Sound, meaning and politics
The social construction of aircraft noise annoyance

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ABSTRACT

Humans produce sounds and they hear each other's sound. What is seen as noise, how much noise can be tolerated and who is allowed to produce the din, is not given with the sound itself. Aircraft noise annoyance is in part a social construction. Not so long ago, aircraft sound was highly regarded. These days, it is often linked to annoyance. The meaning of aircraft sound has changed. Growing noise exposure has contributed to that. But the growth alone does not account for irritation. I assume that the way we deal with annoyance politically has contributed to a change in perception. Noise policies, social movements and regulating institutions influence the way in which we think and feel about noise and annoyance. In the political process a definition of a problem emerges and is spreads. The public will adopt it, reject it or modify it. Policy measures and institutions shape private perception as well. If Swiss citizens are allowed to vote for or against public financing of Swiss airline in a referendum, this creates a sense of control. This feeling of control inhibits part of the annoyance. If, on the other hand, neighbors of London Heathrow, Frankfurt Airport or Amsterdam Schiphol get dissatisfied with their role in the policy process, this contributes to misfeasance and annoyance.

In this paper I am focusing on the political context in which aircraft noise annoyance is defined and regulated. Hopefully, this contributes to a better understanding of noise annoyance. Furthermore, it might reveal some of the reasons why current noise policies often seem so ineffective. To analyze the interplay between political context and private troubles, I will conduct a comparative study. Two neighborhoods with the same noise-exposure in the Netherlands (Amsterdam) and Switzerland (Zürich) are compared. The hypothesis is, that the difference in political context, leads to differences in the kind of problem people have. The political context also might explain why, given the same exposure, Swiss citizens seem to be less annoyed than Dutch. At this moment, data are generated. Therefore, in this paper I will focus on the conceptual framework of my research.

INTRODUCTION

Airplane engines are technical and at the same time a sign of democratized mobility. Not so long ago, birds, wind and church bells were the keynotes of the sky. When the airplanes took over, they were greeted as a sign of progress. We admired that technical representation of human power so much, that we held our breath. Today, air-transport still has these positive associations. But the downside is much more emphasized now than it was 40 years ago. Since the nineteen fifties, annoyance, pollution and risks are often debated. A large number of citizens utter annoyance in questionnaires, letters, complaints and protests. Although noise policies have become tighter, protests, complaints and annoyance are rising. The attention for aircraft

noise more or less goes together with an increase in noise exposure. But noise exposure alone, as we know, does not account for all of the annoyance fully (Schultz 1978, Schick 1997, Miedema en Vos 1998). The amount of sound and its meaning have changed. For this reason I want to focus on the social construction of meaning to better understand and explain aircraft noise annoyance.

The approach to aircraft noise annoyance that I present here is part of my PhD project. I see humans as meaning making creatures. We fill our daily life with meaning and that meaning, at least partially, guides our conduct. Humans form meaning in interaction. Often, private emotions and public concerns are intertwined. In this study, I want to focus on the interplay between individual annoyance and the political context. The same policies, legal regulations, social movements, protests and agencies that are meant to regulate annoyance, have contributed to a change in the meaning of aircraft sound. Noise policy is not only a reaction to an existing problem, it is at the same time a domain in which trust, control, community and problem definitions are brought about. There are even indications that the way noise is regulated is a source of annoyance in itself (Schuemer and Schreckenberger 2000, Schreckenberger e.a. 2001).

In this paper I will start with a general model for noise annoyance. In a second step the construction of meaning is pointed out. Next, I will single out the political context. Further, I will describe the setup of my own PhD research. I will end the paper with a short comment on the possibilities of this approach.

1. THREEFOLD ANNOYANCE

In a long-term historical perspective, even more human sounds spread over an even larger part of the world. The balance between human sound and non-human sound – now often called silence – has changed. For most part of history, human sounds have been restricted to settlements that covered only small areas of the world. From enclaves of human sound, we have arrived at enclaves of silence in most parts of the world (Schafer 1994, Bailey 1996, Bijsterveld 2001). Silence now is something that has to be brought about and protected socially. Humans order the soundscape and noise is defined as a sound that is out of place. Certain areas are defined as silent. But not all humans define silence, noise and annoyance the same way. People fight for the control over the soundscape.

Aircraft noise intrudes into socially constructed silences. In the first fifty years of aviation, this was hardly a problem. The sound of aviation induced admiration and fantasies of luxury. On Sundays, people flocked to airports to find out about the extravaganza of the jet set. In the sixties, Amsterdam Airport Schiphol was the largest tourist attraction in the Netherlands. It attracted about one million paying visitors a year (Dierix and Bouwens 1997). These days, aviation is much less a sign of progress. At least, it is now strongly debated. Annoyance has become an accepted social problem.

This brief sketch introduces social processes as a contribution to the rise of annoyance. The most common explanation for noise annoyance is the exposure to an acoustic dose. The acoustic dose accounts for part of the annoyance measured in surveys. Individual characteristics like fear or control are often added to this. Mostly these are represented as a moderator variable (Stallen 1999, Guski 1999, Miedema and Vos 1998). Common social variables, like income, education or age, are investigated partly, but contribute only little to a variance analysis (Miedema and Vos 1998). Still, it is obvious that social factors play a role. Let me give another example. Most noise researchers have probably had the following experience: When one tells a friend or family about noise, in the next conversation they report a heightened sensibility towards the subject. This transmission of attention can be observed in a long-term perspective as well. The subject of noise annoyance as we know it today, has been spread by members of the cultural elite. In western Europe and the United States, writers, poets and scientist were the first to raise attention to noise annoyance at the end of the nineteenth century (Bijsterveld 2001). They complained publicly and set up political organizations and scientific associations. Public complaint, political action and scientific inquiry were intertwined from early on. Social movements, acoustic research and noise policies contributed to a greater awareness

among the general public. The public in return demanded more political measure, backed up by social movements. This figuration of governments, social movements, citizens, researchers and aviations industry is more or less in operation since the last forty years.

Obviously, acoustic, personal and social factors are operating when someone is annoyed. To combine these conceptually, I will start with the 'triad of basic control' by the sociologist Norbert Elias (1991). Humans, in his view, always have to find a way to deal with their own impulses and needs, their relation with others and with their non-human environment. These three forms of control are intertwined. Noise annoyance in this model is caused by acoustic, personal and social factors alike. The acoustic load is produced socially, by joint human action. Society is an ensemble of individuals who derive their individuality from living together in a specific way. Humans expose each other to aircraft noise. We react to a stimulus, partly moderated by personal traits. But the reaction is not given, it is learned and it depends on the way we appreciate the ones that expose us to the noise.

Figure 1: a general model for noise annoyance
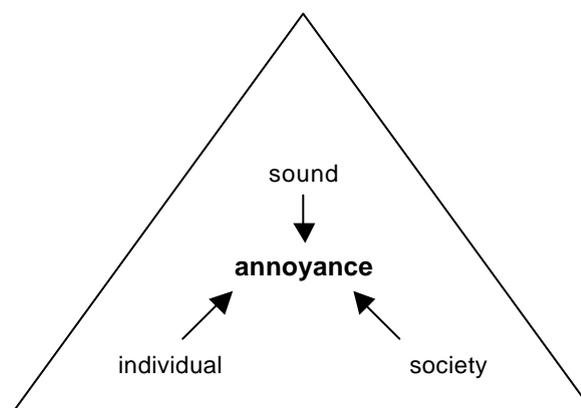
This model shows us that, whenever we focus on a specific explanation, we should be aware of possible interconnections. It directs attention to the relationship between the different aspects. Because I cannot address all possible interconnections, I will focus on the individual interpretation of noise in the context of noise policies, social movements and institutions.

2. THE SOCIAL CONSTRUCTION OF MEANING

We know a great deal about the dose effect relation and annoyance. Annoyance is described as a response to an acoustic stimulus. We know a lot about personal factors as well. Social psychology introduces moderating variables, response bias or non-acoustical factors that channel, shape or transform the response. In this perspective, annoyance is still a response, although a moderated one. Some authors reject this response assumption (Laucken and Mees 1987, Schick 1997). Humans actively construct annoyance. Sound is nothing but a possibility. It is up to the individual what is done with it. In several projects researcher from Germany and Japan have combined this highly individualistic model with a cultural analysis. The analysis of complaint letter showed clearly that annoyance judgments are embedded in judgments about every day life in many ways. A comparison with letters from Hong Kong (Schick and Höge 1996) showed cultural differences between the arguments. One can use this to approach annoyance. But the theory is too rigid in its constructionist premises and too individualistic. Humans construct annoyance, but not every construct is equally possible. The actual meaning is constrained by acoustics in the first place. With an increase in loudness, the variety of possible meaning decreases. The construction is not random or individualistic. Meaning is constructed in interaction. Interacting humans restrict each other. Often, groups or institutions try to put forward their definition of the situation. Interaction takes place in a social context and often leads to social conflict. Furthermore, the approach uses an out-of-date view on culture. It is hardly convincing that all Germans, for example, share the same culture. Old and young, male and female, rich and poor differ noticeably in this respect. Culture is changing and flexible.

Reaction to noise is only partially the outcome of a broad cultural background. The reverse can also be true: communities create meaning as a reaction to noise and noise policies. Culture is the outcome of a struggle around annoyance. Community protest often rises as a response to policies, such as new runways or noise regulations. In that protest, the way annoyance is defined and regulated is often a source of conflict. Communities are shaped in the course of the conflict (Hajer 2002, Van Gunsteren 1999).

These thoughts can be summed up in the following way:
- Humans are meaning making creatures. We react towards the surrounding world and give meaning to it.
- Meaning is not given with the object: it is symbolic.
- How we see things, guides how we act towards them. When aircraft sound is a symbol of progress and status, we will, at least occasionally, listen with pleasure. If the same sound dose is viewed as pollution, we will try to avoid it.
- There is a great variety of connotations of aircraft sound. Annoyance is one of them.
- The variety of possible meanings is restricted by the noise load and interaction in a social context.
- The construction of meaning is an interactive process. In interaction, power differences, interest and culture play a role. They affect the meaning making process and can be an outcome of it.
- Politicians, noise annoyance policies, social movements and air-transport industry try to influence the understanding of what annoyance is and how it is best dealt with. Even scientific practices are not neutral, when an issue is debated in public. Every scientific approach favors certain definitions of annoyance and leaves out others.
- Every definition of the problem gives a certain social position to the parties involved: who is responsible, who has caused the problem, who has to solve it? A struggle around definitions, therefore, is always a struggle for social positions.
- Political and scientific annoyance definitions often go together with certain ways of regulating and measuring annoyance. In these practices, again, annoyance is defined in a specific way.
- People react towards the definitions and regulating practices. They can adopt the (implicit) definition, the can try to modify it, or reject it.

3. THE POLITICAL PRACTICE

The political field obviously consists of diverse governments. Important is the way they implement policies and the way citizens are involved in this. Social movements often are part of the political field as well. They offer alternative ways of defining and solving the problem. Through this, social movements also can generate a sense of control.

Trust and control can be generated by the way a political system operates. The Swiss political systems allows for more direct political influence than many other countries. Citizens around Swiss capital airport Kloten, have the chance to stir aircraft noise development through referenda. This, I assume, creates a sense of control. In the Netherlands, in the area around Heathrow or Frankfurt, the political process might have the adverse effect. Lengthy consultations, inquiries and round-tables often lead to a trade off between interests. Many citizens were disappointed by the actual outcome. Growing misfeasance, uncertainty, negative expectations and rising annoyance might be the result.

The specific way a political system operates, also defines the position of the different parties. A quick look at complaint letters from Switzerland and The Netherlands reveals interesting differences. Swiss citizens actually do not complain openly, they demand an explanation. This is very much in line with the idea that citizens are the rulers of Swiss democracy and the practice of public control. In the Netherlands, complaint letters are full of anger and frustration. Noise, noise regulations and policies are attacked at the same time. Writing a letter presumes, off course, one has at least some influence and actually the writers try to bring forward arguments to change noise policy. But at the same time, they are very pessimistic about the effect of their own letter. In the last ten years, the number of complaints has risen from several thousands to 250.000 in 1997 (CGS 2001). The political impact of complaints has declined since then. People

know this, refer to it in letters or stop complaining. To little surprise, the number of complains has dropped to 170.000 (annual reports of the complaint agency). Swiss citizens seem to disagree much less about noise policies and regulating practices. The way the political system works is implied in a positive way: they are more or less satisfied with it.

Policies and the way they are implemented influence the definition of the problem. Every definition is selective. Annoyance is defined mainly as an exposure response relation. Current noise policies do not allow for many 'non acoustical factors' to enter the definition. Citizens can and often do accept that. One can also use the argument for own purposes, hiding a different definition. Often, moderate social movements do this. They stay more or less within the framework that is set up by the government. Within that framework, they try to move towards adjustment. Another way of dealing with the political definition of the problem would be to engage in a conflict about it. Many citizens who complain often do this. They criticize the current definition while complaining about noise. Those who stay within the ruling framework are often very well aware of policies, procedures and definitions. They try to become professionals and beat the noise experts on their own terrain. Citizens who engage in conflict, are often semi-professionals as well. Although they are highly dissatisfied with the definitions, they learn about it to attack it. Maybe, this is instrumental at some points in time. In the long run, it will change the content and magnitude of annoyance.

Altogether, the way annoyance is defined can be taken over by citizens, can be modified or can be attacked. The same possible interactions exist with regard to the way annoyance is regulated. Noise contours, the way complaint agencies work and the position of citizens in the policy process, for example, can be adopted, modified or rejected by community members. The way a complaint agency works, for instance, allows for some complaints and excludes other. If one wants to complain about flights from Schiphol, the agency will always ask for the exact time of the disturbance. Some neighbors feel and report they are constantly disturbed. This would be recorded as 1 complaint. If one reports annoyance between, lets say, 11 am and 4 pm, this is registered as two complaints. Many people know this procedure. Some started keeping record of the actual time when a plane flew over. In this way, the attention is focused even stronger on aircraft movements. Some citizens have become a bookkeeper of their own suffering. The bookkeeping practice, stimulated by the complaint procedure, has generated up to a thousand complaints per person a year.

4. NO STEADY STATE

A couple of moderators for noise annoyance are frequently discussed (Guski 1987 and 1999, Schick 1997, Miedema and Vos 1998, Stallen 1999). Control, fear and sensitivity prove to be related to annoyance. However, these are too static and timeless factors. For example, recent terrorist attacks probably changed the kind and the intensity of fear of an airplane crash. Control is a mixture of experience and expectation that changes over time. It might be argued that in the western world, we demand and expect a great amount of control. In addition, control is intertwined with trust. One might personally want to control aircraft noise or trust others (politicians, social movements, businesses) that they will behave in an appropriate way. Do citizens trust governments, companies, agencies or social movements? Or, more general, how do those exposed to aircraft sound value and view those involved in the production and regulation of noise?

There are even indications that the evaluation of the political context influences the scale of the annoyance. Schuemer and Schreckenberger (2000) have reviewed literature on the effect of changes in sound exposure and researched this. In many countries, air-traffic is continuously growing. This increase is almost always part of a political planning procedure that often takes years. Planning involves noise contours, flight path regulations, noise limits and land-use procedures. In most cases, once a planning procedure is rounded off, the next one is already starting. What happens to annoyance when the noise load is increases? Most reports state an overreaction. The annoyance in the new situation is higher than in a stable situation with the same noise dose. This works the same way when the sound level decreases. The new level of annoyance is lower than would be predicted on the basis of a steady state response. Furthermore, there are strong indications that the expected growth of the noise load increases

the present annoyance. People get more annoyed even *before* anything has changed at all. (Job 1996, p.2424). This anticipating effect is of special interest to the common situations of long-term planning, gradual growth and uncertainty. This might push sensitivity and annoyance beyond usual dose-effect rates.

Under steady state conditions, there seems to be a relation between annoyance and trust in authorities (Schuemer and Schreckenberger 2000, Schreckenberger, Schuemer en Moehler 2001). If one beliefs that the noise could be lower, but authorities do nothing to achieve this, annoyance increases. This effect is more pronounced under changing conditions. This anticipation effect goes together with misfeasance. Citizens who mistrust authorities expect higher annoyance, and this prior mistrust correlates with the actual annoyance *after* the changes in the acoustic environment. If one mistrust authorities, one fears more annoyance and gets more annoyed in the end. Although this is not investigated directly, in long-term change situations, a circle of mistrust, expectations and annoyance might be in effect.

In dose-effect research the noise exposure is assumed to be steady. Such a steady state is rather the exception than the rule, due to the constant increase in air-traffic. But what is more important, citizens react on the basis of the expectations of a noise levels. A so-called steady state is only steady as long as people assume the noise load will not change. It is a state in which citizens trust political, scientific and business actors when they say that the noise will not increase. Experiences with trustworthiness enter annoyance judgments. Steadiness is a social evaluation.

Expectations and trust are one way in which private trouble and public policies are interwoven. This can be made more substantial by investigating the interaction between citizens and authorities. Which items are at stake? What is debated, how, by whom and with which results? Which conflicts have lead to misfeasance? How do citizens evaluate the planning procedures? Noise policy itself can be seen as a domain in which trust is gained and lost. An increase in air-traffic or noise dose might be viewed as a sign that authorities do not care about ones interests. Noise policies then are viewed with suspicion. Some citizens might ask for stricter regulations. This works the other way around as well: citizens who mistrust the authorities will constantly fear that noise is increasing and because of that they will report higher annoyance. This can lead to more demand for better regulations. However, this does not have to be strategic behavior. Even after many years, overreaction is still present (Schuemer and Schreckenberger 2000). Job and colleagues (1996) have presented evidence for a permanent change in attitude towards the noise under changing conditions.

5. A COMPARATIVE METHOD

Before I round off this paper, I briefly want to present some details of my PhD research. If the political context is of influence, different contexts should lead to various types of annoyance. That is why I use a comparative method. Amsterdam Airport Schiphol (The Netherlands) and Zürich Kloten (Switzerland) are the main cases. I will study the way noise annoyance is defined and regulated politically and individually and how they are interrelated. In both areas, I will focus on residents that are exposed to the same noise dose. These are interviewed open and in-depth. As a second source, complaint letters will be analyzed. The political context will be researched in two ways as well. Policy documents and interviews with key informants will provide an overview. More specifically, I will use reactions to public inquiries. These are written to government agencies in a planning process and suited to construct a model of the political field. All persons and institutions that try to have political influence write these letters. This part of the research will provide qualitative data. Some of these can be transformed into quantitative data, allowing for some descriptive statistics. Modern software for qualitative analysis is well suited for this. For quantitative testing, a very short survey will be held, as soon as relevant subjects can be singled out.

CONCLUSION

The general model I introduced in the beginning accounts for acoustical, psychological and social explanations alike. I emphasis the interplay between the political field and the individual reaction. The kind of question that is addressed here leads to a scientific method that is not common in annoyance research. I concentrate on the character and dynamics of the problem, rather than the quantitative distribution. The quantitative and qualitative approaches do not exclude one another. The statistical evidence for non-acoustical factors leaves room for a social construction approach. The findings might contribute to a reduction of variance in dose-effect curves. A hypothesis might be, that annoyance scores are higher than average whenever noise policies are openly debated for a long time. This opens the possibility to relate complaints statistics to annoyance scores. I assume that extreme numbers of complaints go together with heightened annoyance.

Looking at the political contest might contribute to a better understanding of noise annoyance in general. Hopefully, this sheds light on the question why noise policies are often not effective in reducing annoyance. The acoustic model implied in most policies might not relate to the way citizens experience noise. Then, more communication is no solution, because the model and the policies themselves raise suspicion.

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