residents whose houses were painted did not receive any financial compensation. After months of grassroots opposition and advocacy from tobacco control groups, the frame and balloon with the cigarette brand identity were removed, but the brand-themed house colors remained (Figure 1) – the houses were never repainted their original colors.

In 2016 through early 2017, Vital Strategies initiated a retaliation campaign in collaboration with Muhammadiyah Tobacco Control Center (MTCC), the local community of Kampung Code, and several organizations and activist groups in Yogyakarta. Centered on the slogan "*Tunjukkan Warna Aslimu*" – "Show Your True Colors" – the campaign's goal was to support the Code community in their resistance of the tobacco industry through a counter-branding event using public space and social media in a participatory design intervention. Figure 2 shows the stakeholders involved.

The campaign sought to maximize the potential of creative interventions by linking stakeholders and ensuring broad participation. The project saw giant, anti-tobacco murals painted onto the walls and roofs of houses, with creative direction led by renowned Indonesian graffiti artist Koma⁵⁵ (Figure 3). Yogyakarta is an important center for all arts in Indonesia, including classical Javanese dance, music, batik textiles, drama, silver smithing, visual arts, and *wayang*, and is now also renowned for its street art – in part because it is home to a large student population and in part because of the general surge in the "production and circulation of street art through technology and media in post-New Order Indonesia."⁵⁶ In this cultural context, commissioned artists are important stakeholders.

Luminescent paint and UV lighting were used to highlight the murals at night (Figure 4). The "*Tunjukkan Warna Aslimu*" project also included community empowerment activities, such as video workshop training, a wood block-printing



Figure 1 Kampung Code, an architecturally-designed riverside village branded in red, blue, yellow, and white. Image courtesy of Vital Strategies.

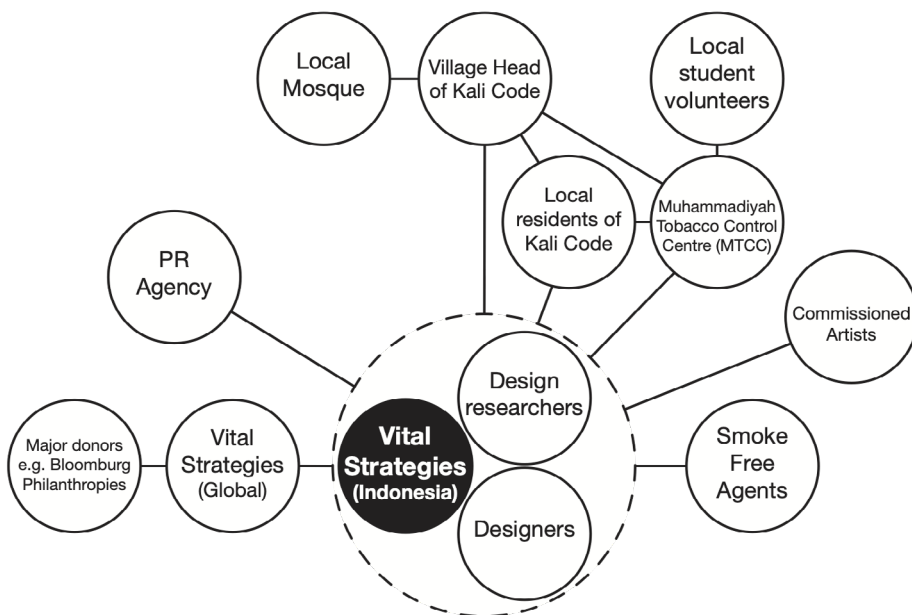


Figure 2 Yogyakarta stakeholders: connecting lines indicate a direct relationship. © 2019 by Alexandra Crosby, Jessica Lea Dunn, Enrico Aditjondro, and Rachfiansyah.



Figure 3 (Left) Koma painting a mural. © 2017 by Jessica Lea Dunn.



Figure 4 (Right) The rooftop graphics at night. Image courtesy of Vital Strategies.

workshop (Figure 5), and health education by partners from Muhammadiyah Tobacco Control Centre. Trellises were covered with bamboo blinds, providing shade for residents at ground level, and also announcing a symbolic and physical reclamation of place when viewed from the bridge above. When viewed from above, the blinds spelled out the name of the village and river with the image of a cigarette as a ticking time bomb overlaid onto the letters (Figure 6). This reclamation is significant – in many kampungs and villages across Indonesia, infrastructure such as weather awnings are donated by tobacco companies, doubling up as advertising surfaces.

After sunset on World Cancer Day (February 4, 2017), the murals created by Koma and his team of artists were unveiled. A large crowd from all over the city attended, joining journalists to photograph the event from the bridge above. Below the bridge, videos resulting from the workshop were screened. During the unveiling, Vital Strategies mobilized the hashtag #SuaraTanpaRokok (Voices without Cigarettes) over multiple social media platforms, and it became the number one trending topic on Twitter in Indonesia. Kampung Code, previously exploited by the tobacco industry without consultation, gained a new character as a site of community resistance. Murals that remind people of the dangers of smoking now decorate the roofs and walls of the houses. While it could also be argued that Kampung Code was exploited by anti-tobacco campaigns, the stakeholder process put in place by the design research team demanded consultation and the dissecting of a wicked problem in a consultative way that excludes the tobacco industry and sensitively considers local needs along with broader public health goals. This campaign demonstrates a local scale design intervention that resists the power of a tobacco company. By subtracting tobacco companies from the design process of a neighborhood campaign, the wicked problem of tobacco control in Indonesia is situated locally and opened up for further design interventions that support the fight against big tobacco and its influence on local populations.



Figure 5 (Above) Woodblock painting workshop with local children in Kampung Code. © 2017 by Jessica Lea Dunn.

Figure 6 (Below) Shade awnings reclaimed by community. Images on the left © 2017 by Jessica Lea Dunn; image the on right courtesy of Vital Strategies.

Figure 7 A #TheyLieWeDie campaign protest regarding the presence of regulation-defying cigarette ads next to a local primary school. Image courtesy of Vital Strategies.



57 SDSN Youth, “Community and Local Government Movement in Reducing Plastic Waste in Indonesia—SDSN Youth,” November 23, 2017, <https://sdsnyouth.org/blog-posts/2017/11/23/treducing-plastic-waste-in-indonesia>.

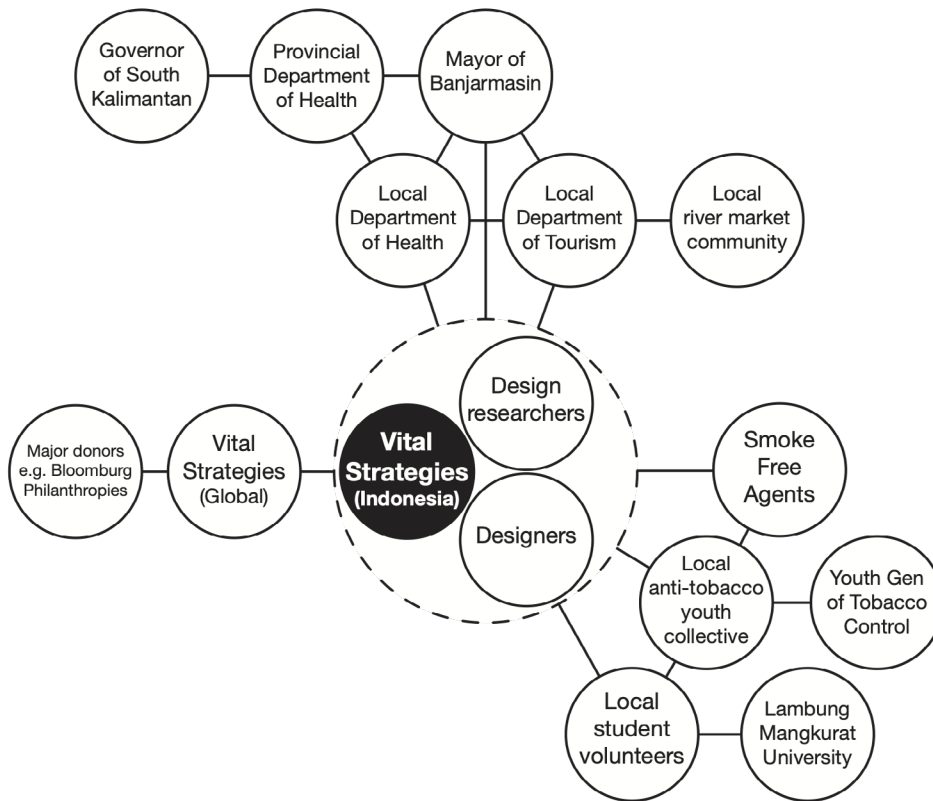
January 2018, Banjarmasin

The second research through design project was an anti-smoking campaign on the Sungai Martapura River, Banjarmasin. Banjarmasin was identified as a site of potential design advocacy by Vital Strategies because the local mayor, Ibnu Sina, and a team of local and provincial level government officials from the Department of Health and the Department of Tourism had publicly advocated for stronger tobacco advertising legislation in the city. The mayor had already demonstrated his capacity to contend with wicked problems and garner strong local responses with his “Plastic Free Banjarmasin”⁵⁷ campaign.

Banjarmasin’s Department of Health had set a target to reduce the prevalence of youth smokers. However, in the absence of appropriately focused and concerted action, the prevalence of youth smokers was increasing. Unlike many parts of Indonesia, the city of Banjarmasin and the province of South Kalimantan both have Tobacco Advertising Promotion and Sponsorship regulations – however, the tobacco industry often thwart local government’s efforts by displaying their ads along smaller laneways and streets in Banjarmasin, rather than on main roads where the regulation is enforced. We directly observed cigarette advertising in front of local primary schools – later the focus of a #TheyLieWeDie youth activist squad campaign for not complying with city regulations (Figure 7) – and heard about the presence of a tobacco industry funded play area from people in Banjarmasin. The tobacco industry continues to target youth by sponsoring music concerts and youth events. This was detailed by one stakeholder, who explained,

“Big Tobacco are spending so much money for advertising, promotion and sponsorship. The weak regulation of tobacco advertising impacts the normalization of smoking and tobacco products. Advertising comes not only in the form of billboards or posters, but also TV commercials, big event music concerts or sports sponsorship, plus cool gimmicky merchandise such as tumblers, selfie sticks, phone cases, tote bags, and so on. They are targeting adolescents and mostly youngsters in urban or suburban Indonesia.”

Figure 8 Banjarmasin stakeholders: connecting lines indicate a direct relationship. © 2019 by Alexandra Crosby, Jessica Lea Dunn, Enrico Aditjondro, and Rachfiansyah.



Planning for the campaign in Banjarmasin began in Yogyakarta, and took place over a one-year period. Members of the Vital Strategies team regularly travelled to Banjarmasin from their Jakarta office. As part of the design research, the team mapped stakeholders (Figure 8), held a focus group discussion, and began planning a public event. Stakeholders ranged from the mayor and regional governor to a local youth-based collective, “Banjarmasin Without Smoking” (Banjarmasin Tanpa Rokok). Activists from other regions in Indonesia joined in, including the “Smoke Free Agents,” who wove their “TheyLieWeDie” campaign into the project.⁵⁸ Vital Strategies staff also travelled from Manila to provide a regional perspective.

The design intervention included a public panel discussion and a parade on the river performed by market vendors – all women – from the famous floating markets in Banjarmasin, a permanent albeit endangered cultural tradition since the early 1500s. Despite being a local tradition based upon the unique geography of the region, the *Pasar Terapung* (floating market) has been adopted as a symbol of uniquely Indonesian living cultural heritage in the nationalist discourse; it is frequently featured in domestic and international tourism campaigns. The vendors ride in traditional wooden boats called *jukung* and wear circular hats called *tanggung*. In the days leading up to the event, students and design researchers organized a participatory workshop to decorate 70 *tanggung* with anti-tobacco designs. School children, tourists, and passersby joined the workshop contributing to the campaign. During the parade, the vendors skillfully collaborated to position their boats in formations, their hats sending a strong message that uncoupled Indonesian (both local and national) tradition from smoking (Figures 9 and 10).

⁵⁸ For more information on the #TheyLieWeDie campaign, see <https://theyliewedie.com/> (Indonesian language).

Figure 9 Synchronized boats arrangement featuring decorated tanggui. © 2018 by Jessica Lea Dunn.



Figure 10 River parade in action, formation in the shape of a fish. The Mayor of Banjarmasin and other government representative were standing on the larger middle boats along with student activists. © 2018 by Jessica Lea Dunn.



59 Robin S. Adams et al.,
“Being a Professional: Three
Lenses into Design Thinking,
Acting, and Being,” *Design
Studies* 32, no. 6 (2011): 588–607,
DOI: [https://doi.org/10.1016/j.
destud.2011.07.004](https://doi.org/10.1016/j.destud.2011.07.004).

Findings and Discussion

By including local cultural heritage icons – the floating market in Banjarmasin, and the architecturally-designed riverside settlement in Yogyakarta – in the creation of the campaigns, and leveraging the local community as stakeholders in the design of tobacco-free neighborhoods, we framed the problem of tobacco control in Indonesia inside a situated context, and were able to target our impacts. Situating a problem in a specific geographic context might be best described as a kind of “organized translation.” In the words of Robin Adams and her colleagues, this means “breaking problems into smaller parts, revisiting previous design decisions with new information, and linking activities of conceptualizing a solution with implementing or manufacturing that solution” and “developing outcomes from multiple pieces, ideas, and perspectives.”⁵⁹ In this sense, design can use the local environment to get a firm grasp on a massively complex, slippery, overwhelming problem.

Let us compare our findings against the wicked problem characteristics outlined in the introductory section. Firstly, evaluating the impact of these two design interventions is a lengthy process that will occur over a longer period of time than the projected duration of the research project. Secondly, results are necessarily location-dependent. In Banjarmasin, the strong participation of the Department of Health, the Department of Tourism, and the mayor in the campaign meant that direct policy change was a result of the design intervention. By the end of 2018, 11 months after the campaign, all cities and regencies in South Kalimantan Province enacted regulations related to tobacco control, including specific regulations on smoke-free areas, Tobacco Advertising Promotion and Sponsorship bans, and enforcement. Nine cities and regencies in South Kalimantan passed smoke-free laws, three cities and regencies in South Kalimantan passed *Peraturan Bupati* (regional regulations), two cities and regencies in South Kalimantan issued official circular letters on smoke-free areas, one regency (Hulu Sungai Utara) issued an official circular letter on a tobacco ads ban, and one city issued a regulation to appoint a designated smoke-free areas enforcement team. The campaign tagline using the local language, #KadaHandakRokok, demonstrates that the use of local language in a tobacco control campaign can be both strategic and long lasting: the hashtag remains active to this day.

Secondly, rather than solving the problem, this work created further opportunities for situated design interventions elsewhere in Indonesia. Ambon, Bogor, Jakarta, and Surabaya all became campaign sites following Yogyakarta and Banjarmasin. The work of harnessing the momentum of design and design research is durational, political, and relational. As one Vital Strategies campaigner describes,

“The Ambon campaign could not have been possible without Code and Banjarmasin. An Ambon official attended a Vital Strategies workshop in 2017 and responded to the work we did in Yogyakarta. It took him two years to convince his superiors and allocate budget for such a campaign to happen in his own city. The documentation from the Banjarmasin campaign was the icing on the cake.”

The momentum is partly due to social media dynamics in Indonesia, which enabled the dissemination of local design interventions at multiple scales. The hashtag #SuaraTanpaRokok, which went viral in Yogyakarta in January 2017, had reached over 5000 cumulative posts on Instagram by July 2019, while on Facebook, the Suara Tanpa Rokok page regularly reaches over 2 million people per month, and in early July 2019, a promotional video achieved over 3 million views in just 2 days. After the 2017 campaign in Yogyakarta, a campaign in Bogor involved the local Bike2Work community and the rebranding of eight city billboards. The Bogor campaign’s tagline is now #TeuHayangRokok, which remains active and was adopted by the city. A #TheyLieWeDie *Kombi Keliling* (travelling Kombi bus) was coordinated with design schools in five universities across Jakarta. The success of the Yogyakarta design intervention and the publicity it gained inspired copy-cat initiatives from like-minded organizations, such as a *Kampung Warna-Warni Tanpa Rokok* (Rainbow Smoke-Free Village) on the banks of the Cipinang River in East Jakarta.⁶⁰

This research demonstrates how design research and practice can contribute to situating wicked problems in particular locations and specific stakeholder ecologies. More explicitly, we found that

- Framing tobacco as a wicked problem in Indonesia can be a platform for supporting and connecting local tobacco control initiatives.
- Designers can help communities make sense of tobacco use as a public health issue in Indonesia by facilitating local conversations and creative expression.

60 UCAN Indonesia, “Awam Katolik Menginisiasi Kampung Warna-Warni Tanpa Rokok” [Catholic Commoner Initiates Rainbow Smoke-Free Village], Berita Online Gereja Katolik Indonesia, accessed June 17, 2019, <https://indonesia.ucanews.com/2019/05/17/awam-katolik-menginisiasi-kampung-warna-warni-tanpa-rokok/>.

- Designers can help shift discussions from “what we don’t want” (advertising targeting youth; death and disease from tobacco related harm; the tobacco industry in control of culture) to “what we want” (healthy neighborhoods and cities where residents are in charge), and directing efforts accordingly.
- Excluding the tobacco industry as a stakeholder in solving the problem of tobacco’s adverse health, economic and societal effects can make room for other local actors to get involved and enable design researchers to understand and leverage the complexity of stakeholder relations in local contexts.

Conclusion

This article has explored the value and relevance of design research to the issue of widespread smoking in Indonesia – a problem that has, in many ways, been created by design. We have tried to convey, through the description and analysis of an iterative and ongoing design research project, how a wicked problem with a seemingly straightforward solution (curbing tobacco use) can be situated by creating space and time for local creative innovation. In conclusion, we have demonstrated the potential of small scale, locally based design advocacy work to shift conversations about tobacco use in Indonesia. While we have begun an important process, many questions remain unanswered. How can the connection of these geographically dispersed cases be ensured so these are not one-off interventions? How can the impact of multi-site design interventions be measured over longer timelines? How can design contribute in situations that do not already have some anti-tobacco momentum, especially those that are perhaps the most vulnerable and severely affected by the industry? How can young designers in Indonesia be supported to work against Big Tobacco?

The two campaigns we present here were delivered successfully, in collaboration with the intended participants. However, the impact of the work on current smokers and potential smokers, and on the power dynamic between the tobacco companies and the communities are more difficult to measure. Such evaluation requires the collaboration of a range of committed experts, over a sustained period of time, with design researchers facilitating connections between people, places, and dynamic stakeholders.

Stakeholders need to work together to thoroughly examine the problem within its situated context, in all its nuances and complexities, by navigating a range of cultural, social, and political factors that find their origins in that place, and also consider a national and global framework. Framing the tobacco problem in Indonesia as a wicked problem and drawing stakeholder mapping into campaign work allowed us to better design for tangible action and apply best practices when facing complex cultural, social, and political influences, especially in the current climate of inadequate policy adoption and enforcement.⁶¹

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References

- Adams, Robin S., Shanna R. Daly, Llwellyn M. Mann, and Gloria Dall’Alba. “Being a Professional: Three Lenses into Design Thinking, Acting, and Being.” *Design Studies* 32, no. 6 (2011): 588–607. DOI: <https://doi.org/10.1016/j.destud.2011.07.004>.
- Aliansi Masyarakat Tembakau Indonesia. “Rahasia Tembakau Kretek,” [Kretek

- Tobacco Secrets]. YouTube video, 5:59. August 31, 2014. https://www.youtube.com/watch?v=TS0h9_-Ofko.
- Appau, Adriana, Jeffrey Drope, Firman Witoelar, Jenina Joy Chavez, and Raphael Lencucha. "Why Do Farmers Grow Tobacco? A Qualitative Exploration of Farmers Perspectives in Indonesia and Philippines." *International Journal of Environmental Research and Public Health* 16, no. 13 (2019): 2330, DOI: <https://doi.org/10.3390/ijerph16132330>.
- Arnez, Monika. "Tobacco and Kretek: Indonesian Drugs in Historical Change." *ASEAS – Austrian Journal of South-East Asian Studies* 2, no. 1 (2009): 49–69. <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-362761>.
- Assunta, Mary, and Ulysses Dorotheo. "SEATCA Tobacco Industry Interference Index: A Tool for Measuring Implementation of WHO Framework Convention on Tobacco Control Article 5.3." *Tobacco Control* 25, no. 3 (2016): 313–18. <https://tobaccocontrol.bmj.com/content/25/3/313.info>.
- Astuti, Putu Ayu Swandewi, and Becky Freeman. "'It Is Merely a Paper Tiger': Battle for Increased Tobacco Advertising Regulation in Indonesia: Content Analysis of News Articles." *BMJ Open* 7, no. 9 (2017): e016975. DOI: <https://doi.org/10.1136/bmjopen-2017-016975>.
- Astuti, Putu Ayu Swandewi, and Becky Freeman. "Protecting Young Indonesian Hearts from Tobacco." *The Conversation*, June 7, 2018. <https://theconversation.com/protecting-young-indonesian-hearts-from-tobacco-97554>.
- Atkins, Meika. "Australia's Restrictive Tobacco Laws: Are Australia's Trade Agreements Going up in Smoke." *International Trade and Business Law Review* 21 (2018): 333–60. <https://heinonline.org/HOL/LandingPage?handle=hein.journals/itbla21&div=18&id=&page>.
- Australian Government Department of Health. "Tobacco Plain Packaging." Last modified April 19, 2019. <https://www.health.gov.au/health-topics/smoking-and-tobacco/tobacco-control/tobacco-plain-packaging>.
- Barclay, Andrew. "In Marlboro's Last Frontier, a Smokers' Rights Group Is Defending the 'Human Right' to Light Up." *Quartz*, February 18, 2017. <https://qz.com/913404/in-marlboros-last-frontier-a-smokers-rights-group-is-defending-the-human-right-to-light-up/>.
- Boehnert, Joanna. *Design, Ecology, Politics: Towards the Ecocene*. London: Bloomsbury Academic, 2018.
- Campaign for Tobacco-Free Kids. "Philip Morris International Suggests Cigarettes Are 'a Cool Friend' for Indonesians." *Tobacco Unfiltered* (blog), August 30, 2011. https://www.tobaccofreekids.org/blog/2011_08_30_indonesia.
- Campaign for Tobacco-Free Kids. "Indonesia Tobacco Giant's Shameful Billboard Says 'DON'T QUIT.'" *Tobacco Unfiltered* (blog), June 10, 2013. https://www.tobaccofreekids.org/blog/2013_06_10_indonesia.
- Churchman, C. West. "Guest Editorial: Wicked Problems." *Management Science* 14, no. 4 (1967): B141. <http://www.jstor.org/stable/2628678?origin=JSTOR-pdf>.
- Crosby, Alexandra. "Festivals in Java: Localising Cultural Activism and Environmental Politics, 2005–2010." Doctoral dissertation, University of Technology, Sydney, 2013. <https://opus.lib.uts.edu.au/handle/10453/21805#>.
- Crosby, Alexandra. "Remixing Environmentalism in Blora, Central Java 2005–10." *International Journal of Cultural Studies* 16, no. 3 (2013): 257–69. DOI: <https://doi.org/10.1177/15221367877912474535>.
- Crosby, Alexandra. "Design Activism in an Indonesian Village." *Design Issues* 35, no. 3 (2019): 50–63. DOI: https://doi.org/10.1162/desi_a_00549.
- Cross, Nigel. *Designery Ways of Knowing*. London: Springer Verlag, 2006.
- Dewan, Angela. "Indonesia's Griya Balur Clinic Touts Smoking as Cure for Cancer, Autism and Emphysema." *news.com.au*, April 12, 2011. <http://www.news.com.au/world/indonesias-griya-balur-clinic-touts-smoking-as-cure-for-cancer-autism-and-emphysema/news-story/0266b081b8bf81795c6c981365b1380d>.
- Dietz, Matthias, and Heiko Garrelts, eds. *Routledge Handbook of the Climate Change Movement*. Hoboken: Taylor and Francis, 2014.

- Dutta, Mohan J., and Josh Boyd. "Turning 'Smoking Man' Images Around: Portrayals of Smoking in Men's Magazines as a Blueprint for Smoking Cessation Campaigns." *Health Communication* 22, no. 3 (2007): 253–63. DOI: <https://doi.org/10.1080/10410230701626901>.
- Emont, Jon. "Antismoking Coalition Gives Big Tobacco a Fight in Indonesia." *The New York Times*, June 1, 2016. <https://www.nytimes.com/2016/05/01/world/asia/antismoking-coalition-gives-big-tobacco-a-fight-in-indonesia.html>.
- Frayling, Christopher. "Research in Art and Design." *Royal College of Art Research Papers* 1, no. 1 (1993/94): 1–9. <http://researchonline.rca.ac.uk/384/>.
- Freek, Hans, and Max Colombijn. "Kreteks Crackle in Children's Hands: The Impact of Advertisements and Peers on Smoking Behaviour of Adolescents in Bandung, Indonesia." In *Reading Asia: New Research in Asian Studies*, edited by Frans Hüsken and Dick van der Meij, 49–63. London: RoutledgeCurzon, 2001.
- Grenville, Stephen. "Quitting Cigarettes in Indonesia." *The Interpreter*, May 23, 2018. <https://www.lowyinstitute.org/the-interpreter/quitting-cigarettes-indonesia>.
- Grimes, David Robert. "A Dangerous Balancing Act." *EMBO Reports* 20, no. 8 (2019): e48706. DOI: <https://doi.org/10.15252/embr.201948706>.
- Grundmann, Reiner. "Climate Change as a Wicked Social Problem." *Nature Geoscience* 9, no. 8 (2016): 562–63. DOI: <https://doi.org/10.1038/ngeo2780>.
- Halse, Joachim, and Laura Boffi. "Design Interventions as a Form of Inquiry." In *Design Anthropological Futures*, edited by Rachel Charlotte Smith, Kasper Tang Vangkilde, Mette Gislev Kjærsgaard, Ton Otto, Joachim Halse, and Thomas Binder, 89–104. London: Bloomsbury Publishing, 2016.
- Hanusz, Mark. *Kretek: The Culture and Heritage of Indonesia's Clove Cigarettes*. Sheffield: Equinox Publishing, 2000.
- Hazmi, Adli. "Film Animasi Dongeng Indonesia Buatan Siswa SMK Dari Kudus," [An Indonesian Fairytale Animation Made by High School Students from Kudus]. *WARTAKOALive*, March 7, 2017. <https://www.goodnewsfromindonesia.id/2017/02/25/film-animasi-dongeng-indonesia-buatan-siswa-smk-dari-kudus>.
- Hodal, Kate. "Indonesia's Smoking Epidemic – An Old Problem Getting Younger." *The Guardian*, March 22, 2012. <https://www.theguardian.com/world/2012/mar/22/indonesias-smoking-epidemic>.
- Irwin, Terry. "Wicked Problems and the Relationship Triad." In *Grow Small, Think Beautiful: Ideas for a Sustainable World from Schumacher College*, edited by Stephan Harding, 232–59. Edinburgh: Floris Books, 2012.
- Johnson, Luke. "Conscience and the Business of Addiction." *Financial Times*, May 20, 2014. <https://www.ft.com/content/83534b98-df53-11e3-86a4-00144feabdc0>.
- Jonas, Wolfgang. "Research through DESIGN through Research – A Problem Statement and a Conceptual Sketch." In *WONDERGROUND: Proceedings of the Design Research Society International Conference 2006*, edited by Ken Friedman, T. Love, E. Corte-Real, and C. Rust, paper 0230. Lisbon: CEIADE – Centro Editorial do IAD, 2006. <http://unidcom.iade.pt/drs2006/wonderground/proceedings/fullpapers.html>.
- Kalra, Aditya, Paritosh Bansal, Duff Wilson, and Tom Lasseter. "Inside Philip Morris' Push to Subvert the Global Anti-smoking Treaty." *Reuters*, July 13, 2017. <https://www.reuters.com/investigates/special-report/pmi-who-fctc/>.
- Kennedy, Ann Marie, and Andrew Parsons. "Macro-Social Marketing and Social Engineering: A Systems Approach." *Journal of Social Marketing* 2, no. 1 (2012): 37–51. DOI: <https://doi.org/10.1108/20426761211203247>.
- Kristiansen, Stein, and Purwo Santoso. "Surviving Decentralisation?" *Health Policy* 77, no. 3 (2006): 247–59. DOI: <https://doi.org/10.1016/j.healthpol.2005.07.013>.
- Lee, Doreen. "'Anybody Can Do It': Aesthetic Empowerment, Urban Citizenship, and the Naturalization of Indonesian Graffiti and Street Art." *City & Society* 25, no. 3 (December 2013): 304–27. DOI: <https://doi.org/10.1111/ciso.12024>.
- Lenskjold, Tau Ulv, Sissel Olander, and Joachim Halse. "Minor Design Activism: Prompting

- Change from Within.” *Design Issues* 31, no. 4 (2015): 67–78. DOI: https://doi.org/10.1162/DESI_a_00352.
- Leppan, Wardie, Natacha Lecours, and Daniel Buckles, eds. *Tobacco Control and Tobacco Farming: Separating Myth from Reality*. London: Anthem Press, 2014.
- Massey, Doreen. *For Space*. London: Sage, 2005.
- Menglu, Yuan, Sarah J. Cross, Sandra E. Loughlin, and Frances M. Leslie. “Nicotine and the Adolescent Brain.” *The Journal of Physiology* 593, no. 16 (2015): 3397–412. DOI: <https://doi.org/10.1113/JP270492>.
- Michaels, David, and Mindy Jones. “Doubt Is Their Product.” *Scientific American* 292, no. 6 (2005): 96–101. <https://www.scientificamerican.com/magazine/sa/2005/06-01/>.
- Muchammad Egi, Fadliansyah. “PKJS UI: Konsumsi Rokok Akibatkan Anak Stunting,” [Department of Social Security Research, University of Indonesia: Cigarette Consumption Causes Child Stunting]. *Gatra.Com*, June 25, 2018. <https://www.gatra.com/rubrik/kesehatan/328599-pkjs-ui-konsumsi-rokok-akibatkan-anak-stunting>.
- Ng, Nawi, Lars Weinehall, and Ann Öhman. “‘If I Don’t Smoke, I’m Not a Real Man’ – Indonesian Teenage Boys’ Views about Smoking.” *Health Education Research* 22, no. 6 (2006): 794–804. DOI: <https://doi.org/10.1093/her/cyl104>.
- Nichter, Mimi, S. Padmawati, M. Danardono, Nawi Ng, Y. Prabandari, and Mark Nichter. “Reading Culture from Tobacco Advertisements in Indonesia.” *Tobacco Control* 18, no. 2 (2009): 98–107. DOI: <https://doi.org/10.1136/tc.2008.025809>.
- Rittel, Horst W. J., and Melvin M. Webber. “Dilemmas in a General Theory of Planning.” *Policy Sciences* 4, no. 2 (1973): 155–69. DOI: <https://doi.org/10.1007/BF01405730>.
- Sarah, Barber, Sri Moertiningsih Adioetomo, Abdillah Ahsan, and Diahhadi Setyonaluri. *Tobacco Economics in Indonesia*. Paris: International Union Against Tuberculosis and Lung Disease, 2008. https://www.tobaccofreekids.org/assets/global/pdfs/en/Indonesia_tobacco_taxes_report_en.pdf.
- Schlosberg, David, and Romand Coles. “The New Environmentalism of Everyday Life: Sustainability, Material Flows and Movements.” *Contemporary Political Theory* 15, no. 2 (2016): 160–81. DOI: <https://doi.org/10.1057/cpt.2015.34>.
- SDSN Youth. “Community and Local Government Movement in Reducing Plastic Waste in Indonesia – SDSN Youth.” November 23, 2017. <https://sdsnyouth.org/blog-posts/2017/11/23/treducing-plastic-waste-in-indonesia>.
- Simatupang, Gopis. “Djarum Foundation Bangun Studio Animasi Kelas Internasional Di Kudus,” [Djarum Foundation Builds International Class Animation Studio in Kudus]. *WARTAKOAlive*, March 7, 2016. <http://wartakota.tribunnews.com/2016/03/07/djarum-foundation-bangun-studio-animasi-kelas-internasional-di-kudus>.
- Sklar, Aaron, and Sally Madsen. “Global Ergonomics: Design for Social Impact.” *Ergonomics in Design* 18, no. 2 (2010): 4–21. DOI: <https://doi.org/10.1518%2F106480410X12737888532921>.
- Sudiarno, Tarko. “Kampung Code: A Colorful Urban Corner.” *The Jakarta Post*, August 11, 2015. <https://www.thejakartapost.com/news/2015/08/11/kampung-code-a-colorful-urban-corner.html>.
- Sukma, Indah Permana. “Mengenang Romo Mangun, Pahlawan Kampung Code Yang Warna-Warni,” [Remembering Romo Mangun – the Hero of Colourful Code Village]. *Detik Travel*, November 11, 2106. <https://travel.detik.com/travel-news/d-3342719/mengenang-romo-mangun-pahlawan-kampung-code-yang-warna-warni/2/#news>.
- Tan, Yen Lian, and Ulysses Dorotheo. *The ASEAN Tobacco Control Atlas*, 4th ed. Bangkok: Southeast Asian Tobacco Control Alliance (SEATCA), 2018. <https://seatca.org/?p=11931>.
- The Royal Australian College of General Practitioners. “Tobacco Smoking: The Scope of the Problem.” Accessed October 9, 2019, <https://www.racgp.org.au/clinical-resources/clinical-guidelines/key-racgp-guidelines/view-all-racgp-guidelines/supporting-smoking-cessation>.
- Tjandra, Nathalia. “‘Disneyland for Big Tobacco’: Indonesia’s Lax Smoking Laws Are Keeping People Hooked.” *The Conversation*, June 1, 2018. <https://theconversation.com/>

[disneyland-for-big-tobacco-how-indonesias-lax-smoking-laws-are-helping-next-generation-to-get-hooked-97489](#).

Tsing, Anna Lowenhaupt. "Inside the Economy of Appearances." *Public Culture* 12, no. 1 (2000): 115–44. <https://muse.jhu.edu/article/26191/summary>.

UCAN Indonesia. "Awam Katolik Menginisiasi Kampung Warna-Warni Tanpa Rokok," [Catholic Commoner Initiates Rainbow Smoke-Free Village]. *Berita Online Gereja Katolik Indonesia*, accessed June 17, 2019. <https://indonesia.ucanews.com/2019/05/17/awam-katolik-menginisiasi-kampung-warna-warni-tanpa-rokok/>.

Vickers, Adrian. *A History of Modern Indonesia*. Cambridge, UK: Cambridge University Press, 2013.

Warner, Kenneth E. "The Economics of Tobacco: Myths and Realities." *Tobacco Control* 9, no. 1 (2000): 78–89. DOI: <https://doi.org/10.1136/tc.9.1.78>.

Wibisono, Nuran. "Kretek Dan Budaya Nusantara." *Wacana: Jurnal Transformasi Sosial* 34 (2014): 145–61. <http://insistpress.com/katalog/kretek-sebagai-warisan-budaya/>.