

INVESTIGATING SUCCESSES AND FAILURES OF TOBACCO CONTROL INSTRUMENTS

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Abstract

Reducing tobacco use is a challenging task and cannot be accomplished within a short period of time. Although a diverse range of tobacco control instruments have been put into place over the years, significant problems still remain. In this paper, we develop a high level framework for investigating success and failure of tobacco control instruments. The main contributions of this paper are as follows. First, we provide a brief literature review of the current status of tobacco control, including what instruments have been put into place, how much these instruments are helping, and what problems we still have. Second, we develop a high level framework for analysing tobacco control issues and the reasons for current problems. Third, we provide a conceptual model to illustrate the process of developing new tobacco control measures, using smoke-free places as an example. Finally, the future directions for this project are outlined. This paper has the potential to support decision-making, decision-refinement, ongoing management of government activities, and tobacco control.

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INVESTIGATING SUCCESSES AND FAILURES OF TOBACCO CONTROL INSTRUMENTS

Tobacco use has become a critical public health issue around the world, and there have been significant advances in tobacco control in the past decade, especially in developed countries (Boyle et al., 2004). However, for almost every action taken by public health authorities and tobacco control organizations, there has been resistance from forces aligned with the tobacco industry. There has been a continuing struggle between those committed to tobacco market shrinkage (e.g. public health authorities, tobacco control organisations) and those committed to tobacco market expansion (e.g. tobacco industries, tobacco growers and their allies).

Tobacco control initiatives have implications for smokers, non-smokers, public places (e.g., restaurants, bars, hospitals, shopping centres), tobacco companies, tobacco service associations, and tobacco control organizations. Numerous interrelated factors, both human (smokers, non-smokers, researchers, doctors, advocates, tobacco producers and policy-makers), and non-human (regulations, research data, culture, government systems, advertisements, penalties), interact with each other and work together to co-produce the outcomes of tobacco control. These interrelated factors also influence, and are influenced by, the process of decision-making, decision-refinement and ongoing management of government activities.

Despite the persistence of tobacco control efforts in many countries, and the recently acquired global legislative framework (the Framework Convention on Tobacco Control, see more below) the prevalence of smoking, and the consequent harms, remains unacceptably high – even in Australia, a relatively successful tobacco control country, 17% of the population still smoke regularly (Fact, 2007). Therefore, tobacco control instruments have only been able to confront part of the problem (“instruments”, as used here refers to any tangible or intangible tool used by tobacco control systems, including policies such as health warnings on packs, regulations, taxes, and programs such as anti-smoking education and campaigns, provision of tobacco control services). There is still a lot of work to do, especially regarding regulation of tobacco products. In this context it is important to investigate both the successes and failures of tobacco control instruments. Such investigations can provide invaluable information about the current status of tobacco control, and help thinking about how the tobacco control coalition can move forward to achieve better results.

This paper describes work being undertaken to investigate possible reasons for current tobacco control problems and identify a strategic framework for developing solutions. Section 2 provides brief literature reviews of the current status of tobacco control, including identifying the instruments already in place, how effective these instruments have been, and what problems remain. Section 3 develops a high level framework to analyse the possible reasons for current tobacco control problems. Section 4 models the determinants of tobacco control activities, and uses the pursuit of smoke-free places to illustrate the fact that decision making about tobacco control is not only based on research, but rather it can be thought of as a complex innovation process involving different interests and jurisdictions. Section 5 outlines the future directions for this project.

CURRENT STATUS OF TOBACCO CONTROL

Recent statistics on tobacco and health (David, 2000) reveal that about 1.1 billion people currently smoke cigarettes, 80% of which live in low and middle-income countries. Overall, the latest global statistics show that a third of the male adult population smokes, and smoking-related diseases kill one in ten adults, which translates into five million premature deaths per annum. If current trends continue, smoking will be responsible for one in six deaths by 2030. More data illustrating the current significance of the tobacco problem is available from the World Health Organisation (WHO, 2007).

The effectiveness of tobacco control varies considerable between countries. Table 1 (Corrao et al., 2000) lists the percentages of males and females who were smokers in different countries at the end of the 1990s. It is noteworthy that in some countries, although the percentages of female smokers are relatively low, the percentages of males are far higher.

Taking the example of a more successful country, in Australia there have been extensive tobacco control activities in each state, with Western Australia having had continuous activity since 1982, and Victoria since 1984. Activities include policy interventions and regulations (e.g. smoke-free regulations), economic measures (taxes), numerous mass media campaigns and the provision of smoking cessation information and services (Quit, 2005). As a result, Australians' awareness of the damage of tobacco smoking on human's health, including passive smoking has increased significantly. The recent report by Young and Borland (2004) indicated that almost 70% of Australian smokers expressed a desire to quit, and the most popular reason to quit was "concern for current or future health". Smoking prevalence statistics (e.g. White et al, 2003) also indicates that there has been a steady decline in the prevalence of smoking in Australia since the 1940s. As indicated above, the latest smoking statistics indicate that smoking prevalence in Australia in 2005 was 17% (18.6% among males, 16.8% among females) (Australian Institute of Health and Welfare: 2005). Even here, there is still plenty to do.

As we have seen, the situation in many other countries is far more serious. However, there are clear signs of progress. Generally speaking, we are now in an era of global anti-tobacco initiatives. For example, since 1993, it has been World Bank policy not to lend any more money for tobacco production or marketing, but will do so for anti-tobacco activities (WB, 1993). In 2005, the World Health Organisation (WHO, 2007), "Framework Convention on Tobacco Control" came into force (FCTC, 2003). This is the first piece of international law from the WHO. Among its many measures, the FCTC requires countries to impose policies with demonstrated effectiveness, including restrictions on tobacco advertising, sponsorship and promotion; regulation of the packaging and labelling of tobacco products; establishment of clean indoor air controls; and strengthening legislation to clamp down on tobacco smuggling. Up to now, 142 parties, representing 95% of the world's population, have ratified the FCTC.

Table 1: Percentages of population who were smokers in selected countries

| Country | Year | Age group | Male smokers | Female smokers |
|----------------|---------|-----------------|--------------|----------------|
| Australia | 1998 | 14 ⁺ | 25% | 20% |
| Brazil | 1995 | 15 ⁺ | 38% | 29% |
| Canada | 1999 | 15 ⁺ | 27% | 23% |
| China | 1996 | 15-69 | 63% | 4% |
| Czech Republic | 1998 | 15 ⁺ | 28% | 12% |
| Egypt | 1997 | 18 ⁺ | 44% | 5% |
| France | 1997 | 18 ⁺ | 39% | 27% |
| Germany | 1997 | 18-59 | 43% | 30% |
| Greece | 1994 | 15 ⁺ | 46% | 28% |
| Hungary | 1998-99 | 18 ⁺ | 44% | 27% |
| Indonesia | 1995 | 20 ⁺ | 69% | 3% |
| Iran | 1997-98 | 19 ⁺ | 25% | 5% |
| Italy | 1998 | 14 ⁺ | 32% | 17% |
| Japan | 1998 | 15 ⁺ | 53% | 13% |
| Kenya | 1995 | 20 ⁺ | 67% | 32% |
| Kuwait | 1996 | 18-60 | 34% | 2% |
| Mexico | 1998 | 18-65 | 51% | 18% |
| Netherlands | 1998 | 15 ⁺ | 37% | 30% |
| New Zealand | 1998 | 15 ⁺ | 26% | 24% |
| Nigeria | 1998 | 15 ⁺ | 15% | 2% |
| Philippines | 1999 | 20 ⁺ | 75% | 18% |
| Russia | 1996 | 15 ⁺ | 63% | 14% |
| Singapore | 1998 | 18-64 | 27% | 3% |
| South Africa | 1998 | 15 ⁺ | 42% | 11% |
| Sweden | 1998 | 16-84 | 17% | 22% |
| Turkey | 1997 | 15 ⁺ | 51% | 49% |
| UK | 1996 | 16 ⁺ | 29% | 28% |
| US | 1997 | 18 ⁺ | 28% | 22% |

There are also national tobacco control services in many countries. Some take an advocacy role, promoting stronger tobacco control actions to decision makers and the public, others deliver cessation (e.g. Quit-lines) and prevention services to the public, and some (e.g. The Cancer Council Victoria) do both. Where cessation and prevention services are provided by government bodies (e.g. State smoking cessation and prevention services in the USA) advocacy is necessarily the province of NGOs. Networks of Quit-lines provide smoking cessation assistance in several countries, including Australia, New Zealand, Canada and the USA (Quit, 2005), and more rudimentary services are available in many more countries. These services generally need to be expanded where they exist, and created where they do not.

There are also an increasing number of tobacco experts, practitioners and academic researchers involved in comprehensive tobacco control research at an international level. Recently, New York Mayor, Michael Bloomberg committed US\$125 million over 2 years to advancing tobacco control. There have also been several recent efforts to co-ordinate international research and evaluation efforts. These include the Global Youth Tobacco Survey (GYTS, 2001) and the International Tobacco Control Policy Evaluation Survey project (ITCPES, 2002). This latter survey, which we are associated with, is following cohorts of smokers in various countries to try to understand how policy instruments affect tobacco use, and how this may vary by culture and means of implementation. The ITCPES study has data from Canada, United States, Australia, United Kingdom, Ireland, Thailand, Malaysia, South Korea, China, Mexico, Uruguay, New Zealand, France, and Germany and work is underway in India, Bangladesh and Sudan. Key aspects of the study protocol and survey measures are standardized across these countries.

With the political commitment, the increased financial resources and the expertise directed at the problem suggest progress is likely. However, to date there has been inadequate consideration of the mechanisms by which we might achieve progress. Achieving a better understanding of the mechanisms is the goal of this project.

POSSIBLE FACTORS THAT MEDIATE OR INFLUENCE THE EFFECTS OF TOBACCO CONTROL INSTRUMENTS

The reasons for current tobacco control problems are complex. A major factor has been the mass-marketing of manufactured cigarettes, which has contributed to high levels of tobacco use, and created a culture where tobacco use has been normalised, making the regular use of tobacco by adults acceptable (something that still applies to a large degree). This began in the West around the time of the first World War, but has become increasingly sophisticated using integrated marketing strategies which included engineering the product to make it more attractive to consumers and seductive imagery to create “added value” by linking cigarettes to success, sophistication and other desired attributes. Different cigarette brands have been imbued with different sets of such attributes; e.g. Marlboro for the man’s man, Virginia slims for the sophisticated independent woman etc. In some countries, like China, where the commodification and mass-marketing of tobacco is still developing, but tobacco control systems are not well established, cultural normalisation has occurred and use is widespread, even with less application of mass marketing techniques. The cultural embedding of tobacco use is demonstrated by examples such as the many people who firmly believe that offering a guest a cigarette is simply good manners, and a sign of respect. This culture did not exist in China less than one hundred years ago. It is a relatively recent phenomenon. Strong cultural traditions may only need a generation or two to be established, but it seems that it takes almost as long to reverse them, even when people start to actively try. Changing cultural norms appears to occur via changes in individual behaviour patterns, but only does so slowly until this process reaches a critical level where the normative frame changes quite rapidly, in a non-linear fashion, speeding up the job of eliminating unwanted cultural practices, but not completing it.

Second, the lack of appreciation of the extremely high risks of tobacco use for human’s health continues to undermine the effectiveness of tobacco control. The pioneering studies about tobacco use and its effects on human health were conducted mainly in the 1950s (Wynder, 1997), and by now it is well established that tobacco use is the largest single preventable cause of premature mortality around the world, increasing the risk of lung cancer, emphysema, heart disease,

stroke and other diseases (Boyle, 2004). However, although smokers know smoking is harmful, they grossly underestimate how harmful, in large part because it does not feel harmful and the harms do not occur until years after use commences. This means that young people do not perceive the damage to health while they are becoming addicted.

Third, smokers themselves find difficulty quitting due to the addictiveness of the nicotine, and the discomfort of withdrawal symptoms - even if they already understand the damage tobacco use causes.

Finally, the tobacco industries, tobacco service associations and tobacco growers resist actions designed to reduce the market for cigarettes to nigh on zero, since they are the chief beneficiaries of tobacco consumption. They are programmed to act in this way because, at least for corporations, their sole responsibility is to maximise shareholder value which almost invariably means maximising profits. In summary, the four main types of barrier to tobacco control are: cultural “inertia”; the seeming low risks associated with use; the addictiveness of tobacco; and, profit maximization.

The experience of the last 25 years tells us that successful tobacco control cannot be achieved through any single policy or intervention. Also, it cannot be achieved within a short period. Instead, it is the outcome of complex interactions between tobacco control instruments, the tobacco industry, decision makers, smokers and their associates, and forces in the environments they all share. In a recent paper (Zhang et al, 2007), we developed a model that identified the key components of a tobacco control system, and how these components interact with each other to affect the outcomes of tobacco control. This model has now been further developed to provide an overview of the architecture of the tobacco control system (Figure 1). In doing so, the model also describes a dynamic cycle for policy making, enactment, monitoring and refinement. The model which is still a work-in-progress, consists of:

- the jurisdictional decision-making sub-system
- the tobacco coalition sub-system
- the tobacco control coalition sub-system
- individuals (smokers, ex-smokers and non-smokers), and
- the broader environment of tobacco control; those features of the tobacco control system we do not focus
 - first, those that have specific and direct relevance for tobacco and tobacco control, and can themselves be influenced from within the existing tobacco domain (e.g. health costs of smoking, culture of tobacco use) and,
 - second, those variables that influence the tobacco control domain, but would require alliances with actors (sometimes well) outside the tobacco domain in order to modify or exploit them (e.g. the current philosophy of government, the dominance of neo-liberal economics, world trade requirements)
- the factors that influence them (input processes)
- the way their intrinsic nature mediates the inputs (transformation process), and
- their subsequent behaviour (output processes), in response to tobacco control decisions (e.g. enactment of smoke-free rules).

It is too complicated to consider all the aspects of the tobacco control issue here. Therefore we focus, albeit not exclusively, on the development of smoke-free policies in response to the demonstrated adverse health effects of Environmental Tobacco Smoke (ETS). In this regard, a brief description follows, to provide some historical background about this issue. Restrictions on smoking to protect non-smokers began in earnest after the release of several reports, including the US Surgeon General (1986) and Australia’s NHMRC (1987) concluding that passive smoking caused lung cancer in non-smokers as well as exacerbating other respiratory conditions (e.g. asthma) in both adults and children. Since that time, the link between passive smoking and heart disease has also been firmly established. In many countries, legislation was put in place and/or

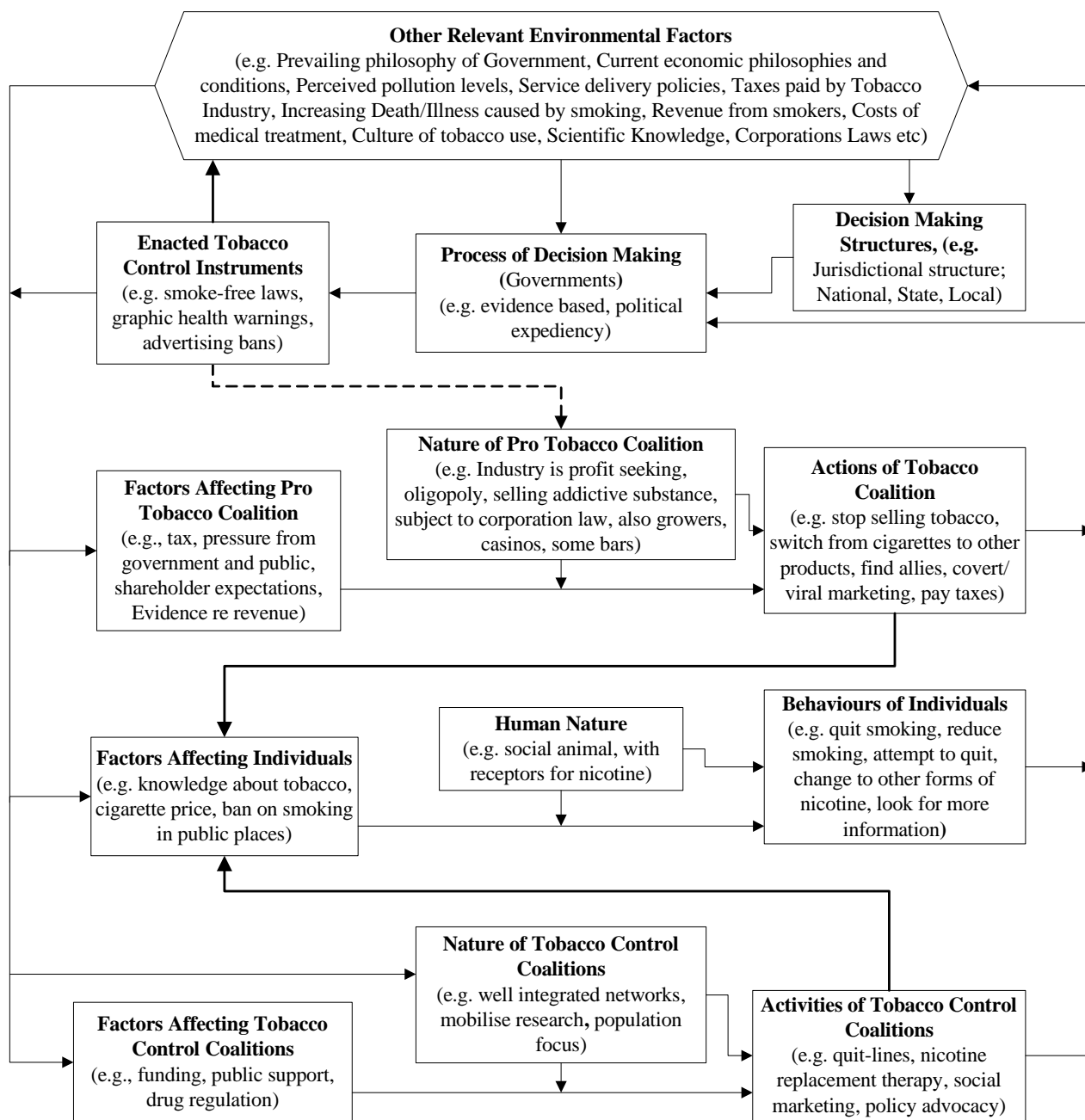
voluntary impositions of bans on smoking in work places were implemented. However, initially, these restrictions did not include recreational venues such as restaurants and bars (with the notable exception of Ireland). However, smoke-free policies (SFP) have been/are being extended to these areas in a number of countries. In Australia, all states and territories have now banned smoking in restaurants, and most have also extended bans to include bars and gaming establishments. At the end of 2007, only the Northern Territory will still allow smoking in bars. In most States, the only significant areas exempted are the high-roller rooms in casinos. The FCTC calls for complete bans on smoking in public indoor spaces, and there are moves to implement these bans in a number of countries. In some countries, including Australia, smoking bans have been largely self-enforcing. In such countries, compliance was high; partly because smokers understood and respected the rationale, partly because even smokers do not like breathing other people's smoke, and partly because both the public and key interest groups (e.g. restaurateurs) were the targets of systematic and sophisticated social marketing/education campaigns (often emanating from tobacco control organisations like TCCV as well as from governments), as well as being consulted on key aspects of the bans (Borland & Davey, 2004). However, in some countries with different legislative traditions (e.g. countries which base their system on the Napoleonic code like France – see Reid, 2005) and/or where both the public and interest groups were neither educated nor consulted in developing the smoke-free rules, and/or the link between tobacco smoke and illness is not as widely understood, compliance with legislation is believed to be far poorer.

Jurisdictional Decision Making

Decision-making about tobacco control, essentially the province of governments is heavily influenced by the nature of the decision making process itself – e.g. by the relative weights placed on: scientific evidence; political expediency the balance of opinion among opinion leaders; public acceptability; and so on. The number and nature of tobacco control instruments that decision makers could produce are suggested by feedback from four sources:

- the nature and actions of the tobacco coalition, especially the Industry itself (e.g. an oligopoly with sophisticated Federal networks, targeting young people, promoting “light” cigarettes etc)
- the tobacco control coalition (e.g. via mobilisation of science, advocacy, social marketing etc)
- the nature and actions of individuals (addicted smokers and their demographics, non-smokers and their attitudes to ETS, smokers who want to quit etc) and,
- the broader environment (e.g. the level of death/illness caused by smoking, the revenues received from tobacco industry and from smokers, attitudes to pollution, the pervasive neo-liberal ideology which places constraints on the overall level of regulation, and influences the kinds of messages that social marketing initiatives send).

Figure 1: A framework for investigating tobacco control systems



The tobacco control instruments that are enacted (e.g. smoke-free rules) will impact directly on the tobacco environment, the tobacco coalition, individuals and the tobacco control coalitions. It is worth noting the dashed line between enacted instruments and the nature of the tobacco coalition. While governments appear loath to directly intervene in this area (as opposed to employing instruments that change the conditions under which the industry operates, like advertising bans or smoke-free rules, without changing its nature and structure), there is the potential to do so, and to produce significant changes in the whole domain by so doing (e.g. see Borland, 2003).

In the architecture of the tobacco control system shown in Figure 1, when smoke-free policies are implemented, having been advocated and promoted consistent with neo-liberal values, they could, for example: lower environmental pollution and the costs of medical treatment, increase the probability that the culture of tobacco use is denormalised, and make future regulation easier (environment of tobacco control); reduce tobacco profits and lead the tobacco industry to market

non-combustible alternatives; increase knowledge about the dangers of smoking; reduce public/social smoking (individuals); increase public support for the tobacco control activities; and stimulate further research on the effects of second-hand smoke.

Further, in the case of smoke-free places (SFP), decision making appears to be most successful where all three critical criteria identified in the diagram are met; i.e. it should be simultaneously evidence based, consistent with political expediency (smokers are increasingly a minority, and most of them support a range of smoke-free rules anyway (Young, Borland et al, 2007)), and consistent with national jurisdictional structures (e.g. aggregated local/community levels in the US, State levels in Australia, and National level in Ireland).

Tobacco Coalition

The intrinsic nature of the tobacco industry itself is: a profit seeking oligopoly, selling an addictive substance – in a globalised, free trade environment. Its nature will mediate between the inputs (e.g. smoke-free rules, increased taxes), and its outputs, or actions in response to those decisions. The coalition is a dynamic entity. Some actors appear “welded on” (e.g. growers), and others have established convergence of interests (e.g. casinos). However others, like restaurateurs, have been known to align themselves with the tobacco coalition on the basis of a supposed convergence. As evidence has accumulated that restaurant owners do not benefit from allowing smoking, this alliance has broken down. The actions of the tobacco industry, driven by business imperatives, include promoting tobacco more vigorously using viral marketing, encouraging tobacco users to switch from cigarettes to other products that can be used in smoke-free environments, negotiating with governments to get more market space, “spinning” the science about second-hand smoke etc.

The industry is also directly influenced by the broader environment; they can take advantage of a neo-liberal trade environment to penetrate previously restricted/protected markets (e.g. the younger female market in Asia), but rising costs of medical treatment coupled to increasing death and illness places pressure on governments to constrain their activities. The industry has played a role in magnifying concerns about possible economic losses to employers, especially in recreational industries (e.g. restaurants, bars, gambling facilities), and has formed and bankrolled alliances with these groups to oppose regulation. Because the reality is that smoking bans do not have net negative effects on restaurant sales, and negative effects in bars appear to be limited to already declining sections of that industry (the old style, mainly male, drink-only culture), this alliance between the tobacco industry and recreational industries has tended to break down once the reality of bans becomes apparent.

Tobacco Control Coalitions

The Tobacco Control Coalition (in Australia) is characterized by: well integrated networks of researchers, advocates and (often) policy makers; the mobilisation of research evidence; experience in advocacy; State based organisation; and, the apparent ability to manage internal values tensions. Their activities are essentially reactive – responding to the actions of the tobacco coalition and the broader environment. The tobacco control environment exerts its influence through available funds, public support (existing tobacco control instruments, like bans on advertising, make it easier to advocate for, and promote, further instruments like smoke-free regulations), and the environment will further influence them through the level of competition for funding, philosophy of government (especially broad public attitudes to regulation) etc. The possible tobacco control activities include advocacy, quit-lines, nicotine replacement therapy, restrictions on promotion of tobacco and social marketing (e.g. public education). In the case of SFP, the tobacco control movement has adopted a range of strategies, from seeking complete bans, moving from no or limited restrictions in a single step, to accepting a stepped approach, whereby bans in places where opposition to restrictions is strongest are delayed until after the benefits in other places have been established. The choice may be dependent on the preparedness of decision makers to act.

Individuals

Individuals are the focus of the activities of the other sub-systems, either directly or indirectly. Humans are social animals, heavily influenced by peers and powerful social actors (e.g. celebri-

ties); have sophisticated cognition, which facilitates the acquisition of knowledge from their environment, their social networks and their leaders; and, have receptors for nicotine – enabling addiction. These elements of human nature are the only set of factors hypothesised to be unmodifiable, although the ways in which they influence tobacco use, can of course be altered. Their nature mediates other influences, e.g. their knowledge about tobacco, the financial costs of smoking, the level of support from their family and so on. The environment influences them via the prevailing culture of smoking, the level of economic activity, the association between cigarette smoking and modernity (Reid, 2005), their demographics (e.g. young people associate smoking with autonomy) etc. In addition, the nature and number of existing tobacco control measures (e.g. with respect to smoke-free regulations) will have a significant effect on their readiness to accept further restrictions on tobacco use (Young, Borland et al, 2007). People's possible responses to tobacco control decisions (like increasing the number of smoke-free venues) include reducing smoking, quitting smoking, finding out more about the effects of second-hand smoke, using non-combustible forms of tobacco/nicotine, changing their vote etc. In respect of passive smoking, smokers have an intrinsic tendency to oppose such rules because they restrict where they can smoke. However, as noted earlier, because they don't personally like breathing other people's smoke, and because they find compliance easy once bans are implemented, support from smokers tends to increase (Young, Borland et al, 2007).

The decentred model above provides an overview of the key relationships between the main actors in the tobacco domain. This provides one necessary prerequisite for understanding successes and failures of tobacco control. However, in order to provide guidance to the tobacco control community, we also require a model of how successful innovations have emerged from this community so that we can use the model to plan future successes, and in order to do this, the model has to be centred. From the perspective of the Tobacco Control Coalition, producing effective tobacco control instruments is a process of innovation that involves engaging with all the sub-systems in the framework. In the next section, we use the campaign for SFP to illustrate how this innovation process works.

THE PROCESS OF SEEKING SMOKING FREE PLACES

The model described in Figure 1, represents a systems perspective, and focuses on the strategic relationships between key actors in the tobacco domain. As such, it also deals with adaptation; i.e. what strategies (e.g. smoke-free rules) do members of the tobacco control coalition initiate, advocate for and/or implement, given their shared environment. The next model, described below in Figure 2, represents an Actor-Network perspective, and focuses on how a given strategy is pursued – how a successful innovation is produced. The innovation process represented by Figure 2, is based on Latour (1999, Pp 98-112). The development of smoke-free places will be used to illustrate how the model articulates the innovation process. The central core of the process is the developing innovation; smoke-free places. In Actor-Network parlance (Law and Hassard, 1999) this core is referred to as “links and knots” because it represents the set of relationships that first initiate the innovation, and then act to organise and hold in place all the activities along the four “loops” that reach out into the broader context. In the case of smoke-free places, the loops represent activities designed to link the core with four interdependent sources of power. The key elements of these sources are outlined below.

The Results of Scientific Research Relevant to the Issue

In Latour's original system, one loop is “mobilisation of the world”. This refers to the requirement to link with a whole range of non-human resources (e.g. non-tangible ones like authority, reputation, scientific evidence and supporting theories, as well as more tangible ones like grant money, survey forms, software packages, office space etc) in order to produce an innovation. To quote Latour (1999(b), p. 90) “all the means by which non-humans are progressively loaded into discourse”. In this case, the key “instrument” is scientific research because the coalition is both driven by, and drives, this endeavour. The scientific research loop includes not only the epidemiology that tells us “Second-hand smoke causes cancer” but also the behavioural/social science that tells us smokers have accepted this. By using this loop, scientific knowledge becomes part of the developing network that lies behind the innovation. At the same time, scientific statements are also loaded into

the discourse about the innovation, and the problem it addresses (e.g. “non-smoking bar workers are x times more likely to develop lung cancer”, “children of smokers are x times more likely to develop respiratory problems”, “most smokers want to quit”). Interestingly, in Ireland, which was actually the first country in the world to go completely smoke free, no primary epidemiological or behavioural research on the effects of ETS on the one hand, or SFP on the other, was carried out. However, it was able to mobilise the relevant parts of the global scientific literature; in particular, data from Australia, the USA and other similar countries was employed, because these countries were seen as sufficiently similar to Ireland for the results to be generalisable.

Institutionalisation (or Autonomisation)

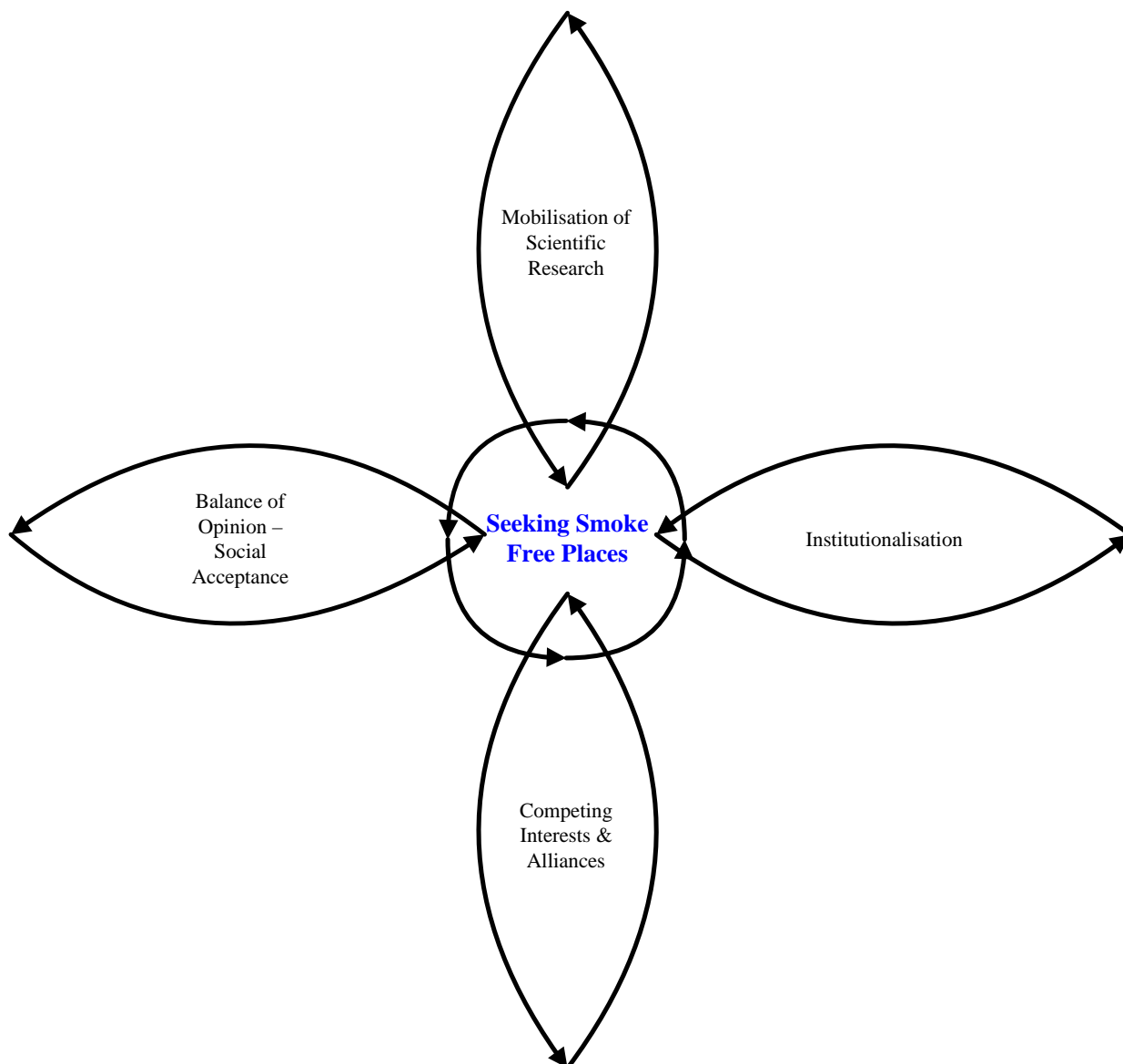
This refers to the process by which authoritative acceptance emerges (especially from colleagues and governments) that there is an issue which requires a solution. Such authoritative acceptance establishes autonomy for the issue by articulating it from the nebulous cloud of issues that are always competing for institutional recognition and support. Using this loop, the developing network that constitutes the innovation links itself with formal professional and government infrastructure. For example, on the one hand, the SFP strategy receives formal recognition/autonomy and support from almost all relevant professional colleges, associations and gatherings that have an interest in cancer and, on the other, governments support it, initially, through grants to research the effects of ETS/SFP, as well as through smoke-free regulations, laws and compliance regimes (eventually).

Ireland is a small, centralised, relatively homogeneous jurisdiction, which means that SFP could be effectively institutionalised, and introduced, at national level. In Australia, on the other hand, SFP was predominantly a State based initiative, reflecting the distribution of constitutional powers. In addition, acceptance of the problem can result in a one-step solution, as in Ireland, or in a progressive series of steps toward the same end, as has been the case in Australia, with progression from airlines and government workplaces, to most workplaces, to restaurants and finally to bars and clubs.

Competing Interests and Alliances

This loop describes the ways vested interests approach the ETS problem. Using this loop, the achievement of SFP becomes the focus of alliances that both embed that goal more broadly into society, and increase momentum toward the goal. Cancer Councils pursue it to reduce cancer, the Heart Foundation to reduce cardio-vascular disease, Medical Associations to reduce disease more generally. They form a natural alliance, which has been widely implemented. There are competing agendas; the tobacco industry fears reduced profits, and the hospitality industry fears a fall in patronage. The science showing the positive effects of SFP on restaurants is also used to make restaurateurs into allies, or at least be neutral, whereas they started out fearing the alleged adverse effects, in part due to fear-mongering by the tobacco industry. The science and evaluate demonstrating that most of the adverse effects would not, or did not, occur, thereby leading restaurateurs to loosen their ties with the tobacco industry. Following implementation, the experienced reality has also meant that there is rarely support for moves to roll back restrictions.

Figure 2: The Tobacco Control Coalition seeking smoke-free places



Public opinion and the social acceptance of the innovation

This loop is about gaining public acceptance both of the problem, and for the proposed solution; or, in other words, denormalising public smoking and normalising SFP. It can be argued that in generating high levels of public support for SFP, tobacco control coalitions successfully translated scientific discourse into popular rhetoric. This was achieved primarily through social marketing that focused on elaboration of the epidemiology (which is not immediately accessible to the general public), as well as by a synergistic relationship between the science that demonstrated positive effects and public acceptance, and the public’s matching experiences.

The pursuit of public support for SFP involved the use of three key channels: first, the use of the media for paid advertising and for unpaid comment and opinion pieces that keep the ETS issue and the SFP solution in the spotlight; second, advocacy activities targeted at opinion leaders and decision makers; and third, people’s positive experience of SFP and of the public response, in

other places or jurisdictions, dampened any fears they may have had about negative consequences and makes the positive consequences tangible.

Finally, it needs to be stressed that success in introducing SFP rules reflects strong positive feedbacks between all the loops (a so called “virtuous cycle”). Solid, well communicated, scientific results reinforced attempts to institutionalise and autonomise SFP (e.g. through taxes, grants and laws/regulations), which then made the formation of powerful cross-sectoral alliances more likely, (while weakening pro-tobacco alliances) and this enabled powerful public campaigns to be developed that gradually denormalised public smoking, which, in turn, stimulated more research etc, etc.

DISCUSSIONS AND CONCLUSION

The high-level framework and the innovation process discussed above have demonstrated that tobacco control is a very complex task, and the outcomes produced will not simply reflect the research that has informed the beliefs, actions and standpoint of the tobacco control coalition. This implies that there is no single, best practice solution to the problem of translating and mobilizing scientific findings into effective tobacco control instruments (i.e. programs, policies, regulations and advocacy initiatives). Many other political, cultural, behavioural, social and economic factors, mediate the relationship between the science and the decision-making processes that gradually design and enact the instruments. Nevertheless this framework has provided a solid foundation to address many current problems in tobacco control, especially the four classes of outstanding problems as we mentioned in Section 3. It has also provided a template for investigating the interactions among different interests and jurisdictions in order to work out possible solutions and, ultimately, achieve better results.

In order to progress this research further, we will: refine the two models above; articulate the four classes of outstanding problems defined above in more detail; identify quantitative techniques for understanding such a complex tobacco control system; and, use these techniques to model a wide range of problems in tobacco control. Members of the team have already used linear models (e.g. linear regression, logistic regression) and these models have been found to be fundamentally limited by their inability to account for the kinds of extremely complex feedback relationships that characterise most aspects of the tobacco domain. Change in many of the key variables like the culture of smoking, the formation of alliances, institutionalisation and even smoking cessation is clearly non-linear. In many cases it takes on the appearance of the kinds of change associated with “supercritical” or “catastrophic” systems. For example, as pointed out above, smoking cultures can change extremely quickly (catastrophically) without any indication that they are approaching a so-called “tipping point”. For many people, smoking cessation looks remarkably similar. In particular, we will be exploring the potential of Agent Based Models (e.g. fuzzy neural networks, fuzzy causal networks etc) to model such systems with the aim of extending our understanding of the underlying processes.

We will focus on investigating the relationship between inputs (e.g. enacted policies) and outputs (e.g., targeted policy outcomes), with the aim of providing evidence-based advice and recommendations to decision-makers. We are planning to use data collected from the ITCPEs project to model the effects of existing instruments on smoking, with the hope of better understanding their roles and limitations, so that we can better identify where new actions might be required. The analysis will cover the following topics:

- What is the impact of existing FCTC policies where they are implemented?
- How might FCTC policy impacts vary by country, region within country or demographic group?
- What factors enhance/diminish FCTC policy impact?

It will also cover the following aspects:

- Measurement of the impact of FCTC policies, including evaluation of existing policies;
- Use of the evidence to determine relative strength of FCTC policies;

- Use evidence to inform the creation of strong implementation of each FCTC policy; counteract disinformation and misinformation from the tobacco industry.

This work is a new step in assisting the development of a more effective set of instruments to control tobacco use, and more importantly minimise the adverse health effects of tobacco use. Working within the conceptual framework we are developing should also help the identification of the kinds of information that are likely to facilitate progress, and to identify the kinds of issues that are likely to cause tensions and resistance to potentially effective actions.

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