

Appendix A: Interview with Experts

The TCRP Project Team has interviewed several individuals with expertise in social learning theory, residential choice, travel behavior, and individual marketing. The interviews included questions on the current research of the individual, and solicited his or her opinions on our research. A summary of findings from the interviews is included below:

Albert Bandara

Dr. Albert Bandara is considered the father of Social Learning Theory and Social Cognitive Theory. Dr. Bandara is a professor at Stanford University.

Dr. Bandara's current work has moved beyond the concept of "self-efficacy" to that of empowering communities. His work in India with the purpose of empowering women stresses the advantage of empowering communities as a whole to bring about change.

He feels that there is more opportunity currently for individuals to change with respect to their choice of neighborhood. Since individuals can develop competencies that allow them to transcend the physical environment, they are more mobile than they used to be and less likely to remain in their old neighborhoods. Job losses encourage mobility from the old neighborhoods. Some groups, like Latinos, move easily. There is gentrification of African American urban areas by the young. Such individuals have diverse interests and cosmopolitan attitudes and want the advantages of an urban center. These changes are evolutionary.

In learning about an individual's mode choices, Bandara stresses the need to ask open-ended questions. He feels that there are many factors that affect this decision, so we would need to leave room to ferret them out. Factors that motivate individuals to exercise control include

- education,
- outcome expectations,
- physical effects,
- adverseness to alternatives,
- social outcomes of choices,
- self-evaluation,
- personal standards regarding alternatives,
- standards on environmental issues,
- collective advocacy,
- mobilization of individuals to influence public transportation,
- public lobbying at state and national levels,
- bonding to setting,
- economic interest,
- single occupancy vehicle interests,
- anti-transit political actions,
- fixed geographic constraints,
- physical determinism,
- convenience/reliability of transit, and
- personal wealth.

He would want to ask about the goals of individuals and of collective society; how does an individual's or the collective society's belief system affect his/her behavior? How does self efficacy or the ability to convince oneself of utility of action affect one's expectation of outcomes?

Encouraging transit is difficult, since individuals love the freedom of going anywhere in their cars. Transit needs to be more car-like, or there needs to be a range of transit options to allow individuals to choose.

Health habits are shaped early, and schools play an important role. Electronic devices can help target messages (the Internet and handheld devices, for example). It is important to mobilize the community for self-change. His advice: alert individuals to risks, teach them new skills, identify sources of funding, mobilize collective action, establish social systems to promote health, give individuals more choices, exploit their ability to exercise more control, and individualize programs.

Cultural change is encouraging more exercise, although school food programs and physical education cutbacks go the wrong way. Physical education programs have long-term benefits as kids are more active and eat healthier and continue this trend throughout their lifetime.

A walkable, transit-friendly community would be a great attraction if it were safe, enjoyable and affordable. The real challenge is to get collective action to create such communities.

Communicate the community concept by showing examples of such communities along with the benefit/improvement to the inhabitant's lives. With respect to transit, show colleagues using transit and espousing the value of transit.

Icek Ajzen

Dr. Icek Ajzen is the father of the Theory of Planned Behavior. He is the Head of the Division of Personality & Social Psychology, University of Massachusetts at Amherst

Dr. Ajzen's work is in the area of theoretical research, although he is aware that his theory has been widely applied in many fields, particularly the health field. His Theory of Planned Behavior has been developed to explain intentions, as well as behavior itself. The constructs influencing intentions can be summarized as attitudes towards a behavior, subjective norm, and perceived behavioral control (self-efficacy). His work finds different degrees of influence from these three constructs depending upon the group being evaluated and the situation. For teenagers engaging in unsafe road-crossing behavior, for example, subjective norm was found to be the most critical. For older women engaging in exercise, subjective norm was less important.

He described his current research into the relationship between intentions and behavior. Most people's intentions overstate what they will actually do rather than understate it. For example, people intend to get exercise, but actually exercise much less than they intend. He is trying to learn why there is a discrepancy and how it might be reduced. One experiment found that people will perform much better (do what they say they will do) if they also commit to a more specific plan which includes time and day an action will be taken, where it will happen, and include an appointment with a friend. In this experiment, which was ostensibly to watch and evaluate a certain TV program, conformance with stated agreement to participate increased from less than 20% to 70% when a more detailed plan was developed.

Dr. Ajzen thought the theory of planned behavior could be of use in providing a theoretical basis for examining the central questions of the TCRP H-31 project. In order to use the theory of planned behavior, he suggested that we utilize qualitative research to elicit the constructs of beliefs, social norms, and perceived behavioral control. Rather than focus groups, he suggested using a larger group (40 to 50 people)

and eliciting their thoughts via a questionnaire. This would allow us to construct appropriate questionnaires for the Internet panel survey. He said that we could look at his web site for suggestions on how to construct the questionnaire.

In understanding the relationship between attitudes, intention, and behavior, it is important to understand the context of what else is changing. In the real world, it is difficult to hold everything constant.

Susan Handy

Dr. Susan Handy is a professor at the University of California at Davis. Her research has been in the area of residential choice.

Dr. Handy has written extensively on the subject of residential choice. She feels that individuals' opinions towards neighborhood type are formulated in multiple points in an individual's lifetime. Opinions are not fixed—they can change as an individual develops. As life circumstances change (e.g., marriage, childbirth, retirement), so do an individual's interests and needs change. Peers, parents, partners and children all influence our perceptions, attitudes, and preferences. The community as a whole, including its socioeconomics, social norms, and interpersonal contact, also affects preferences.

With regard to health, opinions are formulated early. Sedentary parents may have sedentary children, and active parents may have active children. Peers may have more influence on teenagers than parents. It is difficult for adults to overcome/change habits and patterns learned early in life.

Many kids lack exposure to public transportation. Parental influence may shape their opinions until they leave home. College students may be exposed to transit for the first time through campus shuttles. Kids may be embarrassed to take the bus if they perceive it is for lower income individuals. Some individuals may experience their first and only exposure to public transportation while on vacation.

Safe, attractive, and walkable urban neighborhoods may appeal to individuals across all life stages. These should be targeted to those who value such elements. The overall message to communicate is quality of life.

To communicate the benefits of such a neighborhood, take respondents on a tour, either live or virtual. Videos have a bigger impact than a brochure. Tell a story and/or use testimonials with pictures.

Changes in intentions and attitudes do not necessarily lead to change in behavior, and it is difficult to change beliefs and intentions. People may choose to walk in undesirable neighborhoods or may choose not to walk in an ideal surrounding. Individuals do what they want. Surveys can ask what changes individuals are actually making. A more productive approach might be to attempt to influence attitudes and behaviors of those already living in walkable neighborhoods. Approaches such as "Travel Blending" and "Travel Smart" might be used. These call for individuals to track tripmaking with a diary, provide feedback as to how they can make change, and then conduct a follow-up survey to see what change has occurred.

James Sallis

Dr. Sallis is a Professor at San Diego State University and is Director of the Active Living Policy and Environmental Studies Program. He is PI on a U.S. National Institutes of Health project based in the Central Puget Sound and Baltimore to test the effects of the built environment on physical activity patterns.

Mr. Sallis has not explored the issue of residential choice or mode choice, although the work may be migrating in that direction. His work is on encouraging walking, mostly as a recreational activity. He is looking at social learning theory and environmental factors in combination, and is expanding from recreational walking to walking as a means of transportation. He has a large study going on now that is looking at environmental and psycho-social factors. This will encompass and extend social learning theories. The research team has developed useful measures that are related to recreational activity. It might be possible to adopt such measures to look at walking as a means of transportation. Because our application is so different, the measure will need to be researched thoroughly by focus groups for our purposes.

He suggested that we look at a "state of change" scale related to walking and cycling. This has been developed in Europe. He said that the social psychologists use the theory of planned behavior to understand why behaviors occur, whereas social cognitive theory is used by those interested in intervention.

To the extent that we are adding environmental factors and public policy issues, we are moving beyond social learning theory. His current work is also moving in that direction. He will provide a description of ecological models, as well as his current survey forms, as they may be helpful in the design of our research. His project for the National Institutes of Health will go on for several years and will look at objective physical activity data for 2500 people located in two regions and in 16 neighborhoods.

Lawrence Frank

Dr. Frank holds the J. Armand Bombardier Chair in Sustainable Transportation Systems for the University of British Columbia. Dr. Frank is the principal investigator of a research program based in Atlanta known as SMARTAQ - or Strategies for Metropolitan Atlanta's Regional Transportation and Air Quality. He is working with James Sallis on the U.S. National Institutes of Health project.

Dr. Frank explored the issue of residential choice with large surveys in the Atlanta region for the SMARTAQ project. His research team collected travel data on 8000 households and residential preference information for 1500 households. They collected trade-off information to see how households valued household and neighborhood features as well as travel requirements.

Significant factors are always housing costs, crime, and school quality. But the researchers tried to control for these so they could look at the impact of the built environment on choice of residential location. What they found was that one-third of the population living in sprawl conditions would prefer to live elsewhere. The problem is that viable alternatives do not exist—there is a market failure so the choice set is limited. The researchers are looking also at different urban form and how that impacts travel choice. They know that people in denser environments walk more. There is a range of modal behaviors even in similar neighborhood types. But suburban oriented people walk more in urban communities than they do in suburban communities, so urban form does impact mode choice. Characteristics such as connectivity, sidewalk width and quality, safe streets, and shade increase walking. Several papers on the results of this work will be published shortly.

Dr. Frank felt that opinions on types of neighborhoods are formed early (age 10–13 years) when children start to form a sense of the world. He also thought that a child's upbringing will affect his or her sense of environmental ethics, fairness and social justice. He thought that attitudes towards physical activity in order to maintain health come a little later (age 15 or older). He thought that the sense of independence that children have in walkable environments will be a factor in their attitude toward such environments in the future. As for public transportation, attitudes will depend upon where the child grew up. For example, if a child grows up in New York City, he or she will develop an early opinion on public transportation. Those growing up elsewhere may not have any familiarity with it. Their opinion towards public transportation will

also depend upon their level of tolerance for others who may be different, and whether they are willing to not be in total control of their environment. However, Dr. Frank felt that those respondents found to be most favorable to TOD communities did not necessarily come from such communities as children.

He thought that the major appeal of walkable communities will be to the pre-child-bearing and post-child-rearing years. If we have better schools and better pedestrian infrastructure, then walkable communities might appeal during the child-bearing years as well. Currently such communities appeal to a higher income profile rather than middle or low income.

He thought the health message was very important for communicating the value of walkable neighborhoods. Saving money and improving health were two salient messages. The best medium for spreading the word would be through trusted people in the community.

Dr. Frank said that the SMARTRAQ results showed that preferences are related to behavior. For those who would like to live in auto-dependent communities, there is a close relationship between preference and choice. But for those who prefer transit-oriented communities, there is not a close relationship. The problem is there are not enough transit-oriented communities to choose from.

Dr. Frank suggested that our study would benefit by carefully stratifying by urban form, so that we could compare results by urban form.

Werner Brog

Dr. Werner Brog is the Managing and Scientific Director of Socialdata, Institute for Transport and Infrastructure Research, which he founded in Munich in 1972. The main focus of his research is on mobility behavior, the application of policy-oriented decision-making models, and the design and application of concepts to promote mobility behavior change. The dialogue-marketing technique called IndiMark® (Individualised Marketing) has been applied in more than 100 projects for over 1.5 million target persons in 15 countries.

Dr. Brog has not worked in the area of residential location. He proposed to the German authorities that his work in the area of personalized journey planning be extended in a linear manner to cover the question of choice of residential location, but was still waiting for funding for this extension. His work around the world is generally considered to be the most widely adopted form of marketing intervention towards increased transit ridership, and support of the "green modes" in general.

Dr. Brog's current work tends to focus on the choice of transportation mode after the residential decision has been made. However, he noted that his team of coaching experts tends to gain a personal relationship with the individual who is selecting a transportation mode: adding some questions about the residential options, he believes, would be quite easy. Thus, his strategy of providing basic, primary information to willing individuals who have asked for it, could, in theory, help people to choose a transit-supportive neighborhood as well.

Brog starts his market research with a very straightforward analysis of market potential. For Germany, he has calculated that 26% of trips simply cannot be undertaken by public transport at all. Another 24% of trips are severely constrained by factors that make it unlikely the trip would be taken by public transport. Given that about 16% of German trips are taken by public mode, there remains about 34%, for whom he states there are only subjective reasons for not using public transport. That means using public transportation could be possible—without any system improvements—if suitable means of information, communication, and motivation were made available.

Dr. Brog has published considerably on the question of the amount of green-mode use undertaken by the individual. In his major study for the European Union, "Switching to Public Transport," he writes,

"...in terms of increasing public transportation patronage – subjective (soft) factors (system perception) are as important as objective (hard) factors (actual system)."

The essence of his work, as he explained to us, is that potential clients simply do not fully understand the quality of the public mode options available to them. He gave as an example a sample community in the Portland OR area, in which, he argues, the public transportation options to the major destinations are as good as most in Europe. His basic theory is that this "good news" has to be communicated to the individual user in a direct, personal manner:

"...priority has to be given to better information. If the concept of customer service is taken at all seriously, information has to be offered to the customer instead of expecting him to ask for it from the public transport operator."

While our conversations did not focus on selection of neighborhood types, Dr. Brog's work has explored in some detail the *impact of neighborhood types* on major trends in tripmaking behavior now being experienced around the world. Brog's ongoing work concerning one's propensity to use environmentally friendly modes focuses quite directly on the issue of the trip length that is characteristic of the neighborhood under study. In his article titled "Eight cities walking: comparative data on walking as a transport mode from cities in Europe, Australia and the US, Portland," he describes the importance of urban form on trip length:

"Examining the different activities at the destinations it can be seen that in Basel people have short ways to reach their job -- more than half of the work trips are only up to three kilometers whereas in Portland half of the work trips are longer than 10 kilometers. In Basel also trips for education, shopping and leisure are very short. More than 80% of education and shopping trips are no longer than three kilometers. In Portland these trips are longer, but compared to trips for work or education, shopping and leisure are much shorter. The majority of these trips are up to five kilometers only. *This results from the different traditions of city planning.* Basel is a city of rather short distances while in Portland longer distances have to be covered to reach destinations."

Brog has noted how early in life the cross-cultural differences in travel behavior appear in the data.

"In Portland the share of motorized private modes (84%) is more than three times as high as in Basel. This can be viewed for all observed groups. *Already the children and teenagers are educated using the car* (as passenger). Two thirds of this age group are using motorized private modes for their trips, most of them as car as passenger. In Basel, only 16% are using motorized private modes, whereas the majority of this age group is using environmentally friendly modes."

While the issue of exercise *per se* was not a subject of our conversations, Dr. Brog's work on change in walking patterns is used throughout the world. In the IndiMark[®] process, those in the identified market segment are not only sent a stop-specific bus schedule, but also a walking map, on which specific trips are sketched.

Concerning the role of walking over time, Dr. Brog has undertaken analyses of the change in German travel behavior between 1972 and 1997. He concludes that there has been only one dominant change in travel behavior—the substitution of the walking trip with the longer auto trip:

"Only the distance traveled daily has risen appreciably since 1972; in East Germany by 9 km and in West Germany by 8 km per individual. This development confirms that *there was only one major change in mobility: the replacement of (short) walking trips by (longer) car trips.*"

Dr. Brog has written about the moments in life when one's transportation behavior is most subject to alteration. Echoing a major common theme in the development of our Research Plan, he writes, "The best

opportunity to catch new customers are times of change in their personal life, e.g. a move. Individualized Marketing is particularly successful if it hits the (potential) customers in such a situation."

There are many influences on the subject as he/she forms a perception about the logic of changing modal behavior. Consistently, Brog emphasized to us the importance of establishing the credibility of the information provider, the staff person who carries out the intervention. Whenever possible, the information requested is delivered by hand to the customer; "contact by telephone and, on request, home visits are made in the convincing phase. At this point it may be appropriate to deliver a 'test ticket' to encourage the person to try out public transport for a limited period of time."

Consistent with his basic approach, Brog emphasizes that small increases in use from the group that already uses public transportation infrequently can result in major increases for the public transport operator, particularly off-peak.

Concerning the market segment to deal with first, Brog writes:

"Car users are the hardest target group to change in behaviour- build on our existing customers first. The highest increase was gained in the group of regular users of public transport with information demands. Regular car users are the most difficult group to achieve any behavioural changes and should not be initially the center of the efforts."

Within the IndiMark® process, the method of communication is well established. Brog describes how this communication should take place to each of three market segments, (interested non-transit users, interested transit users, and all others not interested.) The program should include three-stages and be based on the following:

- Motivation for change
- Information about the offer
- Experience of the system

His system is quite simple. First, the market is segmented into three groups. He drops those that are not interested in the program. For those that are already loyal customers, they receive some form of gift, and are encouraged to use the system more. He notes that "It is important not to give test tickets to [existing users]" as they do not need to experience the system.

The intense interactions are then saved for those who stated they do not use public transport much, but are interested in the program. This is the only group for whom personal visits are budgeted, for example. This group is offered a "test ticket" so they can experience public transportation.

In our interviews, Brog took the position that the existing IndiMark® process, as undertaken in Portland OR, for example, could be expanded very simply to deal with the issues of residential choice, as extension of its present focus on mode choice.

In Brog's experience, once the barriers of distrust are broken down, people will be candid about their potential to change transportation behavior, and then, they will change that behavior after having changed their intent based on the personal intervention process. For example, of those who did not use public transportation but entered the program, 59% actually asked for a free "test ticket" to help them learn about the system.

When funding allows, his program includes a follow up that measures both the abstract idea of "satisfaction" and the actual change in observed ridership. He writes, "The majority [of field experiments] had a high level of success both in terms of increased patronage and satisfaction. At least two achieved high levels of both

satisfaction and patronage increases, with a future two having either high increase in satisfaction or patronage." In short, he did find a correlation between the improvement in attitudes towards transit and the empirical observation of increased ridership.

We asked Dr. Brog about the relationship of this approach to other applications of Learning Theory, of which the Theory of Planned Behavior is just one application. He replied that, no, he was not carrying out any particular theory; but that, yes, his program could be seen as an example of the kind of guided social change we were examining in the TCRP project. He emphasized how much importance he places on the credibility of the person actually giving information to the customer, consistent with the foundational work of Bandura.

He further noted that once the program is undertaken on an intensive basis in a given area, word of mouth tends to spread quickly. In many cases, people would call the responsible authority, and ask why they had not been invited into the program. Normative influence, he argued, (both from the mentor, and from the peer group) was an essential element of such a campaign. Viewed with the benefit of this insight, the structure of Brog's program is indeed familiar to constructs of learning theory as follows:

1. The individual is convinced of the need for change, and states his/her willingness to change.
2. There is a normative influence, both from the credible mentor, but also from the others in the community who might become involved with the enthusiasm of the program.
3. The individual is given highly specific information about how a given trip could be made by public transportation, and then is offered an incentive to experience the system. Armed with this experience, the individual can make his/her own judgment of his/her level of perceived behavioral control.

Pat Mokhtarian

Dr. Mokhtarian is Associate Director of the Institute of Transportation Studies and Professor of Civil and Environmental Engineering at the University of California at Davis. She has specialized in the study of travel behavior for more than 20 years.

Dr. Mokhtarian has modeled travel behavior including mode choice, residential location (suburban vs. urban), attitudinal variables, and lifestyle variables using both static or cross-sectional studies and time-dependent studies. She has also looked at the long-term impacts of telecommuting, asking the question: Does telecommuting encourage people to move farther from their jobs?

With regard to the subject of residential choice, Dr. Mokhtarian's findings are that attitudes influence residential choice. Literature on "mis-match" theory looks at people who live in suburban communities but desire to live in urban communities and vice-versa. Mokhtarian's research looked at how travel choices are correlated with a person's actual residential location versus their desired location. It was found that suburbanites living in urban communities tend to travel like suburbanites, using their automobiles more frequently, even when they had alternate choices (i.e., transit) available to them. Those persons desiring an urban lifestyle but living in suburban communities also tended to travel more by automobile, likely constrained by a lack of alternative choices. It was found that attitudes do change over time, but slowly. Persons who choose to use alternative modes will often self-select their locations, while those who choose to drive an automobile are influenced by the built environment (e.g., lack of transit) or an overall attitudinal predisposition toward the automobile. Environmental influences on behavior would be better explored by a longitudinal study. It is also important to look for similar demographics and socio-economic factors among study participants.

Individuals formulate their residential opinions from day one (e.g., kindergarten). Through social cognitive theory, we learn that a person's choices are influenced by behavior, personal factors, and environmental factors. Our life experiences, both negative and positive, affect our residential choices. For example, we may choose to live in a single-family detached home if we previously experienced a noisy environment (e.g., loud music) in an apartment building. Depending on our childhood experiences, we may have specific ideas about where we want our children to be raised. Milestones in a person's life (e.g., students, working yuppies, raising a family, and retirement) may influence different location desires. Parental attitudes also have an effect on our residential choice. We are influenced by our parents, peer groups, parents of peers, and cultural norms. Basically, we make decisions based on what makes sense for our current situation.

With regard to mode choice, Dr. Mokhtarian's said that one study found an association with sport utility vehicles (or SUVs) in urban neighborhoods consisting mostly of affluent single households where cars are a status symbol. Persons with pro-environmental attitudes tend to live in high-density neighborhoods and use autos less. Professor Mokhtarian's work has found that some travelers receive a benefit or positive utility from commuting. People valued the "act" of travel.

We tend to model our parents' and peers' choices and actions. Mode choice is influenced more at school than at home. During our early education we are exposed to physical activities at school. Although there has been a weakening in physical education requirements in our schools, there has been a recent resurgence due to youth obesity studies. Our residential location also affects our health maintenance choices. People living in the suburbs may need to drive to the gym, whereas a person living in an urban environment may choose to walk or bike to the gym. The suburbs can, however, foster health by providing open space for enjoyment of outdoor activities, such as biking and walking.

Our first exposure to public transportation is often the school bus. School buses and buses in general have a negative stereotype. It's "not cool" to ride the school bus. Once we get a driver's license, we may feel compelled to drive rather than take public transportation. Today, fewer kids are taking (being exposed to) the school bus and are driven by their parents to school. Previous experiences (or lack of) influence our attitudes towards and perceptions of public transportation. Buses are often seen and experienced as unsafe, dirty, and noisy. Distance to a bus stop and climate will also have an influence on our preference towards public transportation. We are influenced by our peers and parental attitudes towards public transportation. Our economic and social standing will influence our transportation choices (e.g., whether we drive a Lexus or take the bus).

With regard to encouraging transit-oriented development and decreased auto use, we need to sell the whole package rather than focus on just a single selling point. One point won't appeal to everyone. The neighborhood and its amenities need to appeal to different people with different lifestyles. Some people want a large backyard and the privacy afforded by a detached home. Others are willing to share walls with their neighbors in order to be closer to their destinations. Urban planning needs to pay more attention to design amenities rather than focus on social marketing schemes.

It should be noted that you can use amenities to attract people to an area, but they may not use the amenities even though they have them. However, people still want the option of and proximity to amenities. Often people want it all—they want the beach, mountains, and Wall Street all in one place. However, competing objectives for residential location require trade-offs and can accommodate only a few of these desires. For example, persons living in high density areas may insist on adequate parking.

A neighborhood that provides opportunities within walking distance caters to the elderly and those who cannot drive. One such community is a branded retirement community. Although this type of community has several advantages for the elderly (e.g., access to transit and shopping), we need to be careful not to

segregate the elderly (or any other segment of society) from other groups. Senior communities can “bring down” the elderly by drawing attention to the problems associated with old age such as death, sickness, decrepitude. Neighborhoods should consist of a mix of age (income, race, etc.) groups. A neighborhood that has mixed-space uses will provide more choices to a wider audience. There is an unsatisfied demand for this style of community (i.e., one with a balanced mix of uses that also accommodates the automobile). Not only do we need to build more of these types of communities, but we must make them affordable.

A virtual-tour website would provide a visualization of such a neighborhood including the external surrounding (e.g., green space, playgrounds, security amenities, commercial mix, and an internal view of floor model layouts). Brochures/web sites should emphasize amenities and allay negative perceptions. For example, apartments are often thought of as small and noisy. Marketing tools should address these concerns by highlighting spaciousness, privacy, and low-noise levels.

Transit services can be targeted to a niche market. But additional services, such as Wi-Fi on express buses, must be free or low cost to be attractive. Light rail or a plush bus rapid transit service may cater to rich white suburbanites, whereas crowded traditional buses tend to be occupied by lower-income groups.

It's important to identify your target audience demographics (e.g., young vs. elderly, single yuppie vs. family household, auto oriented vs. transit dependent). Will you tend to find these groups in metropolitan or rural areas? How does this type of neighborhood appeal to these diverse groups and lifestyles?

There is a weak link between intentions and actual behavior/actions. These types of studies need to be taken with a grain of salt. We learn by experience; people need to “feel and do” to change behavior. Our preferences change over time; certain developments appeal to certain segments of society. There are trade-offs involved in residential choice.

Kay Axhausen

Dr. Axhausen is professor at the ETH University in Zurich Switzerland. He is the principal architect of the MobiPlan project, which looks at the interrelationship between longer term residential choice and short term mobility decisions

Dr. Axhausen has published considerably on the interaction between the residential location decision and the choice of mode. He was a key member of the European Union's MobiPlan Project, which developed new tools to inform residential decision makers of the transportation impacts of the locational choice.

In his recent paper, “Locations, Commitments and Activity Spaces” (Axhausen, 2001). Axhausen demonstrates the importance of variables studied by location theorists decades ago: he argues that people tend to move outward in a given radial sector from their previous location, thus minimizing the costs of returning to old, familiar locations. His work documents how the assumptions about available modes influence the geographic areas which can be reasonably incorporated into one's lifestyle. His paper includes a mobility choice model, which includes “housing location (type of location, distance to nearest public transport stop; housing costs; distances to work and shopping).” In addition there is a residential choice model that includes: “distance to previous residential location, type of previous location, distances to work and education.”

Dr. Axhausen's ongoing work continues to examine the relationship between a given form of housing and the mobility package offered the user to make possible that residential choice. His work emphasizes the manner in which the package of transportation services offered to the individual empowers the individual to choose a viable trade-off between housing preference and the cost/burden of transportation.

Dr. Axhausen's work shows how the nature of the transport system offered to the individual should be incorporated into the analysis of mode choice:

"Daily travel behavior is influenced by two groups of constraints: the position of the person in the life cycle and by her/his lifestyle choices. While the position in the life cycle has elements of choice with regards to partnership, marriage, children and responsibilities in the care of others (e.g. care of relatives, in particular of the grandparent generation), transport analysts normally accept these as given and as uninfluenced by the service levels of the transport system.¹"

He has argued that the peer group, where the normative influence of one's own group are experienced, must be understood in the analysis of both long- and short-term decisions. He writes that the proper integration of long-term lifestyle decisions with the analysis of shorter term transport options has two implications:

"[A]ll observations of daily behavior are confounded by the self-selection of the travelers into life-style groups, especially with regards to housing, work and the ownership of mobility tools (i.e. driving licenses, car, cycle and season tickets);

and

given the time horizons of the life-cycle choices, they must be based on expectations about the future utility of those choices over the duration of that time horizon."

The Mobiplan program itself, of which Dr. Axhausen was a part, proposed an elaborate mechanism to inform those making the residential decision about the advantages and disadvantages of each candidate location. Dr. Axhausen has recently been working with Prof Lawrence Frank in the surveying of residence of the Atlanta area. He referred us to that work, which will be very useful in defining meaningful market segments in terms of their openness to examine higher density, transit-friendly residential lifestyle alternatives.

Dr. Axhausen's work is somewhat unique in its emphasis on the need for transit services to be promised and understood at the time of the residential decision. In his ongoing unpublished work, he allows the subject to create a package of transport services and then has the subject compare the package associated with the new residential option with his/her present combination of location and services. In all of these exercises, the subject is made increasingly aware of the mobility pattern impacts of the residential decision.

Like other researchers who have tackled the issue of longer term decisions, and how difficult it is to structure longitudinal approaches that trace results empirically, Axhausen and his colleagues established a simplified structure. Lifestyle selection was considered a given, to allow the rest of the process to modeled. They note,

"While the statistically proper solution is the development of self-selection models, which make the decisions about the constraints endogenous to the system (see Bhat, Sivakumar and Axhausen, 2002 for an example), this strategy is difficult in this context due to the long time horizons/long histories of the relevant decisions. In this paper the constraints were described with variables reflecting those previous decisions."

¹ Axhausen K.W., D.M. Scott, A. König und. C. Jürgens (2001) Locations, commitments and activity spaces, paper presented at Survive Workshop, Bonn, December 2001, Arbeitbericht Verkehrs- und Raumplanung, 96, IVT, ETH Zürich.

Dr. Axhausen recommended the use of individual interviews, incorporated into a carefully structured stated preference survey process. And within this structure, he recommended the use of paired choices, in which the subject is, by the end of the process, forced to make specific decisions about specific combinations of services and attributes.