

Path Dependence of the Language Transfer Technique for Foreign Films in the German Cinema Market

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Abstract

Consumers in the German cinema market are rigid with respect to the language transfer format they demand. They are habituated to dubbing and largely refuse subtitling. This is because switching the language transfer format implies that costs have to be borne in the form of accumulation of a stock of subtitling-complementary consumption skills. Subtitling would be more preferable from the perspective of the film distributors for economic reasons, but they are bound to consumers' preferences. Also with respect to Germany's population's foreign language skills and the cultural diversity in the cinema market dubbing constitutes a potential inefficiency. The origin of the Germans' habituation to dubbing is identified in the historical circumstances in the late 1920s beginning 1930s when sound film was introduced. These early conditions were propagated by self-reinforcing and stabilising mechanisms such as habituation, learning-by-doing, and the introduction of TV and Video in the language transfer format complementary to the population's consumption skills.

Introduction

In the German movie market dubbing is the dominating standard transferring foreign-language films into German. This has been so since the oldest members of the audience can think, actually since the dawn of sound films in the late 1920's beginning 1930's. Since that time opponents and adversaries of dubbing have fiercely discussed the aesthetic merits and drawbacks of dubbing vs. alternative forms of language transfer, in particular subtitling and original versions (compare Filmkritiker Kooperative (1973), S. 391). This paper does not aim to contribute to the aesthetic discussion on language transfer but emphasises economic considerations on the issue. Particularly it will be asked how dubbing compares to subtitling from the film distributors' point of view. It is generally acknowledged that dubbing is much more expensive than subtitling (see for example Diaz-Cintas (2007)) which raises the question why film distributors employ such a technique in

the first place when subtitling is employed successfully other countries. The common explanation is that Germany is a large country where dubbing is economically feasible and consumers are strongly habituated to this technique; so suppliers of films are bound to the consumers' preferences. This paper makes the point that the widely assumed automatism that a large country size leads to the adoption of dubbing is inappropriate, i.e. at the introduction of sound films was it was not irrevocably predetermined that Germany adopted the dubbing regime. The rationale is that the mechanisms inherent in habituation could have led the German audience to embrace a distinct language transfer standard if the then prevailing critical conditions were different. The crucial point is the identification of the mechanisms of habituation that can drive the consumers to favouring either dubbing or subtitling. In that sense, if the taste over language transfer mechanisms depends on habituation the dubbing standard in Germany constitutes just one of the possible equilibria. This allows for the possibility, that dubbing is not necessarily the best solution to the language transfer problem from the point of view of film suppliers and the audience. The cost argument from the perspective of film suppliers emphasises potential cost savings in the production process that could be enjoyed if subtitling was the standard instead of dubbing. Furthermore, the implications of the cost structure of dubbing extend into a cultural diversity argument: dubbing puts small and medium budgeted films marketed by small film distributors to a structural disadvantage in the market, thus hampering the diversity of the films supplied and consumed in the market. Another alleged side effect of subtitling is the positive externality of foreign language acquisition by the audience, which are foregone under a dubbing standard. The argument is that viewers' acquire foreign language skills by watching subtitled films/programmes. This argumentation is popular when it comes to explain the relatively strong English skills of the Dutch and Scandinavians as opposed to the Germans, French, Spaniards and Italians.

Main Research Goals:

- 1. In how far does the language transfer system established in Germany (and other dubbing countries) constitute a potential inefficiency with respect to the**
 - Distributors' costs and the costs' consequences for cultural diversity in the market**
 - Language skills of the consumers**

A sudden language transfer system change in Germany is unlikely to be feasible on a large scale - at least by market forces - due to demand side rigidities. It is of interest to see in how far these rigidities are the result from a path dependent adoption process.

- 2. Does the adoption of dubbing in Germany constitute a path dependent development?**

Considering the variety of solutions to the language transfer problem in different countries path dependence may play a role in the adoption process. Therefore, the characteristics of path dependence will be outlined and linked to the theory of habituation. Their combination builds the theoretical framework for explaining the adoption of the language transfer formats. The empirical analysis starts with an introduction into dubbing and subtitling. Then it aims to answer the research questions by first identifying the potential inefficiencies of dubbing vs. subtitling. After that the persistency of the potential inefficiencies in the film market is explained by the rigidity of consumers' habituation with respect to language transfer formats. Dutch and German consumers' attitudes towards language transfer are compared to identify relevant consumption skills associated with subtitling and dubbing respectively. Thereon the self reinforcing mechanisms that propelled and manifested dubbing as the dominant standard in Germany are identified. The initial conditions and crucial events that led the German market to adopt dubbing in the beginning years of the sound film era will be looked at and compared briefly to other countries. At last the findings are summarised and a conclusion is drawn.

Method

From the available Literature and from semi structured expert interviews with film distributors (6), subtitling studios (2), a film exhibitor the costs of dubbing and subtitling were identified for today and the digital cinema to come. The selected film distributors were those that answered to an interview request which was sent out by mail and email to all distributors in Berlin. To supplement and confirm the film distributors' data, a film distributor in the Netherlands and executives of subtitling studios were interviewed. The economic-historical aspects of the adoption processes of the language transfer methods were gathered from monographies and contemporary and historical industry and academic journal publications and surveys.

Theory

Path dependence

The approach of this paper builds on the 'classic' notion of path dependence in the economic debate as represented by Arthur (1989) and David (1985, 1997) and Arrow (2004). The basic theme in the path dependence literature is that an allocative process in a dynamic economy is path dependent if early events, conditions and "developments have a profound and disproportionate effect on later [developments]" (Arrow (2000) p. 175), see also Mahoney (2000), p.511, David (1997), p. 13 ff.). According to Mahoney (2006) critical events do not correspond to pure randomness; they are exogenous to an explanation within the neoclassic framework that

describes the self reinforcing mechanism and lock-in of the path. Critical events are located between the 'pre-path formation phase' and the 'path formation phase' (Sydow et al. (2005), p. 9). "Critical junctures are characterized by the adoption of a particular institutional arrangement from among two or more alternatives. These junctures are 'critical' because, once a particular option has been selected it becomes progressively difficult to return to the initial point when multiple alternatives were still available." (Mahoney (2000) p. 513)

Positive feedback mechanisms magnify initial conditions' and critical events' to the effect that possible alternative standards are increasingly put to disadvantage over time. So, once a standard gains a head start - by help of critical events - positive feedback leads to increases of its market share over time until the market of potential adopters is "cornered" (Arthur (1989) p. 116) or "locked-in" (David 1985). These conditions of rigidity or "inertia" (Mahoney (2000) p. 511) constitute situations in which choices for alternatives to the dominating market standard become unfeasible (Sydow et al. (2005) p. 6) or highly unlikely.

The positive feedback mechanisms can be economies of scale or learning-by-doing effects due to more experience in production. These lead to improvements of quality and/or cost reductions which in turn increase the attractiveness to potential adopters (see Arthur (1989) p.116, and Cowan (1990)). Also network effects and externalities cause increasing returns to adoption and favour the domination of a single standard in a market (see Katz and Shapiro (1994), Farrell and Saloner (1986) and Shy (2001)). The forces underlying positive feedback can also lead to rigidity or lock-in of a market where the choice for deviating from the dominating standard is unfeasible due to high switching costs.

Technical interrelatedness is a self reinforcing and a stabilising mechanism. The premise is that utility of a technology A depends positively on the availability of a compatible technology B David (1985). A lead in the market by one of two complementary technologies increases the utility and the market share of the complement and vice versa. Consequently, technical interrelatedness among two goods or services can translate into positive feedback to adoption that propels two complementary technologies to market domination. Since each technology requires investments in the form of time, effort or money there are switching costs if a user abandons an established technology for an alternative, because new investments have to be made. The required investments in the new technology (and its complements) might outweigh the benefits from the new technology. This discrepancy corresponds to the switching costs, which are at the heart of rigidity in the market. Arrow (2000, p. 178) identifies switching costs as the focal point of all path dependent processes since they are the effective reason for rigidity.

David's (1985) irreversibility of investment refers to the timely order of the specific investments in technologies. The irreversibilities can be "due to learning and habituation". They bias the chances of becoming a market standard to the technology in which investment has begun at an earlier point in time. Similarly Barnes et al. (2004, pp. 372-373) notion of behavioural lock-in entails sticky behaviour and "deep-seated attachments [...] due to habit, organisational learning, or culture".

Arrow (2000, p. 175) points to the close relationship between quasi-irreversibility of investments and complementarities of two investments or technologies and their interplay resulting in inert path dependent outcomes. Both reinforce each other, since the switching costs of introducing a new technology increase when capital is both, durable and complementary to another 'installed base'. This rigidity also occurs in intergenerational models where new users successively arrive in a market and gradually replace older generations of users. The new arrivals tend to adopt the technology that is complementary with the prevalent market standard instead of an alternative. By this the incumbent technology will be passed from one generation of users to the next (Arrow (2004) pp.32-33)

At the core of path dependence is the reproduction of behaviour, thought or technologies that bear potential inefficiencies but whose market position became strong and inflexible. Schreyögg et al. (2003, p. 272) emphasise that a lock-in is no utterly determined condition but that it merely constitutes a relatively confined leeway for actions - comparable to a corridor.

Critical junctures and initial conditions exert a disproportionate influence on future developments and are reinforced by positive feedback loops over time. The path dependent process settles to a locally stable equilibrium, that is potentially inefficient outcome, but from which deviation is difficult - i.e. that is rigid in nature. The reasons are that switching costs of changing to a superior technology might outweigh its perceived (discounted) benefits.

Central to path dependency is the notion that market forces not necessarily select the most efficient solution to an economic problem. Inefficiency of a situation means that the same result could be achieved with less means, or that the given resources employed in a different way could achieve higher production or better quality. Whether an economic arrangement is inefficient compared to an alternative depends on the perspective of the beholder. An efficiency evaluation whose coverage is less comprehensive than the economists' Pareto efficiency approach can focus on the welfare of a confined economic group. This perspective is more suited to business studies where research is conducted from the point of view of a single industry or company and where the consequences of an (collective) actor's strategy are of interest. The focus in this work is on the welfare of film distributors.

Habituation

Habits

Habits can be interpreted as instrumental in that they constitute a routinised response, being beneficial to the decision maker by saving time, cognitive processing- or search-costs and thus enabling humans to accomplish essential tasks with minimal effort (Waller (1988)) as in Stigler and Becker (1977, pp. 81-83) and Becker (1992, p. 331). The instrumental aspect of habitual behaviour bears conciliation with orthodox or neoclassical models' in economics (Waller (1988) pp. 121 ff.).

In this work it is assumed that consumers perceive movies as commodities in the sense of Michael and Becker (1973, pp. 381 ff) and Stigler and Becker (1977, pp. 77 ff). The authors' hold that consumers maximise utility derived from meta preferences over fundamental aspects of life and commodities. Commodities are actually 'produced' by households and composed of different components such as purchasable market goods (x), time (t) and human capital or skills (s) under environmental conditions (E). These are combined according to the 'household production function' (HPF)¹ to a commodity (Z) from which utility is finally derived ($U = u(Z_1, Z_2, \dots, Z_n)$). So the demand for consumer goods/services x is derived from the demand for commodities. Consumers' meta preferences over the commodities are stable while the preferences over the components i.e. market goods can vary² (see Pollack (2002) p. 5). In the case at hand the meta preferences of consumers would refer to 'film appreciation'. The mode of language transfer and the human capital (e.g. language or subtitle reading skills) constitute components of film appreciation.

In economic analysis behaviour is defined as habitual or addictive if past and present consumption are positively correlated (see Messinis (1999) p.418 ff for an overview). With 'beneficial' habits future marginal utility of consumption of a specific commodity is positively related to the amount of its current consumption (Becker and Murphy (1988) pp.680 ff., see also Becker (1992))³. In the Stigler and Becker (1977) model consumption skills are the mechanism causing this correlation: Consumption of a specific good is accompanied by (incidental) acquisition and accumulation of complementary specific consumption skills that facilitate and thus increase consumption of this specific good in the future. Here the basic unit of analysis is the individual consumer and his consumption of and exposure to foreign language films.

Definition of the concept of habitual behaviour with respect to language transfer

¹ In Michael and Becker (1973, p. 382) the human capital factor is not considered and the HPF is $Z_i = z_i(x_i, t_i; E)$. In Stigler and Becker (1977, p. 77) the HPF is $Z_i = f_i(x_i, t_i, s_i, Y_i)$ where Y stands for 'other inputs'.

² for a critical review of meta-preferences see Jonsson (1996)

³ Examples for beneficial addictions are 'music appreciation' of a certain kind of music (see Stigler and Becker (1977), pp. 77-79))

habituation: *Consumers' habituation in the case of language transfer methods is the becoming of a relative rigid pattern of choice which is biased to a specific language transfer format. Its repetitive and rigid nature is brought about by the accumulation of a language transfer format-specific consumption skill portfolio that increases utility from - and in turn consumption of - the corresponding complementary specific language transfer format.*

In the case of subtitling the preliminary assumed consumption skills are foreign language skills and subtitling reading skills (see Koolstra et al. (1991)). The more subtitled films the viewer consumes the more he gets acquainted to listening actors talking in a foreign language (say English) and the larger will be her comprehension of the foreign language dialogues in the future. The same holds for the subtitle reading skills. With respect to dubbing to the consumption skills are less obvious and rather subtle. As a preliminary assumption they consist in the ability to tacitly ignore or tolerate the inconsistencies of lip-sync-dubbing (Garncarz (2005), p. 75).

So increased consumption of - and exposure to - foreign language movies in a specific language transfer standard - be it subtitling or dubbing - facilitates consumption of films in that very language transfer standard in the future.

Path dependency in habit formation: Positive feedback

Becker, (1992, p. 329) identifies the property of positive feedback mechanism inherent in habitual behaviour as “reinforcement”, i.e. circular positive feedback between increasing consumption skills resulting in consecutively increasing utilities of consumption and finally in higher levels of consumption. This property of habits corresponds to the positive feedback mechanisms central to the path dependence models in Arthur (1994) and David (1985). The reinforcement property is responsible for the market to “tip over“(Katz and Shapiro 1994, p 106) towards one alternative. This tipping over due to a positive feedback-mechanism plays a role in the addiction/habits models, too, where habitual behaviour induces a consumer to consume a lot of one commodity and to neglect alternative consumption patterns or to abstain (see Becker and Murphy (1988) p. 683). Applied to the case at hand: If the accumulated consumption skills specific to one language transfer method exceed a certain threshold level consumption of the associated language transfer method will increase strongly⁴ to the extend of a behavioural lock-in (Barnes et al. (2004)). Which steady state is selected depends on the stock of specific consumption skills: A relatively large initial stock of language transfer format specific skills raises the likelihood that consumption of the corresponding language transfer format increase in the future

⁴E.g.: Increased consumption and exposure to subtitling leads to accumulation of subtitle-reading skills and foreign language-related consumption skills. The latter could include increased familiarity with slang, dialects or the ability to follow faster paced dialogues, which increases comprehension of subtitled films over time and increases utility of consuming them and in turn raises demand for subtitled films.

due to habituation (compare Gavrilu et al. (2005), section 5). The point of bifurcation of the individual's path of consumption is marked by a certain threshold level of accumulated specific consumption skills that are specifically coined for one of the alternative of a set of competing technologies (ibid., compare Hoeffler et al. (2005)).

Habits and Rigidity: Compatibility of technologies and quasi-irreversibility of investments of consumption skills and language transfer formats

As in David's (1985) QUERTY case the concepts of complementary technologies and quasi-irreversibility of investment tend to be strongly intertwined in their application to consumer habituation. This is because consumers *invest* in a particular set of consumption skills that *are complementary or compatible* to a specific technology they demand. David (1985, p. 334) argues that "technical relatedness, or the need for system compatibility between keyboard "hardware" and "software"" determine the expected present value of the technology. David (1985, p. 336) conceives specific typists' skills as a quasi-irreversible investment causing the lock-in of the typewriter market because they are subject to high costs of 'software' conversion. In the case of habits over language transfer formats specific consumption skills can be conceived as specific software, too, that is difficult to convert⁵. In analogy to David "hardware" refers to either subtitling or dubbing. The degree of compatibility of hardware and software determines the value or utility i.e. 'film appreciation'. The latter increases with the degree of complementariness of consumption skills and the consumed language transfer format. At the same time the accumulation of specific consumption skills constitutes a quasi-irreversible investment. This is due to the "costs of software conversion" in the form of time, effort, and disutility that accrue when an audience has to change the language transfer format and the old stock of language transfer-specific consumption skills becomes obsolete, and has to be replaced by a new stock of skills. Arrow (2000, p. 175) holds that equivalently to investment capital human capital is relatively durable (i.e. also language transfer format related consumption skills) and that the durability of capital increases the associated switching costs.

Quasi-irreversibility of investments refers to the difficulty and cost of abandoning and replacing a once accumulated set of consumption skills. Technical compatibility refers to in how far a stock of consumption skills matches or is compatible to one of the two language transfer formats, dubbing and subtitling.

In short, the behavioural lock-in in the sense of Barnes et al. (2004) or rigidity and persistency of habitual language transfer format consumption originates in the switching costs that

⁵ E.g. It might not be easy to convert the specific subtitle reading skills into the skill to tolerate the inconsistencies of lip-sync dubbing.

have to be incurred if the past pattern of consumption is abandoned. The switching costs relate to the accumulation of specific consumption skills that are compatible to the new pattern of consumption.

Intergenerational stability of habits comes about when currently established (older) members of a population pass on a habit to the next, younger generation and when adherence to the habitual conduct is rewarded (Hayek (1967) pp. 79-80). The adoption of established conduct from social peers operates through learning and imitation (Hayek (1967) pp. 78-79) which is not necessarily intentional (Bowles (1998) p.80). In terms of habituation younger generations adopt the language transfer format preferred by their parents and thereby accumulate the respective complementary set of consumption skills.⁶

Research Questions:

The empirical analysis will be guided by the following questions in determining in how far the adoption of dubbing in Germany constitutes a path dependent development: 1st Inefficiency, 2nd Inertia, and 3rd historicity of the path.

- Does dubbing an inefficient solution from the perspective of film distributors in the theatrical market? How will the broad introduction of digital cinema affect these efficiency considerations?
- Does dubbing constitute an inefficient solution from a perspective of cultural diversity?
- Does consumption of subtitling enhance foreign language skills compared to dubbing?

To understand the adoption process of the language transfer system and the resulting rigidity in the markets the research sub-questions to be answered are:

- Is the German cinema market currently characterised by rigidity with respect to the language transfer formats of films?
- Are there self-reinforcing mechanisms that over time increasingly established dubbing as the prevailing language transfer format in Germany?
- Is the adoption process of dubbing path dependent in the sense that its direction was decisively influenced by historical events and circumstances?

⁶ Hodgson (1993 pp.124-126) extends this transmission to the social level by noting that information entailed in habit and conduct (i.e. in institutions) transmits and modifies through imitation and learning of individuals and whole institutions (see also Veblen, 1899).

Empirical Analysis

The Film distribution and Language transfer methods

During the golden era of the silent film between WWI and the late 1920's films were traded internationally on a large scale (see Toeplitz (1979)). The only modifications to a film that was required for exhibition abroad was to replace the 'intertitles' or 'title cards' providing text explanations of the plot in the language of the film importing country. With the introduction of sound into film in the late 1920's the "language barrier" impeded international film trade, i.e. a film produced with actors' dialogues recorded in a particular language could not be easily understood by target audiences who had no command over the original language. Consequently, to enable the respective national audiences' comprehension of foreign language films different language transfer methods were developed to transfer original dialogues to the respective national audience's mother tongues. Of the language transfer methods that were developed worldwide two are used in the German market today: dubbing and subtitling⁷. Subtitling is confined to niche markets, and dubbing clearly dominates the cinema -, television - and video market before its digitalisation⁸.

Film Distributors

Film distributors acquire the right to market a film in a certain geographical area which usually comprises a national market⁹ ((Goldberg (1991), ch. 7, Homann (2001), p. 252). The film distributor carries the costs and responsibility for launching the national promotion and publicity campaign. He is also responsible for the production of film prints, booking and distributing them to exhibitors (cinemas), who hire a copy of film for a specified period (Hartlieb (1984), pp. 313-317), Homann (2001), p.253). From the box-office revenues (gross-receipts) the exhibitor keeps a contractually specified share and the rest goes to the film distributor. He deducts his distribution fee (25-40% of the gross-receipts) and the expenses for print and advertising (P&A) ((FDA, 2007, pp. 28-31) Wasko (2003)). Depending on the contractual agreement the outstanding balance may be shared with the producers of the film (Homann (2001), p.254). A part of the Film distributors' costs are the expenses for the language transfer, i.e. subtitling and/or

⁷ In some eastern European countries and Russia there is a third method that is used for language transfer of films into the national idiom: voice over. See Luyken et al. (1997, pp. 30ff.)

⁸ Until video was replaced by DVDs subtitling dominated the market. DVDs generally contain both, dubbed and subtitled versions of a film.

⁹ Depending on the contract can cover certain linguistically homogenous areas, such as The Netherlands and Flanders, the Dutch-speaking part of Belgium, or France and the Wallonia, the French speaking part of Belgium.

dubbing.¹⁰ The distributor generally decides on whether the film is dubbed and/or subtitled and how many prints of each language transfer format are circulated in the market.

The Techniques

With dubbing the original version's actors' dialogues are replaced with newly recorded dialogues spoken by native speakers in the idiom of the film importing country while the original music and sound effects (M&E) track will be kept. So for the audiences in importing countries the film is comprehensible since the actors on screen seem to speak the respective domestic language. Usually the distributor contracts dubbing to a specialised dubbing studio. A dubbing director develops a dubbing script in coordination with a translator and supervises professional dubbing speakers' recordings in a specially equipped dubbing studio, and the final editing of the dubbing soundtrack with the M&E track to a master tape¹¹ (compare Luyken et al. (1991) ch. 3). The challenge here is to write a dubbing script and record the dialogues in such a way that the final dubbing sound track is lip-synchronous with the visual acting on screen and that the content and meaning of the original dialogues is transferred into the target language. The duration of the dubbing recording alone can take up to 20 days and lasts one week on average for a 90 minute feature film (Pruys (1997) p. 90) while the total dubbing process lasts 3-4 weeks (Luyken et al. (1991), p.79). The master tape is duplicated and the copies are distributed to exhibitors.

Subtitled versions of foreign language films contain the actors' original dialogue¹² and M&E tracks (see Maier (1997) and Pruys (1997), Section II). While the actors on screen articulate a line of dialogue (or some written text is visible) a condensed translation of the dialogue (or text) in the target language is provided (usually) on the bottom of the screen. The audience hears the actors speaking in a foreign language and in parallel follows the content by reading the subtitles in their mother tongue (compare Maier (1997), p. 93 ff., Luyken et al. (1991), chapter 2). Subtitling is generally contracted to a postproduction studio. A translation of the spoken dialogues is condensed into lines of text in "subtitle-format" and assigned a time code that corresponds to the designated time on film on which the subtitles shall appear. There are two possible methods for producing copies for distribution. In the 'laser-etching technique' the distributor's original negative tape may be used as a master copy which is duplicated. The subtitles are then burned on the 35mm copies individually, i.e. frame by frame onto each duplicated tape. The second method

¹⁰ Sometimes film distributors also acquire the distribution rights for further windows (DVD/Video, pay TV, free TV) of release and earn a license fee from reselling the film to publishers of Video/DVD, pay TV stations and broadcasters (Wasko (2003) pp. 105ff.).

¹¹ See for example the renowned dubbing studio Berliner Synchron (http://www.berliner-synchron.de/index.php?article_id=4&clang=0) who offers these production steps in house.

¹² 'Original dialogues' refers to the dialogues as they were recorded during production or post production and spoken by the actors themselves. For problems with the definition of the term 'original version' see Pruys (1997, p.11 ff) and Sudendorff (1988).

for subtitling is to burn the subtitles on a master tape (internegative) and there from drawing copies for distribution from the subtitled master tape (sub1, dis2, dis3). In Germany the internegative method is not used since fixed costs of producing an internegative tape are relatively high and the number of copies needed for amortisation is not reached, due to the low demand for subtitling in Germany.

A third possibility is to simply release an unaltered original version to the German cinema.

Generally it can be said, that the process of producing a first copy of subtitles is much cheaper than dubbing, due to lower labour and capital (studio) requirements. The process of dubbing is relatively laborious, time-consuming, and subject to monopoly pricing by 'known' dubbing speakers.¹³ Thus dubbing is costly compared to subtitling surpassing the costs of the latter by the factor 10 or more and amounting up to 45.000 € for simple productions (Luyken et al. (1991), chapter 4), Pruys (1997) pp. 92-93).

In most individual national markets one of the language transfer formats clearly dominates the theatrical film market, as dubbing in Germany or subtitling in the Netherlands (see Luyken et al (1991), pp. 30 & 33).

Potential Inefficiency

Language transfer Costs

For film suppliers the necessity to provide dubbed versions of foreign language films instead of subtitled versions comprises a suboptimal equilibrium as compared to the situation when consumers were habituated to subtitled versions *ceteris paribus*¹⁴. The potential subtitle-equilibrium entails cost savings in comparison to the current dubbing-equilibrium. The cost savings foregone under dubbing consist of the relatively high costs of the dubbing process itself which can amount to more than 10 to 15 times the costs of subtitling (Luyken et al. (1991), chapter 4), Pruys (1997) pp. 92-93).

The fixed cost of dubbing a small or medium budgeted (budget up to €m) 90 minute cinema film featuring no stars in Germany for was found to be €30.000 on average. According to film suppliers (dis1, dis2, dis3, sub4) costs ranged from €20.000 up to €60.000 for small and medium sized films (20-70 copies per film) with total distribution budgets ranging approximately between €100.000 and €250.000 per film. These figures correspond to older figures given in the

¹³ In general foreign film stars are always dubbed by the same speaker. The domestic audience over time associates the dubbing voice with the foreign actor which puts the dubbing speaker a monopoly position able to demand 1000€ per day (sub1)

¹⁴ c.p. means that consumers' demand for films was the same under subtitling as it is currently under dubbing due to habituation.

literature¹⁵. If dubbing speakers are popular stars the total dubbing costs range from €60.000 upwards to €100.000 or more¹⁶. After the first copy or master (fixed costs) is completed every additional copy (variable costs) of the film costs about €1000¹⁷; these prints are finally distributed to exhibitors.

The costs for subtitling itself are on average €2.500 per film. The reproduction (variable) costs in the case of laser subtitling are €1000 copy costs plus an average of €725 for the laser subtitling per 35mm film copy (dis1, dis2, sub1, sub1, sub2).

The internegative method however involves fixed production costs for the master internegative of about €25.000; from this master distribution copies are made for €1000 per print.

These figures are summarised in Fig. 1 in the appendix¹⁸. The graphs illustrate that for subtitling the laser method is the cheaper reproduction method for up to 38 copies. The internegative method is always cheaper than dubbing by a fixed amount. Thus the potential benefits from having a subtitling regime are more emphasised for small and medium film distributors where the language transfer costs take a relative large share of the whole budget and the potential savings from using only subtitling instead of dubbing are relatively large.

The potential cost inefficiency of the dubbing regime for large distributors releasing blockbusters is negligible. The relative cost difference for - lets say- a blockbuster running in Germany with merely 600 copies between dubbing (€30.000) and internegative subtitling (€25.000) is negligible, while it has more weight for smaller distributors. When asked to compare their situation with that of distributors in subtitling countries a typical statement of a small and medium sized distributors is “Naturally the costs [in subtitling countries] are lower; the effort for dubbing is not small either, in so far this is a reason to be jealous” of distributors in subtitling countries (dis2). This illustrates that obligatory dubbing is indeed perceived as sub-optimal at least by the smaller distributors.

Table 1 shows the distribution of the size of films released to cinemas in Germany between 2003 and 2005. The size of films is indicated by the number of the films’ distributed prints. Small

¹⁵Luyken et al. (1991, p. 106) assess the costs for *one hour* of quality lip-sync dubbing for *television* to ECU25.000 – ECU29.000. When converted into 2006 Euros with the help of the OECD price index (<http://stats.oecd.org/wbos/default.aspx?querytype=view&queryname=221>) these amount to €35.000 and €41.000 (see appendix 2). Assuming an average feature film play time of 90 minutes these figures translate to €46.500 and €55.500 per film. Foreman (1997, p. 7) estimates that dubbing a 90 minute feature film in Germany costs DM50.000 – DM100.000 (\$29.000 - \$60.000). When converted into 2006 Euros with the help of the OECD price index these amount to €30.410 and €60.820 (see appendix 2)

¹⁶German known actors or celebrities who lend their voice to a popular foreign actor earn wages of €1000 or more per day (sub1). With dubbing recording lasting for a week, in a film with two famous dubbing speakers their wages amount to €14.000 alone.

¹⁷A rule of thumb in the film industry says that copying a 35mm film costs about €1.000 per copy (dis1, dis2, dis3, dis4). These costs seem to be the same in the Netherlands (dis5), while in the US the rule of thumb says that the copying costs are approximately \$1000 (Wasko (2003, p. 93))

¹⁸The €75.000 ‘dubbing de luxe’ costs are an approximation for a more star-intense, expensive production.

and medium (S&M) sized films that are released with up to 100 copies per film (i.e. the lowest of the three copy classes) constitute 65% of all films releases in Germany¹⁹. The cinema sectors' total costs related to dubbing and copying are estimated to be around €2.2m in Germany. A switch from dubbing to subtitling would save the industry altogether roughly €8.2m under the current 35mm technology. The S&M sized films' distributors²⁰ alone would save roughly €4m per year under the subtitling standard using the 35mm film technology. Assuming S&M sized distributors' total budget of €250.000 per film released the potential cost saving allows to release about 16.2 additional S&M sized films per year. This is equivalent to an increase the number of S&M sized films released per year by approximately 6%.

Under the forthcoming digitalisation of cinema (see Rüggenberg, (2007)) copy costs are projected to drop by 90% (FDA, 2007, p. 14) to 95%²¹ to approximately €50-€100/copy. However the approximate fixed costs of €2.500 for subtitling and €30.000 to €60.000 for dubbing remain constant. With digital cinema, just as with DVDs, the costs of adding subtitles to a copy are marginal once they have been produced. So the copy costs for all formats are reduced to approximately €50 to €100/print. So only the fixed costs of the language transfer formats make a difference in the costs. As Fig. 2 shows that the cost difference between dubbing and subtitling - i.e. the potential inefficiency - becomes more emphasised under digitalisation: The total cost difference between dubbing and subtitling for the whole German cinema market is approximately €15.2m per year. For the S&M films the cost difference between dubbing and subtitling amounts to €7.86m per year. This corresponds to about 31.5 S&M sized films that could be released additionally per year if subtitling was the market standard under digitalisation. The problem for German film distributors is that they obviously can no longer switch to the alternative subtitling that offers more profit-potential because of the audience's reluctance.

Cultural Diversity and Language Proficiency

EU gross box office revenues in 2004 were about €3,363bn. European feature films produced that year numbered 761, while the US produced 611 motion pictures (OBS (2006), p. 15). In contrary to these figures are the market shares in 2004 were favourable for the US Films:

¹⁹ The dubbing costs are assumed to be 30.000 for the two lowest copy classes and increasing by €10.000 per copy class up to a maximum of €70.000. This reflects the increased wages for dubbing actors as the number of foreign movie stars that a movie features increases and the higher possible expenditures devoted to **higher** quality dubbing as distributors' budgets increase.

²⁰ Small and medium sized film distributors refers to distributors distributing small and medium sized films which are defined here as films that are brought in circulation with up to 100 prints.

²¹ These numbers were given in the conference presentation "D-Cinema in den USA: Was lernen wir daraus für Europa?" by Dr. Winfried Hammacher (W2 GmbH, Berlin and Managing Director DCV Digital Cinema Venture LLC, Los Angeles) hold at the 2006 industry conference "Kino mit Zukunft – D.Cinema vor dem Roll-out" in Berlin on September 7 2006. see also <http://www.m-mba.de/showfile.php?sid=12&fref=seminarflyer&s=pdf&PHPSESSID=e1b7f11030b98466d50eb3cce9f957a0> (information retrieved in October, 2007)

purely European films had a market share of 25.2% in the European cinema market, while US and US-dominated productions secured 66.7% (ibid.). To counter the US domination of the EU film market the European Union implemented the €755 million budget film sector subsidy programme MEDIA 2007 (EU, 2006). Its objectives are:

- *“to preserve and enhance European cultural diversity and its cinematographic and audiovisual heritage, guarantee accessibility to this for Europeans and promote intercultural dialogue;*
- *to increase the circulation [...] of European audiovisual works inside and outside the European Union”* (EU (2006) Ch. 1 art. 1)

Thus cultural diversity with respect to consumption of films can be seen as a goal of EU normative policy. Promotion of cultural diversity is therefore an angle for evaluating economic arrangements in the film sector²². The argument that has to be considered in that respect is that the high costs of dubbing impede the distribution and consumption of small and medium budget films. The rationale for this is that the high, relatively fixed costs of dubbing (approximately €30.000 for smaller budgeted films) account for a relatively large share of the S&M distributors’ budget. The smaller the distributor’s budget, the larger becomes the share of the budget that is spent on dubbing and the less resources can be devoted to publicity and advertisement, which is vital in increasing the potential audience’s awareness and thus box-office in the market (Wasko (2003), pp. 59ff, FDA (2007)). This rationale builds on the fact that the amount devoted to dubbing is relatively inelastic with respect to the film distributors’ budget. I.e. The stated average dubbing costs of about €30.000 of a small distributor (dis2) are about 1/5 of his average distribution budget of €150.000. On the other hand a major distributor may pay merely twice as much for dubbing, i.e. €60.000, but may command over a distribution budget of more than one of million € This problem for S&M distributors becomes more engraved if one considers that the quality of dubbing decreases drastically (in terms of lip synchronicity) as the budget devoted to dubbing falls (see Maier (1997), p. 72 and Forschungsinstitut für Soziologie der Universität zu Köln (1963), p. 405). This puts small and medium budgeted films at a structural disadvantage compared to major distributors’ films: the former have to settle on a relatively low quality of dubbing due to budget constraints. Considering that the average production budget of European films is significantly lower than those of US films²³ also their distribution budget will be smaller. Consequently, under a dubbing standard smaller film distributors devote a relatively large share of their budget to dubbing as compared to large films’ distributors, having relatively few resources left for

²² See Moreau and Peltier (2004) for a more detailed analysis of the cultural diversity in film markets.

²³ In 2005 the average cost of US feature film was \$60m while it cost on average \$13,3m, \$6,2m, \$2,9m in the UK, France, and Italy respectively (OBS, 2006, p.7).

advertisement. Also the dubbing budget of the smaller films' distributors is lower as the one of larger films' distributors; consequently the quality of smaller films' dubbing is lower than that of larger films. In contrast, under a subtitling regime the quality differences of the language transfer between large (e.g. US) and small (e.g. EU) films are likely to be smaller, since the fixed costs of subtitling are relatively low and easily affordable even for small film distributors. In contrast to dubbing subtitles' quality is hardly is quite inelastic to the budget devoted to it once the basic amount of approximately €2.500 has been spent. Therefore conditions for audience's appreciation become more equal for smaller and larger films. Above it was calculated that the potential cost savings under a subtitling regime for distributors' of S&M sized films would allow to increase the supply of S&M films by approximately 6%. This could be used to increase the cultural diversity of the supplied films.

Consequently from an EU policy perspective dubbing constitutes a potential inefficiency compared to subtitling, in that it potentially lowers audience acceptance of small EU films due to relatively low quality dubbing. Dubbing binds resources that the distributors of S&M sized films could use to increase their output of films by roughly 10% which could be used to increase the cultural diversity in the film supply. Further research is needed to analyse the impact of dubbing on cultural diversity empirically.

Language Skill Acquisition

Apart from increasing cultural diversity in the film market, the EU commission's goal is that "Every European citizen should have meaningful communicative competence in at least two other languages in addition to his or her mother tongue." (EU Commission (2003), p. 4) The means to reach the ends of both policy goals (promotion of cultural diversity and foreign language proficiency) converge: the EU commission (2003, p. 19) wants to "analyse the potential for greater use of subtitles in film and television programmes to promote language learning". The potential of subtitles to promote foreign language proficiency is popularly insisted on by the inhabitants of the subtitling-dominated countries of northern Europe. Koolstra et al. (2002, p.431) report the findings of Vinjé (1994)²⁴ that "one-quarter of Dutch primary school children are convinced they even learn more English from radio and television than at school". Similarly de Bock (1977)²⁵ finds that "More than one-third of Dutch adolescent viewers are convinced that watching subtitled television programmes is indeed beneficial to learning foreign languages."

²⁴ For original references see: Vinjé, M. (1994) 'Kinderen praten Engels: Balans van het Engels aan het einde van de basisschool' [Children Speak English: Results of English Lessons at the Completion of Elementary School], JSW 79(4): 32-5.

²⁵ cited in Koolstra et al. (2002 p.431). Original Reference: De Bock, H. (1977) Ondertitelen of Nasynchroniseren? [Subtitling or Dubbing?], Report No. B77-090. Hilversum: NOS.

Experimental studies confirm this tendency in that they find that consumption of subtitling enhances foreign language comprehension as compared to dubbing (see Koolstra et al. (2002) for an overview, and the section ‘Positive feedback loop: Habituation’ below). E.g. Koolstra et al. (1999, p.58) E.g. watching subtitled English programs induces vocabulary acquisition and word recognition among Dutch children. D’Ydewalle and Van de Poel, M. (1999) report similar results for foreign languages

Rigidity

Apart from potential inefficiencies path dependence depends crucially on the condition of lock-in or rigidity which makes deviation from the current standard unfeasible.

Suppliers’ limited Room to Manoeuvre

Film distributors promoting and distributing a foreign language film in a national market have to comply with the domestic audiences preferences when deciding over the language transfer format in which the film is exhibited in the cinema. The German audiences’ preferences over the respective language transfer formats were surveyed in a representative study the last time in 1987²⁶: Then 78% of the population preferred dubbing, 4% preferred original versions, 4% subtitling, 9% were undecided (see Luyken et al. (1991), p.113). Film distributors in Germany comply with the 78% majority of audience in that films are released to the cinemas in a dubbed version in general²⁷: At least 95% of the 35mm prints in circulation are dubbed versions while the subtitled or original versions of a film constitute at most 5% of the copies in circulation (dis2, dis3, ex1). These 5% serve a niche audience, primarily visiting art house cinemas. These are mostly located in a few the large cities (Hamburg, Berlin, Frankfurt a. M. and Munich (dis2)).

All interviewed film distributors (and exhibitors) state the same, i.e. that the German audience in general is strongly habituated to dubbing and quite inflexible with respect to language transfer formats. They are aware that violating the preferences of the majority of the audience by releasing a film in subtitled or original version only would imply a significant drop in the number of tickets sold at the box office (Dis1). So the film distributors and exhibitors have a limited room for manoeuvre with respect to language transfer formats. They are tied to the audience’s rigid

²⁶ The results of the survey are published in Luyken et al. (1991, pp. 112-119). A new survey is conducted currently for the EU MEDIA Programme; results will be published by the end of 2007.

²⁷ There are few exceptions to the ‘dubbing rule’ among films with more than 30 copies in circulation. E.g. Mel Gibson conceived “The Passion of the Christ” (2004) and “Apocalypto” (2006) to be released in a subtitled original language version worldwide (Gumbrecht, H.U. (2004)) (for the German releases see the Online-Filmdatenbank for “The Passion of the Christ”: <http://www.ofdb.de/view.php?page=fassung&fid=35671&vid=91102> and “Apocalypto”: <http://www.ofdb.de/view.php?page=fassung&fid=112220&vid=191132>). In the case of Kevin Smith’ “Clerks” (1994) – a small budget production (\$230,000 incl. post production (www.imdb.com)) the German film distributor decided to release only a subtitled version to the cinemas because of the difficulties of dubbing the dialogue-laden movie (dis3).

demand for dubbing. In analogy to Nelson (1994) and Burgelman (2002) the film distributors' situation can be understood in a wide sense as one of being quasi-co-evolutionary tied to the development of consumers' preferences. The audience is characterised by strong habituation to dubbing resulting in a behavioural lock-in (see Barnes et al. (2004), p.372-373) and distributors are bound to the audience's preferences **so that their room of manoeuvre in the market is limited.**

Demand Rigidity

The German audience's strong and rigid preferences for dubbing can be explained by habituation. Habituation is due to the accumulation of dubbing-related consumption skills and the absence of a sufficiently accumulated stock of subtitle-related consumption skills. Consequently switching from dubbing to subtitling' means that German consumers suffer a drop in utility, which depicts the consumers' costs of switching from dubbing to subtitling. The switching costs take the form of limited comprehension of content: Luyken et al. (1992, p. 119)²⁸ find that for 32% of the German population subtitles do not ensure satisfactory understanding. This applies only to 9% in the Netherlands where subtitling has a market share of 94 % in television (Ibid, p.33,). Therefore the Dutch market will serve as a subtitling comparison market. Equally 63% of the German population finds subtitles difficult to read (14% in NL). Consequently a majority of the German audience would be negatively affected by a general switch to subtitling, while dubbing ensures satisfactory understanding of films for 76% of the audience. These figures reflect the Germans' habituation to dubbing and by that their low level of accumulated subtitle-related consumption skills - particularly subtitle reading skills. On the other hand the Germans' stock of dubbing-related consumption skills seems reasonably developed. I.e. the audience is tolerant towards the inconsistencies inherent in the dubbing technique: Only 25% think that dubbing lessens their enjoyment (55% in NL) and only 46% of the German audience recognises inconsistencies between the dubbing-soundtrack and actor's lip movements (82% in NL). Consequently 78% of the Germans prefer dubbing as a language transfer technique while only 13% prefer either subtitling or original versions.

Switching from dubbing to subtitling implies that the general German audience's utility is negatively affected (during a transition phase) until a sufficiently large subtitle-related stock of skills is accumulated such that utility from consuming subtitled films matches the previous utility from watching dubbed films. The switching costs entail two components²⁹: 1st there would occur a drop in film appreciation due to the lack of subtitle-related consumption skills and language

²⁸ The figures stem from 1987.

²⁹Both are strongly intervened theoretically and practically but will be held apart here for the sake of clarity.

comprehension, and 2nd there are costs of investment in subtitle-related consumption skills.³⁰

Total switching costs fell with the speed with which the German audience would accumulate a sufficient set of subtitle-complementary consumption skills. The duration of the adaptation process is hard to estimate, since there is no direct case for comparison. To gain an impression of the duration of the audience habituation to subtitling one can look at figures from the Dutch market:

When switching from dubbing to subtitling it is decisive for consumers to accumulate a set of skills to master quick and possibly effortless reading of subtitles. As can be seen in Figure 3 the share of the Dutch audience who deemed that subtitles were difficult to follow fell from 14% in 1987 to 9% in 1999, thus on average by 0.42 percentage points per year. Figure 4 depicts two important components of subtitle comprehension which together will be termed subtitle reading skills from here on: The speed in which subtitles are read and the perception of readability of subtitles³¹. The share of people who thought that the time in which subtitles are presented on screen is fully sufficient increased from 63% in 1987 to 80% in 1999 (thus on average by 1.41 percentage points each year) and the share of people who deemed that subtitles were good to read increased from 71% to 87% in the same period (on average by 1.33 percentage points per year). The dynamics of these figures on subtitle reading skills in the period 1987-99 largely resemble the data from the period 1974-87.

It is difficult to apply the Dutch figures on subtitle reading skills development directly as a forecast to the German market: In 1987 the Dutch were already widely habituated to subtitling with 82% preferring this format compared to 4% in Germany.³² Therefore the percentage point changes in the Dutch opinions on language transfer formats and indicators for their consumption skills (see Figure 3, 4, 5) are likely to differ from those of the hypothetical German future figures if Germany embarked on the subtitling track today. As an orientation: The Dutch' preferences for subtitling went up from 63% in 1974 to 82% in 1987 to 93% in 1999, while the preference for dubbing fell correspondingly. These numbers can not deliver an exact prediction of how long a potential transition phase for the German consumers would last. Still, it can be estimated that the time in which a majority of Germany's audience is likely to develop a sufficiently large set of

³⁰ If German consumers are not fully rational then the accumulated dubbing-related set of consumption skills may enter the consumer's decision as sunk costs, in addition to the costs of accumulating a new set of consumption skills and the temporary drop in film appreciation.

³¹ There is an international norm in subtitling since the 1980's that makes audience statements over time comparable. Subtitle studios generally adhere to a quasi-norm, the so-called "6-second rule" that specifies that a two lines of subtitles, containing 64 characters (including spaces) should be visible for 6 seconds. (Koolstra et al. (2002), p.328) These specifications were agreed upon by the *European Broadcasters Union* (<http://www.ebu.ch>) in 1987 (Luyken et al. (1991), p. 44) and are reflected in the "Code of Good Subtitling Practice" (Ivarsson, J. and Carroll, M (1998)) that serves as a guideline for *European Association for Studies in Screen Translation* (<http://www.esist.org/>).

³² It seems unlikely that by now the German audience has developed to a similar position that the Dutch were in 1987. Evidence from a EU-MEDIA Program survey due in autumn 2007 will most likely support this point.

subtitle-related consumption skills such that it prefers subtitling over dubbing is likely to take 15 years or more³³. This is a very optimistic time frame considering that in the Netherlands the number of subtitle-lovers increased by 29 percentage points over 25 years and the number of dubbing-lovers fell roughly equivalently in the same time. The prospects of a transition period of that length in which the dubbing-habituated German audience suffered utility losses relative to the current situation naturally obstructs any attempt to wide scale substitution of dubbing by subtitling. Therefore one can speak of a very rigid or even lock-in situation.

Self-reinforcement

Here self-reinforcing factors of language transfer methods are addressed. They explain the mechanisms through which language transfer methods crowd out competing standards once they gained a head start in the market.

Positive Feedback Loop Habituation: subtitle reading & foreign language acquisition

The process of habituation to a language transfer format constitutes a positive feedback or “reinforcement” (Becker (1992), p. 329) in that the preference for a specific language transfer format increases with its consumption over time. This self-reinforcing property is explained by the incidental accumulation of utility enhancing consumption skills during consumption. D’Ydewalle and Rensbergen, (1989, p. 238) show that in subtitling countries children’s habituation to subtitling occurs between grade 4 and 6. In Grade 4 59% of the children prefer dubbing over subtitles while in grade 6 only 13% of the children still prefer dubbing. Subtitle reading skills must evolve during these years. Evidence from eye movement tracking tests show that automated subtitle reading – e.g. the ability to switch effortlessly from the visual image to subtitles and back - of children at grade 4 and 6 does not principally differ from adults. But for the 4th graders “attention switching still requires some effort”, hence their preference for dubbing (ibid., p. 244). Over time exposure to subtitling leads to an effort-less “automatically elicited tendency to read the subtitles” (ibid. p. 245), but this has to be trained (Danon (2004), p. 72, ff). The population-wide

³³ This is based on the 1987 figure that 78% of the Germans prefer dubbing, 4 % prefer subtitling and 9% prefer original versions. Starting from the 4% German subtitle lovers and the average increase of 1.38 percentage points per year in the number of Dutch people preferring subtitling over other language transfer methods between 1974 and 1987 it will take roughly 33 years until 50% of the German population prefers subtitling. On the other hand, if one starts out from the 78% of dubbing lovers in Germany and a decrease of 1.46% points of Dutch dubbing lovers on average per year between 1974 and 1987, it will last roughly 19 years until the percentage of dubbing lovers in Germany is 50%. This calculation is based on the Dutch figures from the period 1974-87. Still, one could argue that the figures would be higher in Germany because the growth rates of dubbing lovers would be higher in the beginning due to the start from a low base level. Even assuming an increase of 2 percentage points on average in the number of subtitle lovers, it would take 23 years until they constituted 50% of the population, up from 4%. Equivalently assuming an average 2 percentage points fall per year in the number of dubbing-lovers it took 14 years until the dubbing lovers constituted 50% of the population, down from 78%.

habituation effects and their dynamic development of can be seen in the in Table 3 and 4. The number of people who deemed that subtitles were difficult to read fell constantly between 1987 and 1999 in the Netherlands as consecutive generations become habituated to subtitling.

Koolstra et al. (1999, p.58) find for Dutch children watching English TV programs with Dutch subtitles that acquisition of vocabulary and the recognition of English words is higher than for control groups watching dubbed programmes. Similar results are reported by d'Ydewalle and Van de Poel, M. (1999). Koolstra et al. (2002) provide an overview of the experimental findings of different researchers on language transfer related consumption skills: Consumption of subtitled movies/programmes increases foreign language comprehension and subtitle reading skills as compared to consumption of dubbed content. This constitutes a positive feedback loop: Increased subtitle reading skills and foreign language competence naturally increase appreciation of subtitled foreign language (mostly English) films (Garncarz (2005), p. 82), which in turn increases consumption. Table 3 reflects these results, too: 63% of the Germans find it difficult to follow subtitles and merely 61% think that subtitles ensure satisfactory understanding. This hints that subtitle-related consumption skills are relatively underdeveloped in Germany due to lack of exposure. On the other hand dubbing-related consumption skills seem to be relatively well developed: Only 46% of the Germans think that the dubbing soundtrack does not always match the actors' lip movements while 81% of the Dutch do so. The Germans' tolerance for the inconsistencies of lip-sync dubbing is a skill in the sense that is acquired through exposure (Garncarz (2005), p. 79) and therefore it constitutes a form of habituation.

Based on experimental and survey data it can be concluded that habituation to dubbing or subtitling is a process of self-reinforcement, where increased past consumption of one of them leads to increased utility and potentially increased consumption in the future.

Transaction costs

Transaction costs occurring on the supply and demand side can reinforce a standards' position once it attained leadership in a market. In a certain geographic area film exhibitors in different windows of exhibition (e.g. cinemas, video stores, or television³⁴) supply films in a particular language transfer format if a sufficiently high number (critical mass) of consumers prefers to consume films in that format. In each window of exhibition it is not always profitable to serve 'minority preferences' consumers fully-fledged in a certain area when their number does not surpass a critical mass. This is because film supply is subject to a degree of indivisibility, i.e. serving minority preferences is sometimes uneconomical. Consequently often only dubbing is

³⁴ This paragraph refers to 'videos' as video tapes, i.e. before DVDs that entail subtitling and dubbing arose. Similarly television and cinema exhibition are considered before their digitalisation.

supplied in cinema exhibition, video stores or broadcasted. In Germany almost only in densely populated areas subtitling niche markets emerge (dis2). Here the catchment area of a video store or a cinema encloses a critical mass of consumers with 'minority preferences.

For consumers the transaction costs for consuming the 'minority standard' subtitling are higher than for the dominating dubbing standard. This is reflected in longer distances to be travelled to cinemas or video stores supplying subtitled films and the limited availability subtitled or original version videos in Germany before DVDs became common. The latter were more expensive than dubbed videos and had often to be imported from abroad (Maier (1997), p. 30). Subtitling's higher transaction costs constitute an incentive for subtitling-lovers to consume dubbing instead. 78% of the population prefer dubbing and 13% prefer subtitling/original version. However the actual current supply and consumption of dubbing and subtitling is 95% and 5% respectively, and it was even more biased to dubbing in the past (sub1). Assuming a degree of inelasticity of film demand with respect to the language transfer format³⁵ implies that consumers with minority-preferences tend to watch (fewer) dubbed films instead. They thereby may get habituated to dubbing, at least partially. At least such a substitution effect increases the relative number of dubbing-consumers.

Via economies of scale in the production and distribution of dubbed films increased consumption of dubbing translates into lower relative prices and increase dubbing's attractiveness. This is a self-reinforcing interaction between supply and consumption of a language transfer format. Due to high fixed costs there are economies of scale in production and distribution of the language transfer process. Examples would be economies of scale in the production and distribution of video cassettes and cinema film-copies.

Learning-by-doing

Positive feedbacks on the supply- and technical side can take the form of learning by doing (see Arthur (1989), p.116). Learning-by-doing improves the efficiency of the production process and/or the quality of the language transfer. An example is the changeover from *Rythmographie* to 'normal' dubbing in the late 1940's in Germany. With *Rythmographie* the dubbing text and instructions for intonations were projected on a screen. The dubbing speaker's voice was recorded in long sequences as he read the text from the screen, often without seeing the corresponding film (Müller (2003), p.310). Problematic with this method was that the speaker could hardly keep up a natural rhythm of pronunciation resulting in a snatchy, non-fluent intonation. This problem was

³⁵ This means that consumers watch films even in the non-preferred language transfer format if the language transfer format they actually prefer is not supplied, supplied in small amounts only or when the access costs to the preferred language transfer format are high. Consequently the amount of total film consumption may be reduced according to the elasticity of film demand with respect to language transfer format or price.

solved by the emergence of professional dubbing speakers reciting their text lines lip-synchronous by heart and recording in shorter takes (Maier (1997), p.69). So the establishment of dubbing led to improvements that increased its attractiveness, in terms of quality and efficiency in the market even further.

Complementary Technologies

The rigidity of the language transfer system can be perpetuated by the interplay between technical complementarities and quasi-irreversible investments as the introduction of broadcasted television on a broad basis in the 1950s can illustrate. Then the German audience had already accumulated a stock of language transfer specific consumption skills (i.e. was habituated to dubbing) through previous cinema consumption (Garncarz (2005), p. 80). Consequently TV employed a format that was technically complimentary to the quasi-irreversibly investment in the form of consumers' consumption skills which formed an installed base.³⁶

The introduction of television has led to substitution of cinema consumption by television (Kreimeier (1992), p. 448) and increased consumption of (foreign) films/programmes in general (Bessler (1980), pp. 112- 115). Ergo the adoption of the habitually established language transfer format should have reinforced the existing habitual consumption patterns of the audiences. The same mechanisms apply to the introduction of Video in the 1970s. Here, too the language transfer technique was chosen that was compatible with the previously established formats in the respective countries' cinema and TV markets. In Germany both, the introduction of TV and video, reinforced dubbing's domination, by expanding the media of habituation.

Historicity & Comparison to Other Countries

As Path dependent adoption processes are characterised by contingency in their very first phase. In the case at hand this requires to show that various technological alternatives were feasible alternatives in the years after sound was introduced and that small events and other non-foreseeable circumstances caused the adoption of one or the other standard - the final choice not being predetermined.

An argument that attempts to explain the worlds' distribution of dubbing and subtitling countries is the market size argument: large countries such as Germany, France, Spain and Italy dub. Smaller countries such as the Netherlands and the Scandinavians use subtitles because dubbing's high expenses can not be recouped in their small markets (e.g. see Luyken (1991), p. 32). If this was true, then the process would not be path dependent in the strict sense which

³⁶Additionally the stock of foreign films in film distributors' and traders' archives that could have been broadcasted were in the dominating language transfer format as well, i.e. dubbed into German. This installed base of quasi-irreversible investment was technically compatible to the consumers' skills.

includes contingency. However, the argument that market size per se determines the predominant language transfer method is refuted in the literature (e.g., Donan (1991), pp. 606-607 and Dibbets, (1996), (1993) p.104)). Counterexamples to this ‘rule of thumb’ are too prominent to be overseen. On the one hand small countries use dubbing although subtitling would be more cost-effective: In all small classic subtitling countries family films are *profitably* dubbed and subtitled. Moreover some small countries use dubbing generally in cinema, e.g. in the Czech Republic 64% and in the Slovak Republic 94% of the films are dubbed. Also in small countries a large percentage of the TV programmes are dubbed, e.g. in the Czech republic 45%, Hungary 80%, Slovak Republic 94%, Bulgaria 70% (Dries, 1995)). On the other hand large countries not necessarily use dubbing: in the large Russian Federation voice over³⁷ dominates the TV market (ibid.) and in Japan’s cinemas about 75% of the circulating copies are subtitled (dis6)³⁸. These examples show that one can not predict the language transfer technique from country size with general validity.

Survey data in Luyken et al. (1991, pp. 30-33, 113) shows that people prefer the language transfer format that is dominant in their country. So theoretically things could have gone different in Germany, too. The question is what factors caused dubbing to dominate the market in Germany. Therefore, to identify critical events and circumstances that influenced the standard selection in Germany one has to look at the period 1929 - beginning 1930s when sound film was introduced (Wahl (2005), p. 53, Kreimeier (1992), pp.214-215) and the following decade during which the Germans’ habituation to dubbing took place (Garncarz (2005), p. 79).

In the begin of the sound film era it was by no means clear which language transfer system would prevail in the respective European markets. A 1930 survey among European film exhibitors and industry associations revealed that foreign language sound films’ were generally refused by the audiences, and only accepted if significant parts of the population spoke the foreign idiom³⁹, which was not the case in Germany (Film-Kurier (1930)). So if country size matters, then only indirectly via the relative large foreign language competence of the population. The survey reveals that in most surveyed European countries dubbing was “unsuccessful” and thought to be “futile” (ibid.)⁴⁰. In Germany this aversion against dubbing was shared by the majority of the critics’ and the audience (Müller (2003), p. 302 and 306). Garncarz (2005, pp. 77-78, 2003, p. 16) and Müller (2003, p.303ff) explain the audiences’ strong repudiation of dubbing with the rejection of the

³⁷ With voice over the original soundtrack is used but turned down and a dubbing track (usually spoken by one or two speakers) is superimposed such that the audience hears the original dialogues in the back- and the dubbing track in the foreground. This method is cheaper than dubbing.

³⁸ For comparison of the relative market sizes of these countries the MEDIA Salles European Statistical Yearbook gives the yearly cinema admission figures (I.e. No. of tickets sold) for 2005: Mexico: 161m, Germany: 127m, Italy: 102m, Russia: 92m, The Netherlands: 20m, Hungary: 12m, Czech Republic: 9,5m, Slovakia: 2m

³⁹ French, second to German were the most potentially accepted foreign languages in Europe, English as a foreign language was only potentially accepted by the Danish. (Film-Kurier (1930))

⁴⁰ Only the Yugoslavian and the Dutch film exhibitors’ associations deemed dubbing to be feasible.

“synthetic human”: The fusion of one man’s body with another’s voice was not accepted, perceived as strange and appalling. Optical versions⁴¹ were an attempt to overcome these perceived inconsistencies and to achieve lip-synchronicity. But these also estranged the German audience because the knowledge of the impossibility of a foreign movie star speaking fluently German constituted an inconsistency for audiences, too (see Garncarz (2005) p. 78, (2003), pp.16ff. and Low (1985), pp. 99-100). In Japan - for the same reason - the perception of the cultural inconsistencies of dubbing and its rejection by the audience were more severe. Therefore Japan’s traditional theatre’s narrators did live voice-over in the cinemas which was substituted later by subtitling (Toeplitz, (1979), pp. 322-323 and dis6).

By that time dubbing itself was of low quality. The dubbing method employed was the not sophisticated and un-natural sounding *Rhythmographie* causing severe audio-visual asynchronies which disturbed Europe’s audiences (see Low (1985), p. 99, Dibbets, (1993), p.104 and Maier (1997), p.69). To overcome these language barriers and win audiences with films in their respective mother tongue optical versions, but above all language versions⁴² were produced between 1929 and 1933 (Toeplitz (1979), p.295). But language versions, too, were burdened by similar obvious inconsistencies since “cultural specificity [of films and their setting] could not be repressed” (Dibbets (1996)). These were “catastrophic” on the artistic and technical level (Toeplitz (1979), p.295), sometimes boycotted and booed by the audience and above all uneconomical⁴³.

If dubbing, optical versions and even foreign language versions were rejected by the German audience - then why did not subtitling prevail? Up until the mid 1930s subtitling suffered from strong drawbacks, too: Until the end of 1932 subtitles were generated via the so-called optical or photographic copying technique. The result was “hardly satisfying” (Dibbets (1993), p.100) for the subtitles were often unreadable in the lighter parts of the picture. Additionally picture quality and the sound track quality severely suffered from the production process, but it was used till 1932 (Dibbets (1993, p.101). In 1930⁴⁴ an improved technique was introduced that is based on stamping the subtitles into the film emulsion layer mechanically, although the “results [were] often erratic, with poorly defined letters” (Ivarsson, (2001) p. 3). In 1933 a new etching technique for generating subtitles was introduced. These ‘chemical’ subtitles were cheaper to

⁴¹ In optical versions the actors speak their text by heart in different languages. These optical versions can be dubbed more easily, since the actors’ lip movements match the lip movements of the target language.

⁴² In language versions (or ‘double shooting’) a film is shot with one technical team, set and scenario but casts from different countries, such that there are up to 15 films shot in parallel, each version acted by native speakers (Danan, (1991), p. 607).

⁴³ Most language versions were produced for the German, French and English/US markets and to a smaller extent for Spain, Poland, Czechoslovakia, Hungary, the Netherlands and others (ibid.).

⁴⁴ Dibbets (1993, p.101) reports that the technique was used in the Netherlands from

generate and did not affect the picture's quality and were used until the 1990s (Dibbets (1993, p.101),⁴⁵ Low (1985), p. 100).

Until the emergence of language versions on a large scale in 1930 the situation was open: The audience rejected the revoicing techniques (above all dubbing) while subtitling's prevalence was hampered by the low picture and sound quality and the audience's preference for films in the own idiom and national star actors (Garncarz 1994). Language versions, although not appreciated too much either filled this vacuum. Although they were expensive, they enjoyed an advantage in terms of sound-picture consistency and quality compared to other techniques. The audience and the industry regarded language versions as an acceptable compromise, a method to overcome the drawbacks from dubbing and optical versions on one hand and subtitling on the other. Müller (2003, p.312) argues that as late as 1932 there was no "silver bullet" to overcome the language barrier. By that time neither dubbing nor subtitling showed signs to prevail and dominate the market (ibid.). When the production of language versions was largely abandoned after 3 years in 1933 (Toeplitz (1979), p.295) their effect on the cinematic history however was strong and lasting: In Germany the competition among different language transfer formats was probably decided by the early - mid 1930's in favour of dubbing. Through language versions Germany's audience consolidated its previous inclination to watching films in German. The audience habituation in that respect was so strong that dubbing had become preferable to subtitling although the latter technique had been strongly improved in quality and by 1937. Wahl (2005, p. 54) reports, that up till the war popular (US) foreign films were exhibited in subtitled and original version, but mostly were dubbed and Müller (2003, p. 312) concludes that dubbing was established as the market standard between 1933 and 1939.

The *country size argument does not apply to dubbing itself*, since in many smaller countries films are that format. From a cost argument dubbing seems to be feasible, even in small countries: Dibbets (1993, p. 104) reports that as early as 1932 attempts were made by distributors to introduce dubbed films in the Netherlands, but these were not accepted by an audience already habituated to subtitling. The country size cost argument merely applies to the production of *language versions*. Their expensiveness was an incentive to concentrate production on larger markets and only to smaller markets where the audience and regulations demanded films to be exhibited in the national language. In these markets language versions habituated the audience to watching films in the domestic idiom. So the introduction of language versions constitutes a 'small event' that tipped the balance of the audience's choice between revoicing techniques (i.e. dubbing) and subtitling towards the former by because it led the consumers demanding dubbing

⁴⁵ Dibbets (1993, p.101) reports that this technique was introduced in the Netherlands not until 1937

instead of subtitling when language versions were mostly abandoned and the choice was between dubbing and subtitling.

Another factor that distinguishes a number of the later dubbing countries was policies to promote domestic production and protection against German and/or American domination. Import quotas were introduced in the late 1920's - beginning 1930s in Germany, France, Italy, Spain, Czechoslovakia and Hungary (Danan (1991), p.608 and Toeplitz, (1979), pp. 305-306). These were reintroduced after WWII by Italy, Spain and France. Altogether these had a significant positive effect on domestic production and box office share ((see Danan (1991), p.608 and Gruback (1969), pp. 22-23, 26).

The “choice in favour of dubbing [was] influenced by nationalist considerations in many countries” (Dibbets (1996)): Strong exclusive nationalism perceives foreign language films as offensive and threatening national identity and culture, which can be counteracted by dubbing (Danan (1991), p. 611-612). These nationalist tendencies took the form riots in cinemas which exhibited ‘objectionable’ or ‘offensive’ foreign films (Kreimeier (1992), p. 227, Toeplitz (1979), pp. 205, 304). In 1929 Mussolini prohibited all films with non-Italian dialogue tracks; so did Franco with Spanish (Danan (1991), p.611) consequently only dubbed foreign films could be exhibited. In Germany censorship was severe already in 1930 (Pruys (1997), p. 147ff.).

From 1934 on Goebbels’ *Reichsfilmkammer*’s censorship prohibited the majority of foreign films to be exhibited (Maier (1997), p. 67). Films that managed to slip through were mostly dubbed due to a) systematic efforts to create jobs for unemployed Ufa actors (Vöge (1977), p. 120⁴⁶) and b) to shield off foreign influence in accordance with Nazi autarky policy (Kreimeier (1992), p. 263). In the 3rd Reich films were sometimes even shown deliberately in original or subtitled version to deter potential visitors: obviously the German audience must have been largely habituated to dubbing by the mid – end 1930s, according to Maier ((1997), p. 67).

Also Garncarz ((2005), pp. 79-80, (2003), p.18) reports that up till about 1933 - in a process of “cultural learning” - the audiences got habituated to ignore the inconsistencies of dubbing in countries that employed dubbing or language versions (compare Wahl (2005, p. 54)). The balance of habituation was tipped towards dubbing by the use of language versions between 1929 and the early 1930s which was reinforced by the Nazi-era film policies. Foreign influences were systematically kept out, motivated by protectionism and nationalism. In contrast -

⁴⁶ Reference from Danan (1991), p. 611, original reference: Vöge, H. (1977) “The Translation of Films: Sub-Titling Versus Dubbing”, *Babel - International Journal. of Translation.*, 23-3, pp. 120-125

exemplarily for the subtitling countries - the Netherlands⁴⁷ did not pursue active import restricting policies as in the dubbing countries Germany, France, Spain, Italy, Czechoslovakia, Hungary (Dibbets (1993), p. 104).

If the German audience has not become habituated to dubbing during the 3rd Reich it definitely became in the post war years. After the war control over the film industry lay in the hands of the allied forces. Exemplarily since 1941 Hollywood had not had access to the German market (Bräutigam (2003), p. 20). Film – as before during the war - provided a popular forum for of escapism for the population and a tool for ‘Reeducation’ and cultural propaganda for the Allies (Kreimeier (1992), p.435). Although demand was high the backlog of 2500 US films (Danan (1991), p. 608) produced during the war could not simply be exhibited since many were strongly anti-German. Dubbing provided the tool for adequately manipulating the films to fit the German market: potentially offensive scenes were cut out and dialogues were dubbed accordingly to inconspicuously twist the plot and character of whole films to please the audience (see Pruys (1997), pp. 153ff. and Maier, (1997)). Consequently dubbing became the language transfer method of choice in post WWII Germany. This reinforced the previous habituation of the audience and strengthened the path in favour of dubbing.

Conclusion

This paper shows how dubbing constitutes a potentially financial inefficiency for film distributors. Particularly for distributors of S&M sized films the costs of dubbing constitutes a significant cost block. Under a subtitling regime this group of distributors could provide roughly 10% more films with the same budget. The consumption of subtitled content improves the populations foreign language skills. As a conclusion dubbing leads to a potential inefficiency from an EU policy perspective aiming at encouraging more culturally diverse film consumption and increased language proficiency of the citizens.

Different language transfer formats prevail in different national markets as the respective audiences became habituated to ‘their’ language transfer format. Suppliers of films are bound to the national tastes and demand is rigid with respect to language transfer formats. This is because changing the format is associated with switching costs for the consumer. These costs in Germany consist primarily in the need to accumulate a set of subtitle-related consumption skills such as subtitle reading skills and foreign language comprehension skills. A consumer that has accumulated a sufficient stock of these skills is said to be habituated to subtitling, such as the Dutch are. The German audience in contrast is habituated to dubbing, i.e. has accumulated the

⁴⁷It is not known to me that Scandinavia, Belgium, and Portugal did implemented such a severe protectionism in the 1930s as the later dubbing countries did. More research has to be done on this point.

skill to ignore the inconsistencies inherent in dubbing. The process of habituation to language transfer formats is identified as a self-reinforcing process: More consumption leads to increased utility from consumption. The question is why consumers' habituation took so different forms in different countries.

The historic process of adoption of dubbing can be denoted path dependent for the finally prevailing language transfer format was not generally predetermined by country size as the examples of small dubbing- and large subtitle-countries shows. Rather there were critical events and circumstances that had a significant effect on the adoption of the language transfer regimes. In the beginning years of introduction of sound film audiences in general did not accept the 'synthetic man' embodied in dubbing. In Germany, during the early 1930s subtitling and dubbing were still competing for the succession of the language versions, but the audiences were already strongly habituated to watching all films the domestic idiom, which favoured dubbing. In Protectionism, nationalist policies and the wide use of language versions favoured the adoption of dubbing. Foreign influences were systematically shielded off, especially during the 3rd Reich. In post-WWII Germany allied film policies used dubbing as a way to market the backlog of films produced during the war and reinforced the audience's habituation to dubbing. It is well imaginable that habituation of the German audience could have taken a different path if chemical subtitling was developed 1-2 years earlier, the German government policies were less protectionist and nationalistic in nature, and if the Nazi-era and the consequent post-war film releases did not so systematically favour dubbing.

Further reinforcement of consumption habits occurred with the wide introduction of TV in the 1950's and Video in the 1970's. Then dubbing was chosen since it was compatible with the audience's set of accumulated dubbing-related consumption skills. Learning-by-doing effects on part of the dubbing studios increased the effectiveness and quality of dubbing in the 1950s and acted as self-reinforcement.

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Interviewees

Distributors (dis)

dis1, dis2, dis3, dis4, dis5, dis6

Exhibitors (ex)

ex1

Subtitling Studios (sub)

sub1, sub2

Appendix: Figures & Tables

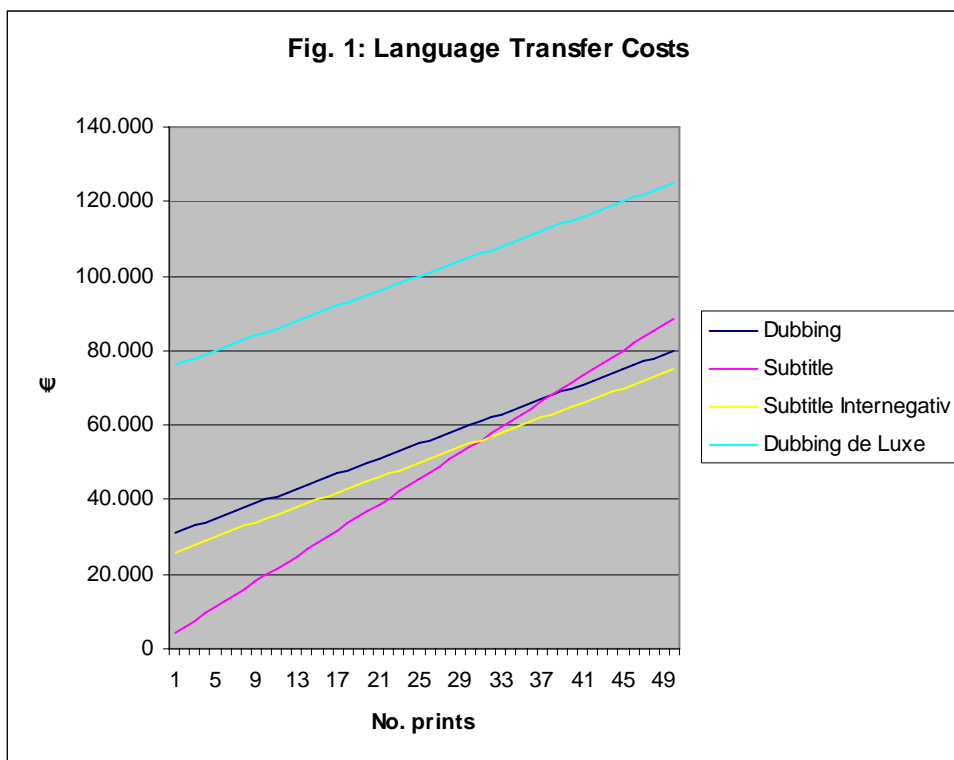


Fig.2: Digital Cinema Language Transfer Costs

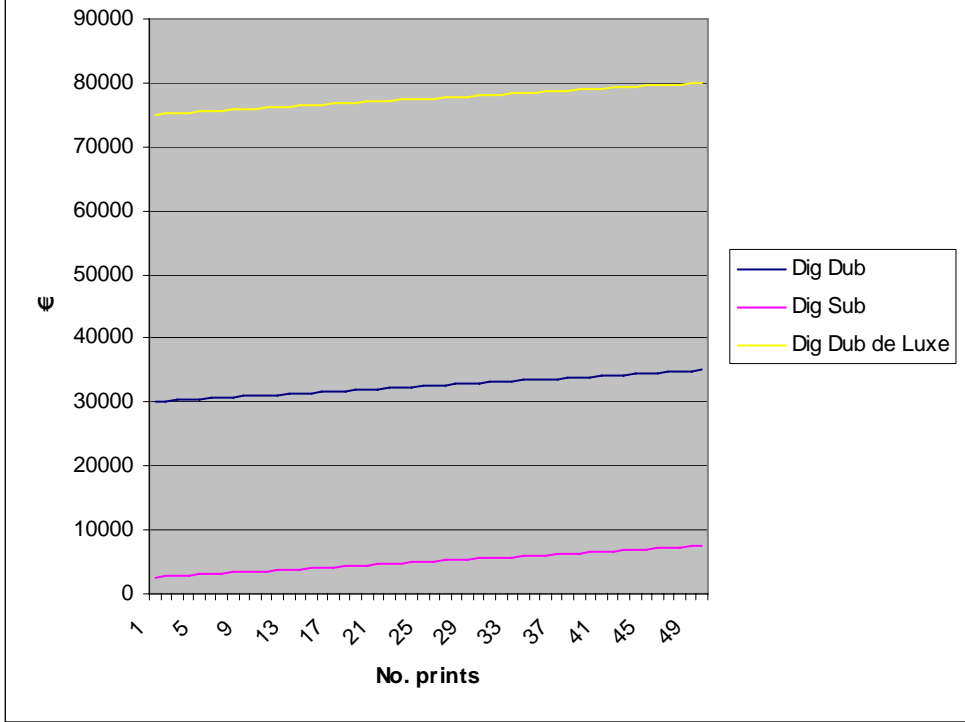


Figure 3, Indicators for Consumption Skills in Germany and The Netherlands: Statements about Subtitling and Dubbing

Sources: Luyken et al. (1991, p. 119); Spinhof, H. and Peeters, A. (1999)

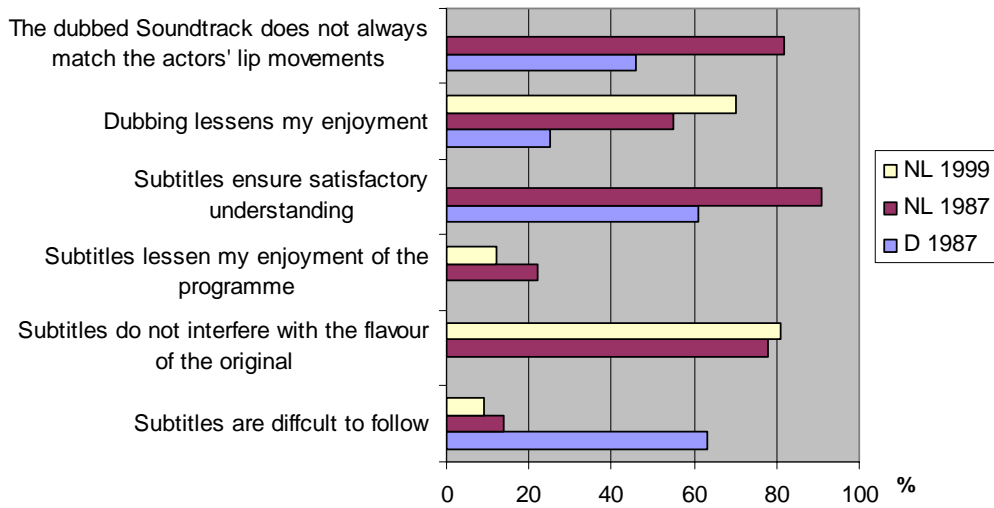


Fig. 4. Development of the statements (1974-1999) on the processing of Subtitles in the Netherlands: Time and Readability

Source: Spinhof and Peeters (1999)

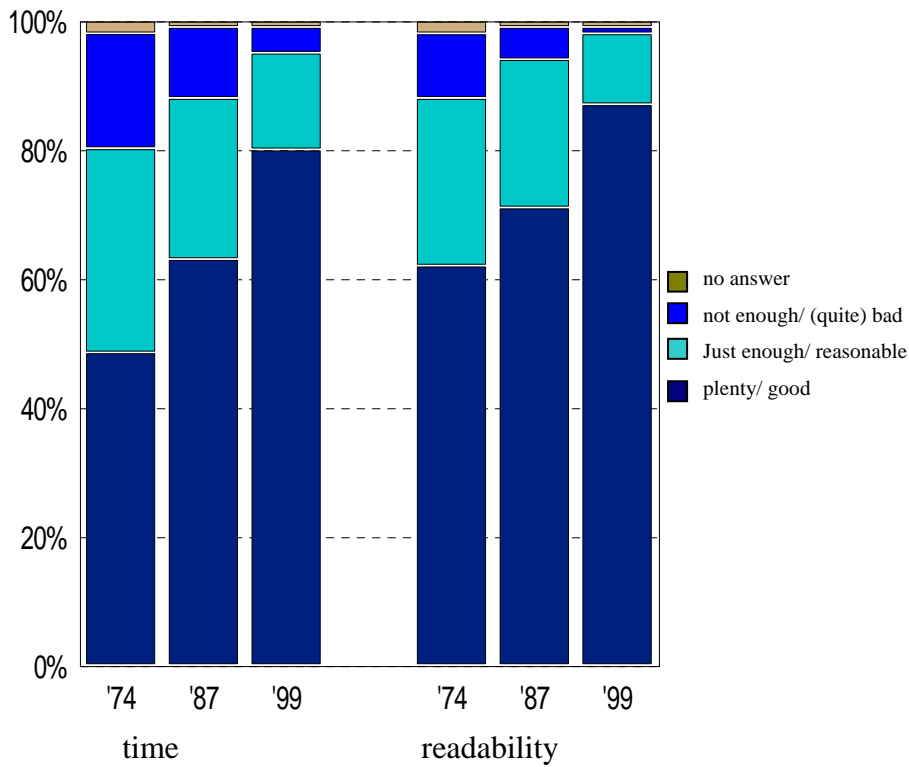


Fig. 5: Dutch preferences over Language transfer formats
Source: Spinhof and Peeters (1999)

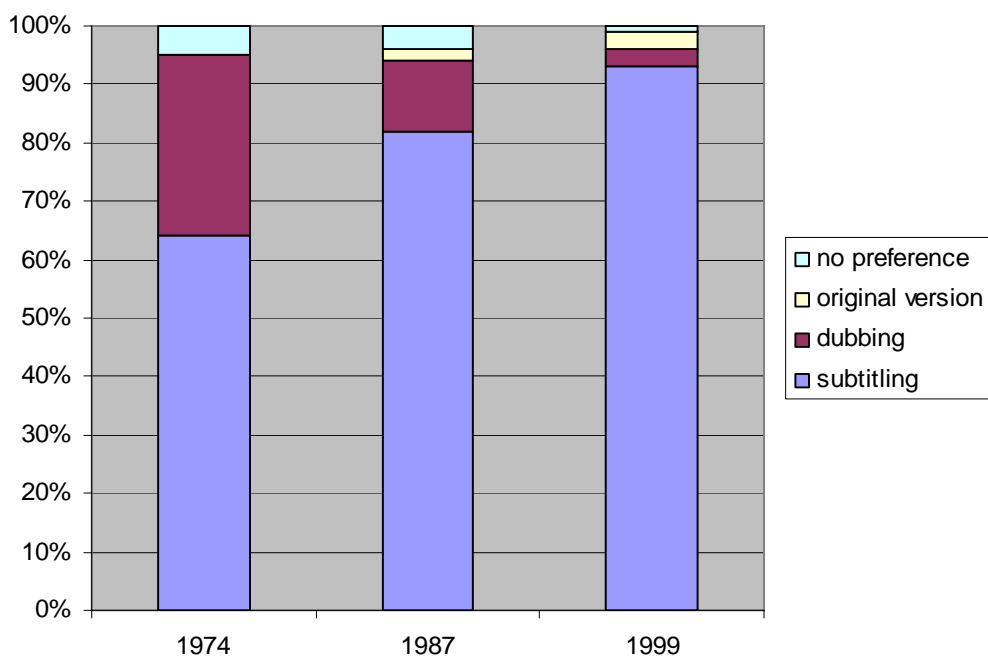


Table. 1 Copy classes, average number of film releases per copy class, and estimated language transfer costs per copy class.

Copy class: No. of copies per year,	films released in % (Average 2003-2005)	Number of films released (Average 2003-2005)	Estimated Dub costs in €	Total dubbing costs per copy class in € (No. of copies x Dubbing Cost)	Total subtitling costs per copy class in € (No. of copies x cost of Subtitling of €2.500)	Differences between subtitling and dubbing costs in €
1 - 10	30	121	20000	2426667	303333	2123333
10 - 50	24	101	30000	3030000	252500	2777500
50 - 100	11	47	40000	1866667	116667	1750000
100 - 200	9	35	50000	1766667	88333	1678333
200 - 300	8	32	60000	1900000	79167	1820833
300 - 500	9	37	70000	2613333	93333	2520000
500+	9	39	80000	3093333	96667	2996667
total	100	412		16696667	1030000	15666667

Source for copy classes:
SPIO (2006)

Appendix 2

For comparison, the stated amounts of ECU25.000 and ECU29.000 in 1991 have to be converted into 2006 Euros, taking into account the inflation over this period

For the EU 15 countries the OECD reports inflation index figures of the consumer price index for the years 1991-2006. (see the databank on the OECD homepage

<http://stats.oecd.org/wbos/default.aspx?querytype=view&queryname=221> , information retrieved in September 2007). The index rose from 79.7 in 1991 to 113.3 in 2006, with 2000 =100.

Rescaling the figures to 1991 as a base year (I.e. dividing the index figures by 79.7) yields that the price index rose by a factor of 1.42 between 1991 and 2006. The composition of the ECU remained relatively fixed during the 1990s (see European Commission (1996)) when the ECU was converted 1:1 into the Euro (see European Union homepage

http://ec.europa.eu/economy_finance/emu_history/history/part_a_2_d.htm, information retrieved in September 2007). So as an approximation one can calculate, that a 42% increase in the price index between 1991 and 2006 can be assumed to be a realistic enough approximation when it comes to compare the price levels over this period. Assuming this, the stated amounts of 1991 ECU25.000 and ECU29.000, if converted 1:1 into Euros, and taking into account a total inflation of 42% over the whole period corresponds to €35.000 and €41.000 in 2006.

The increase in the price index is based on the OECD figures from <http://stats.oecd.org/wbos/default.aspx?querytype=view&queryname=221>, retrieved in September 2007. The inflation between 1997 and 2006 was calculated by dividing the OECD producer price index number for 2006 (116.8) by the index number for 1997 (98.4), the result being the index change between 1997 and 2006, i.e. 1.186, or 18.6%. The DM/EURO conversion with which is the DM amount is converted into Euros is 1,95583 DM/€(Compare the official conversion rates published on “Council Regulation (EC) No 2866/98 of 31 December 1998 on the conversion rates between the euro and the currencies of the Member States adopting the Euro”, Official Journal L 359 , 31/12/1998 P. 0001 – 0002, retrieved in September 2007 from <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31998R2866:EN:HTML>). Using an inflation of 18.6% and a DM/Euro conversion rate of 1,95583DM/€the 1997 amounts of DM50.000 and DM100.000 can be converted into 2006 Euros. The corresponding 200prices are is €30.410 and €60.820. This conversion assumes that the relative factor prices entering the production decision stayed constant.