

# Policy Annoyance

## *How Policies Shape the Experience of Aircraft Sound*

How do people get annoyed about aircraft noise? The sound itself is often assumed to be the main cause. Christian Bröer shows in a recently finished PhD research that there are other sources of annoyance. Noise policy itself clearly influences the way we perceive aircraft sound. The same aircraft sound is experienced differently in The Netherlands and in Switzerland. This is not caused by general cultural differences. The differences in perception can be explained by differences in the noise annoyance policy. Noise complaints, for example, are strongly shaped by the political opportunities and the workings of the complaint agencies. The article concludes with some suggestions for noise policies in the future

By Christian Bröer

### Introduction

Air mobility nearly spans the entire globe, and, at the same time, it has a highly localized impact wherever it touches the ground. Conflicts about noise annoyance surround airports in many countries, and influence airport developments. It seems evident that increasing noise levels lead to increasing annoyance among airport neighbors. However, noise annoyance research has consistently shown that sound pressure in and of itself does not sufficiently explain noise annoyance. Statistically, about 1/3 of the annoyance reaction can be explained by the sound levels (Miedema and Vos 1999). Equally important are so-called non-acoustical factors: distrust towards authorities, anxiety and the idea that one cannot control noise, increase annoyance (Job et al. 1996; Fields 1993 and 1999; Stallen 1999; Van Kamp et al. 2004). Citizens who distrust politicians, experience aircraft sound to be more annoying, which in turn strengthens distrust (Bröer 2002). People experience the same sound in different ways, and it seems that in Western countries today the same sound is experienced as more annoying than forty years ago (Bröer and Wirth 2004; Guski 2003). In sum, our understanding of how annoyance comes about is insufficient. Sound exposure only partly explains noise annoyance and there is

reason enough to consider whether political processes contribute to the perception of sound as a problem.

### Comparative Research

In this research (Bröer 2006), I take a step back from traditional statistical analyses of noise annoyance and focus on what people really mean when they talk about annoyance. The study searches for the influence of policy on people's experience of aircraft noise. If policy influences the perception of aircraft sound, we should see that people experience sound differently in different political contexts. Therefore, I have compared two cases that are similar in many respects, but that have different noise policies: Amsterdam Schiphol and Zurich Kloten. Part of the research has taken place in areas with similar noise levels (53 dB(A) Lden). Both cases comprise material about the policy process (policy documents, pre-material, web-pages, interviews and participant observation) and contain material about personal experience (89 semi-structured interviews, 250 noise complaints, 148 letters in major newspapers and 29 public enquiry statements). First, I investigated how noise annoyance is defined politically. I paid most attention to those definitions that are supported by the government, industry, science and social movements at the same time. Next, I



have researched if these broadly supported definitions are shared by people in everyday life. Within personal material, all parts in which people describe annoyance were singled out. Following, I have analyzed what arguments people use to support the statement that aircraft sound is or is not annoying. This is done in part with qualitative analysis software (Atlas.ti), which led to more than fourteen hundred coded segments. These arguments were clustered into types. I have searched for the policy definitions within these personal arguments and for references to policy processes and actors. In the following two paragraphs, I present a summary of the noise definitions in policies in Amsterdam and Zurich and the way people react to that.

### Different Policy

Aircraft sound became a policy problem during the 1950s in both Amsterdam and Zurich. In

Amsterdam, airport planners and policy makers raised the issue and turned to scientists for estimates of future annoyance. Only afterwards, politicians, the media, and eventually citizens, began voicing concerns about noise exposure. Citizens were more important from the outset in Switzerland. However, their concern has been swiftly incorporated into established policy processes. Politicians, industry and experts dominated and continue to dominate the policy discourse in both cases.

A strong trend argument is visible in both cases. Early on, politicians and industry presented the growth of air mobility as a necessary trend and as part of vital global competition. They suggested that national history is intertwined with the (air) transport sector. Government and industry presented air transport development as a natural process that is inevitably heading towards growth. This argument covered up political decisions that made the economic development possible in the first place. The trend argument was hardly challenged in the past and remains almost unchallenged today. The trend argument became dominant partly because it was institutionalized in science. Scientists have worked out noise annoyance criteria that incorporated this trend argument. Noise limits, for example, include the political choice to accept noise annoyance to a large degree. While contours might temper further sound exposure, they allow for and legitimate massive exposure at the same time. Politicians can legitimate noise policy with reference to science-based criteria.

Next to these similarities we find differences in the way aircraft noise is regulated. In The Netherlands, noise is defined as a spatial problem, which can be solved by central spatial planning policy, noise limits for wide areas and expertise. From the 1980s onwards, the planning approach became mixed with ideas from ecological modernization. Annoyance developed into an environmental issue, which mobilized national environmental movements. Ecological modernization led to a new, positive-sum logic: a promise from policy-makers to expand the airport and alle-

viate noise exposure at the same time. Following the Dutch policy concepts, I have termed this the “mainport and environment” definition of noise annoyance, which became dominant from the 1990s onwards. During the 1980s and 1990s, the Dutch government also attempted to get more citizens involved in the policy process and created a contradictory situation: noise policy is still based on expert knowledge, standardized annoyance reactions, central planning and a passive population. But the process itself mobilizes social movements, people and their own judgments.

**Table 1: Noise policy in Amsterdam and Zurich**

	<i>Amsterdam</i>	<i>Zurich</i>
Main idea	Mainport and Environment	Distribution
Policy approach	Ecological Modernization Spatial Planning	Federalization
Definition of annoyance	Environmental problem Planning problem Objective	Distribution problem Threat to local life / “Heimat” Subjective
Solution	Solution possible Limits Contours	No solution possible Flight paths Number of flights
Level of policy	National	Regional

In Switzerland, politicians and industry regulate aircraft noise in a federalist way and defined annoyance as a distribution problem. Local, regional and national governments have a say in this process, with an emphasis on the regional government (the “Kanton”). Citizens are repeatedly involved in airport policy through referenda. In Switzerland, “distribution” became the leading idea about aircraft noise at the end of the 1990s. The liberalization of civil aviation led to more lenient noise abatement policies in Switzerland and the Kanton pleaded for new flight paths under the heading of distribution. Aircraft noise became redefined as something that can be distributed differently between local communities. A debate about “solidarity”, “democracy” and local living conditions followed. Aircraft movements and flight paths became the defining characteristics of noise in the public debate. This is in contrast with The Netherlands, where annoyance is primarily defined as an acoustic noise load in large areas. The distribution policy of the local authorities coincided with a regional consultation process, new legislation, a conflict with Germany and the spread of information on possible flight paths

by the airport. The possibility that aircraft movement might be distributed differently in the future alarmed many neighboring communities and citizens. Shortly, citizens formed many new activists groups. The ensuing conflict even undermined existing consultation bodies. Noise seemed to threaten local communities or, as they say in Swiss German, “Heimat”.

In sum, the same aircraft sound is dealt with differently in Amsterdam and Zurich, as indicated by the table. In the following paragraph, we will see how citizens react to those policies.

### Different People

Contrary to the acoustic definition of noise annoyance, people actually make aircraft noise meaningful in everyday life. They have ideas about flying, economy, politics, local life and relate the sound to those ideas. People evaluate sound not primarily on its loudness, but on its meaning. The research shows that this meaning has a clear pattern. Policy is a defining feature of personal noise experience in four ways:

1. People explicitly refer to policies when they talk about annoyance.
2. People use the definitions of the policy.
3. People struggle with the policy.
4. The definitions of the policy influence the level of annoyance.

These four points are explained below.

First, politics and policies are a major issue when people talk about aircraft sound. Even when explicitly asked to judge the quality of the sound, people switch to the quality of the policy. I found more than a thousand expressions during interviews, in letters and complaints about noise annoyance, of which forty percent are about the pol-

icy of government, industry and social movements. Hearing noise means evaluating policy of these parties.

Second, people regularly use the language and the logic of the policy. In The Netherlands, for example, people describe noise as an environmental problem, roughly the same as the Dutch policy does. In Switzerland, noise is very rarely seen as an environmental problem, because it is not defined as such politically. Swiss people, however, mention local living conditions more often, which is in line with the debate about distribution and the perceived threat to the native area. Noise complaints show how the dominant policy practice structures noise annoyance. The content and amount of complaints follow the policy. People adjust their complaint behavior to the complaint agency. Dutch people hand in almost a million complaints every year, while Swiss people file just several thousand complaints. But the Dutch are not more plaintive than the Swiss. They have been stimulated to complain in several rounds on policy consultations. Furthermore, the complaint agency offered the possibility to file every single aircraft as a new complaint, which leads to mass-complaining by some citizens. Complaints are thus a product of policy.

Third, people struggle with dominant ways of defining noise annoyance. People adopt parts of the language of the policy and go against other parts. This explains that we find different conflicts in both cases. The conflicts are partly structured by the different policies. A case in point is the “local resistance” in Switzerland, which is characterized by a perceived threat to the community. This threat justifies a militant opposition, which, since 2003, has actually led to instances of violent action by citizens. The local resistance seems to be far removed from the dominant policy. But it actually builds on it because people are invited to be concerned about noise in



Photo 1: *Protesting against new air routes over residential areas*

their community in distribution policy processes. Local resistance is an exaggeration of the ruling policy.

Fourth, the policy influences personal noise experience through the level of annoyance. People, on average, reported a higher or lower annoyance, depending on the definition of annoyance. This statistical correlation merits further research, since I could only trace it in a limited number of cases.

### Conclusion

Aircraft noise annoyance can only partly be explained by the sound level itself. Non-acoustic factors, like fear or trust, add to our understanding of this. There is enough scientific evidence to conclude that non-acoustic factors are just as important as the sound itself. Non-acoustic factors are not given, however. Citizens are not born with trust or fear. People develop distrust and there are signs that political processes influence people’s perceptions. Therefore, I have broadened the investigation and asked if specific policies shape peoples understanding of aircraft sound. This is clearly the case. People point to the

Photo 2: *Applauding the arrival of the new Airbus A380*



policies themselves when they evaluate the sound. They use political language, struggle with politics, and are more or less annoyed, depending on the definition of noise which they develop in political processes. The variety of noise perceptions in 516 personal documents can largely be understood as a reaction to the political definitions of aircraft noise annoyance. In many ways, people use the definitions of the policy or struggle with it. Rarely, I found people that were unaffected by it. In Switzerland and The Netherlands, noise annoyance is defined and regulated differently. Therefore, Swiss and Dutch people experience the same sound in a different way. Through policy, communication, consultation and research people develop ideas about sound and expectations about future exposure. They evaluate aircraft sound as part of their relation with politicians, industry and social movements.

How might this be relevant for further research and policy? Unfortunately, there is no straightforward political answer to the current annoyance problems. First of all, as this research demonstrates, people incorporate policy into their daily life. Every new policy, therefore, influences people in a partly unpredictable way. Second, there are no clear-cut scientific measures to determine how much noise is too much noise. This is, in large part, a political and normative decision. Third, policy, as it is defined here, is much broader than a set of measures. Government, industry, sciences, and sometimes even social movements, share definitions and practices which shape our everyday understanding of aircraft sound. These basic understandings are hard to change, much like a culture.

Having said that, there are possibilities for policy that incorporates recent insights into the origins of noise annoyance:

First of all, redefine annoyance. If the protection of citizens against annoyance is a major goal, the experience of citizens has to be the major part of the annoyance definition because annoyance is what people experience as such. I have not defined annoyance here, but I have showed how people adopt political definitions in everyday life. There are no evident definitions, since the main question is a political one: how much annoyance do we want to accept?

Second, make dose-response relations less important. Dose-response relations predict the amount of annoyance (response) based on the exposure to sound (dose). These calculations are one of the main policy instruments. In the future, they will be of less and less importance. Already, in many cases, the annoyance is above the level predicted by the dose-response model. Instead, one has to investigate further the processes in which sound is turned into a specific problem in everyday life. So, one might develop policy which addresses noise as it is experienced and defined by people. The number of people that reports annoyance is a much more straightforward and reliable measure for policy than sound pressure levels.

Third, criticize taken-for-granted assumptions. Often, the growth of air mobility is presented as a necessary trend. But we do have a choice, at least in highly developed countries. Freezing the growth of a major airport for a couple of years would signal to airport neighbors that their concerns are taken seriously. This might also be reversed: instead of taking annoyance more seriously, one might ask politicians to speak out what has already been agreed upon: that we have to accept annoyance on a large scale.

Fourth, solve contradictions in the current policy. For example, people are asked to participate in the policy process and asked to form an opinion. At the same time, acoustic measures, contours and limits are unable to address the personal involvement of citizens.

Lastly, a measure that works in a different country or region will not work

automatically in your case. As the cases discussed here show, every measure is embedded in a specific policy tradition. One might investigate which measures work under which circumstances.

Finally, one has to ask if noise annoyance should be addressed as a single political issue. As this research shows, people relate noise to other issues as well. This opens up the possibility to connect noise to issues like global warming, consumption critique, local autonomy and democratization. Policy not only addresses issues, it defines and shapes them too. Under democratic conditions, the process of problem definitions should be democratized as well. The future of noise annoyance research and policy depends on new ways of addressing this issue.

### References

Bröer, C. 2002. 'Sound, meaning and politics, The social construction of aircraft noise annoyance'. *Revista Acustica*, official publication of the Forum Acusticum

Bröer, C. 2006. *Beleid vormt overlast, hoe beleidsdiscoursen de beleving van geluid bepalen* (policy annoyance, how policy discourses shape the experience of aircraft sound). Amsterdam: Aksant.

Bröer, C. and Wirth, K. 2004. 'Mehr Belästigung bei gleichem Pegel, Wieso Flugzeuggeräusche heute möglicherweise lästiger sind als vor 40 Jahren'. *Zeitschrift für Lärmbekämpfung*: 118-122.

Fields, J.M. 1993. 'Effects of personal and situational variables on noise annoyance in residential areas'. *The Journal of the Acoustical Society of America* 93: 2753-2763.

Fields, J.M. 1998. 'Reactions to environmental noise in an ambient noise context in residential areas'. *The Journal of the Acoustical Society of America* 104: 2245-2260.

Guski, R. 2003. 'Status, Tendenzen und Desiderate der Lärmwirkungsforschung'. *Zeitschrift für Lärmbekämpfung* 49: 219-232.

Job, R.F.S., Topple, A., Carter, N.L., Peplow, R., Taylor, R. and Morell, S. 1996. 'Public reactions to changes in

noise levels around Sydney airport' *Internoise 1996*. Liverpool.

Miedema, H.M.E. and Vos, H. 1999. 'Demographic and attitudinal factors that modify annoyance from transportation noise'. *Journal of the Acoustical Society of America* 105: 3336-3344.

Stallen, P.J. 1999. 'A theoretical framework for environmental noise annoyance'. *Noise and Health* 3: 69-80.

Van Kamp, I., Job, R.F.S., Hatfield, J., Haines, M., Stellato, R.K. and Stansfeld, S.A. 2004. 'The role of noise sensitivity in the noise-response relation: A comparison of three international airport studies'. *Journal of the Acoustical Society of America* 116: 3471-3479.

### About the Author

Christian Bröer is assistant professor of sociology at the University of Amsterdam in The Netherlands and member of the Amsterdam School for Social Science Research, which financed this research. He can be reached at [c.broer@uva.nl](mailto:c.broer@uva.nl), or University of Amsterdam, Department of Sociology and Anthropology, O.Z. Achterburgwal 185, 1012DK Amsterdam, The Netherlands, ++31 (0)20 5252238. His thesis is recently published and can be ordered at Aksant publishers ([http://www.aksant.nl/boeken/boek\\_558.asp](http://www.aksant.nl/boeken/boek_558.asp)).

This is the first of two articles. The next article, in *Airlines Magazine* Issue 38, will focus on the current research projects of Christian Bröer

**Photo 3:** Cover of Christian Bröer's doctorate thesis "Beleid vormt overlast"

