**Chapter One:** Aim, Scope, Conceptual Framework and Definitions

**Authors:** Vania Ceccato and Andrew Newton

## Introduction

Mobility is a basic requirement of modern society. Distance separates individuals' homes from places where they work, shop, do business, undertake leisure and recreational activities, and socially interact. Public transit plays a key role in reducing social exclusion by offering access to these fundamental life activities. For example, in Sweden and in Great Britain, one quarter of households do not own a car (SIKA, 2008; DfT, 2012). Moreover, access to a car is not equally distributed amongst the population, and varies by age, gender, ethnicity and socio-economic status. Particular groups are more reliant on public transportation than others (Kunieda and Gauthier, 2007; Raphael et al 2006). Furthermore, there are obvious environmental benefits of promoting public transport as a means of sustainable travel (Steg and Gifford, 2005). Since public transportation is a cornerstone of sustainable development, passengers deserve convenient and reliable transportation systems. However, getting people to use public transportation systems is not just a matter of making them efficient and cost-effective. Passengers need to feel safe not just at stops and stations, but during their entire journey. Transportation systems encompass more than buses, trains and infrastructure, they constitute actual transit environments where individuals spend time on a daily basis and are, therefore, important settings in everyday life. Indeed, one in five European's spend on average more than two hours a day commuting these transit environments (Stepstone, 2012).

It can be argued that the environments of transit systems are unique from other places. They generate areas of social convergence that have long been associated with crime susceptibility and are frequently perceived as unsafe (Ceccato, 2013). Moreover, risk of victimisation is not uniform across the transportation system. Passengers' perceptions of risk in urban

environments are also place and time dependent, which in turn affects mobility patterns and travel choices. Therefore, creating secure and safe transport environments should be viewed with the same level of importance as ensuring a person's low levels of risk of victimisation and perceived safety outside of the transit system. To achieve this goal demands an integrated and cross-disciplinary set of theories, methods that are capable of analysing and making sense of increasing quantities of data and information, and thinking from a range of perspectives, akin to the new frontier of research and planning practice. Safety and security in transit environments are not issues that can be dealt with within the boundaries of a single science or discipline; they require the knowledge and contribution of criminologists, urban planners, engineers, geographers, architects, and psychologists; to name but a few.

The aim of this book is to illustrate safety and security conditions in transit environments from an interdisciplinary perspective, through the use of both theoretical and empirical studies. It presents a collection of high quality studies which cross traditional boundaries between different disciplines, yet share a number of important commonalities. These shared ideas are used to organise the material presented in this book and discussed in this chapter. The edited volume examines both the security and the safety conditions of transit environments, through a place-based approach to understanding crime and security within the different components of the transport journey, and also considers safety and security from the perspective of the transport user.

Firstly, the book reports on both *safety and security conditions* in transit environments, and for this volume these are associated with criminogenic conditions of crime and perceived safety, respectively. The criminogenic conditions of crime determine the statistical risk (actual probability) of an individual becoming a victim of crime. According to Hale (1996), fear of crime can be defined as "*the fear of being a victim of crime and may include a variety*

*of emotional states, attitudes, or perceptions*" (Warr, 2000, p453). Passengers may feel safe in crowded, high crime stations and fearful in empty, low crime stations (Ceccato, 2013). Secondly, the book adopts an approach that puts the *transit environment* and *the journey* at the centre of the discussion on safety and security. This is very different from the more traditional approaches which, focus on criminals, criminality and why people commit crime. The book has therefore a *place-centred* focus on the context of crime, which provides a promising alternative to traditional offender-centred crime approaches (Weisburd *et al*, 2012). Most places have no crime and most crime is highly concentrated in and around a relatively small number of places (Eck and Guerette, 2007). Some places are so crime-prone that they are labelled hot spots of crime (Sherman et al., 1989). Research shows that that crime follows patterns of activities and land uses that are rhythmic in space and time. If crime is concentrated at a certain time and particular place, then there is no doubt that there is something about that place that results in a crime happening there and not somewhere else. Moreover, if these rhythmic patterns are identified, the argument holds that crime can better be prevented. *Thirdly*, the book attempts to open up the issue of safety and security in transit environments to a wider audience by illustrating the case of those who are in transit, and may sometimes become a victim of crime: *the users*. In doing so, the book takes the different needs of users into account, specifically young people, and females, the elderly and disabled individuals. These groups are often highly reliant on public transport, may be at a high level of risk of victimisation, and, moreover, may have elevated perceptions and fears of crime on transit systems.

In this volume it is argued that safety and security in transit environments is dependent on multi-scale conditions that act at various geographical scales in the urban environment. These conditions are determined by: the *micro-environmental attributes* of a node (a bus stop or a station); the characteristics of the immediate environment (short walk distance from the

node); and the type of neighbourhood in which the node is located as well as the relative position of both the station and the neighbourhood in the city, *the meso and macro transit settings*. Safety and security should be examined in the content of a *whole trip approach, the* door-to-door movement; *all aspects of the journey*, particularly from the perspective of those who use the system, the user.

The book is perhaps the first edition devoted entirely to crime and perceived safety in transit environments from an international and interdisciplinary perspective. As the majority of the current literature in this topic to date is dominated by North American and British case studies, this book aims also to open this field of research up to other contexts. The book includes examples from transportation system in Japan, Scandinavia, Italy and also draws from the Global South, including a case study examining public transit from a South African context.

**The conceptual framework**

This book examines safety and security adopting four distinct dimensions of the public transportation system as depicted in Figure 1.1.

*Micro transit environments*

Transport nodes are examples of micro transit environments, such as bus stops and train stations. Lack of illumination at or along a pedestrian path to a node exemplifies the conditions that the immediate environment has on a node's vulnerability to crime, and furthermore this impacts on the perceived safety of passengers. The social environments that characterise these nodes also contribute their criminogenic conditions as well as the perceived safety of them. The environmental features of these environments define the 'appropriate users' of these micro transit environments. If properly adapted, passengers with special needs may, for example, be afforded the same chance to use trains and buses as all users.

*The journey*

The decision that an individual takes to be on the move may unfortunately result in a reduction of their safety, depending on where and how they travel. Some crimes happen whilst a passenger is on the move, such as on a train. Crime also occur when a passenger is waiting at a boarding points (for example taxi/bus stops, train/bus stations, and modal interchanges) or travelling on board a mode of transport such as a underground train, bus or commuting train (Newton, 2004). Individuals may be unfamiliar with the risks they face as they move into an unknown environment, and the risk of becoming a target for offenders is increased. Transport sites are often crowded yet can lack capable guardians; persons who, sometimes just by their presence, of by a willingness to intervene, can discourage crime from taking place. Nowadays the use of mobile phones and Information Communication Technologies (ICT) can improve the chances to report a crime as it happens, but the flip side to this if these technologies can also become a crime target as they are desirable to offenders.

Insert Figure 1.1 about here

*The meso and macro settings*

This section of the book examines the relationship between transit systems and their safety and security when considering it as part of the wider neighbourhood or city. Places like transit stations have unique characteristics that mean conventional prevention techniques are often ineffective. They are mostly equipped with impersonal surveillance (for example CCTV cameras) that, in several transit stations, have been shown not to reduce crime, generally due to implementation failures. People who might be considered as informal guardians at a station often have no sense of ownership and are unwilling to get involved if something happens, which contributes to a feeling of 'detachment' in places where people are typically on the move and transient. In this context, transit crime covers a wide range of offences that could

occur when the passenger is walking to, from or between transport facilities or stops (walking from departure point such as home to a taxi rank or back; from a taxi stop to a bus station; or from a train station to a destination point, for example to a workplace or back). The risk of being a victim of crime is not equally or randomly distributed over space, some parts of a city are more criminogenic than others. Previous research has shown that a station may be more vulnerable to crime if it is located in a high crime area with risky socio-economic and land use indicators (such as mixed land use, high rise buildings, or being close to premises selling alcohol or with a high concentration of young males). The transit system itself if part of the wider function of the city is serves. This part of the book is devoted to the examining the ecology of crime and perceived safety, across the wider transportation environment and city context.

*The user perspective*

Mobility should be considered as an individual right, and as such this book explains why one should care about transit safety from the perspective of individuals. The book includes studies that examine safety and security in transit environments from the perspectives of gender, age and disability. These approaches to safety and security are essential, as being a women and/or having a disability can influence the way spaces and places are used, how individuals perceive risks at these settings, and also if, and how, an individual may become a victim of crime. A range of suggestions offered in these chapters include: providing support for actions that foster gender and disability awareness, knowledge, and competence among citizens; and encouraging them to claim equal enjoyment of rights and benefits of safe urban environments; in this particular case, in transit environments. Therefore this section of the book investigates and demonstrates the relevance and importance of this topic to both academics and practitioners alike.

Transit systems are multi-faceted and challenging to study, including: the complexity and rapidly changing dynamics of transit environments; the potential vulnerability of public transit users; the difficulties of transforming actual reductions in crime levels into reduced fears and perceptions of risk; and, the unique difficulties in analysing safety and security concerns on transit settings and identifying an evidence base of what works for prevention. These challenges call for an interdisciplinary approach towards safety and security in transit environments. The road to achieve this goal is misty and tortuous, full of uncertainties and challenges, many of which will become evident in the proceeding chapters of this book. However, there are also a number of promising developments in this area which this book seeks to highlight.

**Book structure**

The book is divided into six parts and twenty chapters. Section One sets out the scope and purpose of the book. Firstly in Chapter One the structure and context of the book are outlined alongside a description of the conceptual framework which has been used to structure the edited volume and some key definitions used in the volume. Chapter Two then considers the extant and salient theoretical perspectives on safety and security in transit environments, within the context of the conceptual framework developed in this chapter. This includes reference to past and current studies on safety in transit environments illustrates the state of the art in the area.

Section Two focuses on crime and perceived fear at the micro-level landscape (for example bus stops, and platforms at a subway station). These transit nodes effectively mark the exit and entry points of transit systems, and are often a place where people converge. This has important implications for safety. The environmental features of these nodes and their

relationship with safety are analysed across four case studies: Boston (Chapter Three), Stockholm (Chapters Four and Five) and London (Chapter Six).

The *whole journey approach* to secure and safe transit environments is examined in the third part of this book (Chapters Seven to Nine). Hypothetically, even if transportation nodes could be made entirely safe, there is also a consensus that a completely safe journey, from door-to-door, is not easy to guarantee. One hindrance to an individual's movement is the fear of being exposed to an uncontrolled or unexpected danger, such as being a crime victim. This part of the book considers the moving journey, and examines safety from both offender and potential victim's perspectives. This section also deals with space-time dynamics of the crime and safety, and details some of the challenges in making this dynamic system both safe, and feel safe, as users traverse through a range of different environments. Two examples from the United States (Chapters Seven and Eight) and one from the United Kingdom (Chapter Nine) are presented in Section Three.

The complexity of transportation systems in relation to the neighbourhood and the city is the focus of Section Four. Safety and security at transportation environments are not independent; they are fundamentally embedded to their surrounding local environmental conditions, land use, demographic and socio-economic contexts. The chapters in this part of the book are devoted to the ecology of crime and perceived safety across the wider transportation environment and urban context. Articles here illustrate this perspective from both North American cities (Chapters Ten to Thirteen) and urban areas from the Global South (Chapter Fourteen).

Section Five moves the users' perception of safety in transit environments to the forefront of the discussion. As stated earlier, access to car ownership and reliance on public transportation is not distributed evenly across the population, and particular groups can be said to rely upon

and or feel vulnerable when using public transport. Chapter Fifteen illustrates the perception of crime and disorder events in Tokyo, Japan whilst Chapters Sixteen and Seventeen provide examples from United States and Scandinavia from a female perspective. Chapters Eighteen and Nineteen focus on the challenges of providing safety and security to users with mental and physically impaired disabilities from Italy and Sweden respectively. Chapter Nineteen combines user perspectives with technological innovation, and illustrates the potential of using Information Communication Technology (ICT) for visually impaired users to improve safety when travelling.

Finally, Section Six of the edited volume draws together the discussions in the volume. It synthesises and critically reviews its key findings, identifying some of the key lessons learnt, and highlighting key challenges facing those who wish to develop new research frontiers in safety in transit environments. It attempts to draw together the empirical findings and theoretical discussions adopted by the authors who have contributed to this text from a range of backgrounds and disciplines. It considers the utility of the proposed theoretical framework within which the science of transit crime can be examined. Moreover, it will outline future potential research avenues and also the future policy recommendations and practical outcomes that have been demonstrated by this collection. This will include both a number of challenges and potential solutions for both research and practice in the coming future.

**Definitions**

The authors who contributed to the book were asked to provide definitions of some of the common concepts used including; *safety and security; public transportation; transit environments/settings; transport nodes; and transit crime*. Their definitions are from a range of different fields and perspectives, and the following discussion draws these together and highlights commonalities of approaches and some alternative ideas. These concepts are used

as reference throughout the book but since the book contains contributions from different disciplinary traditions, they are may not be limited to those expressed below.

*Safety and security*

Safety and security are contested concepts that remain somewhat arbitrary and open to debate as different disciplines attach different meaning to them. A common theme is that all definitions consider some aspect of the notion of lack of harm, or imply this is essential as part of an individual's needs. Hence the search for a singular definition of either security or safety is illusory. There are clear overlaps of the meaning of these terms as defined by the book's authors. The main point to arise from these different conceptualisations is that both safety and security are considerably complex phenomena.

Two main groups of definitions can be identified. One that associates these concepts explicitly with the broad notion of harm (Sedelmeier, La Vigne, Wiebe, Landman, Smith, Levin, Loukaitou Sideris, Newton and others) and a second group that adopt a wider perspective, linking safety and security to crime and victimisation (what), to measures to ensure safety and security (how), to the target directed at (whom), to ongoing conditions (processes) or to their impact (outcome), often associated with a particularly setting (Hart and Miethe, Uittenbogaard, Gentry, Felson, Sochor, Shibata, Iudici, Ceccato). Instead of trying to compress the richness of the terms safety and security into a homogenising blunt template, neglecting the existence of multiples concepts coming from an interdisciplinary field of research, in this book, we reveal some of the differences by reporting examples of authors' conceptualisation of safety and security. How have the terms *safety* and *security* been approached in this book?

Smith and Yu's definitions of safety and security are an example of associating this with the notion of harm. They state: '*Safety refers to the protection of an individual's bodily integrity*

*or an object's structural integrity from harm caused by outside sources or actors*' while '*security refers to the protection of an individual, object, or property from the harm resulting from actual acts of crime and disorder, as well as the protection from worry or fear a person may feel in relation to these types of potential acts or to the person's perceived personal vulnerability to such acts*.' Sedelmeier suggests a similar definition; '*Safety is the condition of being protected from potential harm and hazard*'; while security is about '*the degree to which one is protected from potential harm and hazard*'. Likewise, La Vigne refers to the term safety as '*the protection of harm from personal victimization*'; and security to '*the environmental design, management, and enforcement associated with prevention of both person and property crime*'.

Loukaitou-Sideris expands the definition of safety to non-human dangers. Safety is defined as '*freedom from harm, human danger (e.g. crime, traffic) and non-human danger (e.g. natural disasters, poor environmental conditions*)', while security, following the Webster dictionary is: '*the state of feeling or being free from fear, care, danger, etc'.*

Newton suggests specifically for public transportation passengers and staff only that '*safety relates to the perceptions and feelings of individual passengers and staff and their right to feel able to travel without risk or harm.*' The author notices however that there is a separate and wider notion of health and safety which refers to accidents and emergencies. Security in the context of public transportation refers to '*the risk levels and vulnerability of public transport systems to experience crime (low level criminal damage to serious major incidents) and disorder incidents, and the measures that can be put in place to reduce the risk of such threats. The notion of security may also be extended to include terrorism incidents'.*

For Landman and others safety involves victimisation but also accidents. They suggest that '*safety refers to the extent to which residents in an urban area is protected from factors that*

*may hurt them physically, for example being a victim of crime or being hurt by a vehicle when trying to cross a busy intersection.*' The less tangible dimension is captured by their concept of security. For the authors, security often refers to '*a sense of feeling at ease or comfortable in a particular place due to the presence of factors that are linked to this perception such as the presence of visible policing, well-behaved people, security cameras or gates and fences*.'

Levin highlights that within transport research, safety has traditionally been examined through an engineering lens in terms of risk reduction (road safety, traffic safety); and the notion of safety generally assumes events that involve significant risk of death, injury, harms or damages. However, from a behavioural and social science perspective, the author contends that it is crucial not to distinguish between real or significant safety issues and the perceived safety; that safety should include a combination of possible consequences and related uncertainties. Uncertainties, due to risk of accidents or criminal actions, may result in victimisation of certain groups, or a greater consequence, is that responsibility may be placed on particular groups for this. Within transport planning and transport research Levin suggests security is viewed as a more socially laden concept than safety, and often defined in terms of individual or public safety; addressing the risk of harm due to criminal acts consciously performed by other persons (not accidents). In her chapter she focuses on subjects' communications, on experiences and values of safety/security from a gender perspective, in other words how travellers verbalise meanings of safety/security in public transport and related environments. The concepts of safety and security in her chapter are sometimes operating in parallel, and it is argued that safety and security issues have a discursive impact on people's every-day life and mobility options.

Sochor relates the concepts of safety and security closely with mobility. She associates security with '*measures taken to protect against an event or exposure to something that could affect potential mobility*'; while '*safety is the state of being sufficiently protected from an event or from exposure to something that could affect potential mobility*'. The author highlight the qualifying term "*sufficiently*" here reflects the impossibility of ubiquitous safety, and what is deemed sufficient safety depends on the respondent, target, activity, cost, and so forth. This definition of safety aims to encompass the needs of certain groups such as those with limiting physical or mental capacities, whether temporary or permanent. This reflects the United Nation's right of equal access to transportation for the disabled, as well as many nations' transportation policy goals of accessible, high quality, safe transportation systems. In the context of mobility, system security measures include modifying the physical environment, security personnel, and surveillance systems, while individual security measures include carrying devices, from mobile phones to weapons, and behavioural responses such as avoidance, protective actions, and so forth. Furthermore, while creating a more clear demarcation between these concepts, it is her intention that these definitions do not exclude alternative interpretations. For example, traffic safety clearly falls within this definition, the "event" being a traffic accident. However, while such concerns may be a mobility barrier for certain individuals, traffic safety and accidents are not the focus of her chapter. Rather, the focus is on other issues affecting an individual's sense of assurance while moving in an urban environment.

Shibata, Uittenbogaard and Gentry link the concepts of safety and security closely with transit and transportation settings, perhaps unsurprising given the topic of this book. Shibata relates the concept of security to concerns over the safety of train carriages and railway stations. As a result of this measures may be introduced such as women-only carriages, emergency buttons on station platforms and on train cars, CCTV, and the removal of trash

bins as a precaution to prevent terrorist bomb attacks. Safety is articulated as the perception of a particularly environment that may change over time. This issue is exemplified by reminding us about March, 25th, 1995, when many subway passengers were victimised by a sarin gas attack committed by a cult group in Tokyo subway station. Since then, railway stations are perceived as being more unsafe than any other public facility.

Uittenbogaard defines safety as '*the extent to which a certain social or physical setting is vulnerable for crimes*' while security entails '*the act of being able to deter, prevent and/or intervene in order to increase safety. This is valid for both social and physical settings and can be achieved by human or non-human actions'*. Gentry also splits the meaning of safety and security in transit environments into two main groups: safety relates to the human dimension, in other words, '*all measures that address the people within transit: commuters, employees, victims/offenders, guardianship*' while security incorporates '*all measures that relate to the physical environment of transit: equipment, CCTV, vandalism, access points, travel time/distance*'.

Wiebe and colleagues, also adopt a more user focused perspective to safety and security. They define safety as '*an individual's perception of how safe they are from the risk of being assaulted, as they navigate the transportation environment during daily activities*' while they suggest '*security is about being free from the risk of being assaulted and security from feeling afraid of being assaulted*.'

The origins of the concept security are rooted in the Latin term, *securitas*, associated with 'peace of mind, freedom from care, and also freedom from danger' (Ceccato, 2013). For Ceccato, security at transit environments concerns the risk of being a victim of a crime whilst safety refers to feelings of perceived safety at, for instance, the station itself, or on the way to or from a station. For her, security is the tangible dimension, indicated as the statistical risk of

being a victim of crime. The risk of an individual being a victim of crime is dependent on a number of factors, some relates to individual's characteristics and lifestyles, others are associated with the environments one gets exposed to. One might be exposed to a series of complex interactions; on the journey to transportation nodes (bus stops, stations and interchanges) and whilst on the move (on subways, busses, and trains). Crimes tend to occur in particular geographical areas in a city, at certain hours of the day and even in association with specific demographic, land use, and socioeconomic aspects of the population (for a review see Ceccato, 2012).

Safety is the less tangible dimension, the perception of the risk of being a victim of crime, although this does not necessarily exclude other sources of anxieties. Safety is dependent on individual characteristics, such as, age and gender. For instance, in the UK, only about 30 percent of men declare feeling unsafe in transportation settings after dark, compared to 60 percent of women (Crime Concern. 2004). Fear also reflects an individual's capabilities. Individuals with disabilities are more likely to fear being a victim of crime and feel unsafe when travelling alone in their community after dark, perhaps as a result of greater perceived inability to fight back if attacked (Loukaitou-Sideris, 2014). Fear is also influenced by the characteristics of the environment. A study of transit environments in the UK found women fear multi-story parking structures whilst men fear waiting on underground station platforms (Crime Concern. 2004). There are potential local and global dangers that mediate fear and vulnerability in modern societies. Thus, fear is triggered by multi-scale factors and the media helps to establish the link between global threats and local contexts, affecting an individual's perceived safety.

Some of these factors are defined by the contexts people live in. Ceccato (2013) points out that the conviction that a societal safety net will not be in place 'if something happens' may

lead individuals to take extra precautions. For example, women's experiences, particularly in societies with high gender inequality may affect fear as they rarely get the support they need in cases of sexual assault (Whizman, 2007). Similarly, if victimized by a crime, individuals may not report the crime to the police as they are sceptical about society's capacity to protect them (Day, 2009; Los, 2002; Pain, 2009). Fear also stems from the perception of powerlessness and distrust in societal institutions. Ceccato also notices that in the Swedish context within transport research, safety is a term often used to describe traffic safety (for example risk for traffic accidents) while security is commonly associated with crime, perceived safety, or terrorism threats.

Regardless of the definition adopted for safety and security, Iudici indicate that safety and security in the transportation context are relevant social issues that ought to be treated in a participatory framework; a product of interplay between users and scholars who study the best conditions to ensure safe mobility.

*Public transportation*

In this volume the editors consider the term public transportation as a fairly broad view of the transit setting; indeed it is evident that in the book the contributing authors frequently interchange the terms transit systems and public transport systems. North American readers are likely to identify with rapid or mass transit systems, whereas European readers with public transport. Public transportation can be loosely defined as a shared passenger transportation service that is available for use by the general public (as distinct from modes such as taxicabs, car pools, or hired buses, which are not shared by strangers without private arrangement). Public transportation services are usually funded by government subsidies and fares charged to each passenger. Services are normally regulated and possibly subsidized from local or national tax revenue.

According to Newton (2014), public transport is used to describe a system used by the public, often a means of transporting passengers in mass numbers, generally a for-hire system, relatively low cost, that occurs along fixed routes or lines and following a timetable. It is designed to take persons to areas that serve major societal functions. Public transport modes are wide ranging but include railway (railroads, light rail, metro/subway/underground railway, high-speed rail, and intercity rail), buses, trolleybuses, trams; ferries; coaches; airlines; water taxis, gondolas; and pedi-cabs. There is debate in the literature as to whether taxi, cycle and pedestrian journeys fit the above definition. Some of this controversy is exemplified below in the different definitions of public transportation offered by the contributors of the book.

Newton suggest that these private services such as taxis should only be included when they form part of a wider public transport journey combined with one the above modes of transport. Bicycle hire schemes are becoming more popular in urban areas and could be included as part of the public transport system, although they are not discussed in this volume. If public transport is directed to the needs of a specific group, for instance, the elderly or disables, it may be widened to include *paratransit,* an expression used in areas of low demand, for people who need a door-to-door service. Newton indicates that in some parts of the world, the term *collective transport* is used within the context of public transport, for example a minibus or fixed group taxi, such as South America and Russia.

This is also highlighted by Landman and colleagues in South Africa, who consider public transport as constituting the different modes of transport that allow the general public to move from one place to another in the public realm, for example municipal buses. In South Africa, these modes are usually operated and managed by a public agency, for example

municipal bus services, but can also be operated by a private company offering a service to the general public, for example the Metro Rail and the Mini-bus taxis in South Africa.

Uittenbogaard simplifies the definition of 'public transportation' to include all modes of transport that are not automobiles and can carry several passengers. Public transportation moreover is the use of a transport vehicle not owned by one of the passenger itself. Taxis are therefore not included here. Similar definitions are put forward by Wiebe, Yu and Smith and Gentry.

Sedelmeier identifies with the issue of shared spaces and privacy in public transportation. For him, public transportation is composed of several transport modes in which the vehicle typically makes frequent stops along a predetermined route to admit and discharge passengers, and in which the rider can typically expect to share space with strangers in the vehicle compartment. This would include most forms of rail, bus, and ferry service, but not "for hire" transportation such as taxicabs or commercial air travel. Interestingly, La Vigne, Hart and Miethe also highlights that public transportation should be considered as *all publicly funded/supported* modes of transportation.

Several authors consider public transportation as a shared and fundamental infrastructure of large cities and metropolitan areas, inclduing Felson, Loukaitou-Sideris and Shibata. Loukaitou-Sideris defines it as '*being all shared-use, public-access, intra-metropolitan transportation systems, such buses, railways, light rail, trolleys, trams'*. Figure 1.2 illustrates a typical metro system, The Stockholm Metro in Sweden (In Swedish this is Stockholm's tunnelbana, literally: Stockholm's Tunnel Track). This has 100 stations, 47 underground and 53 above ground operating across are three lines (Green, Red and Blue). In 2013 this carried 328 million passengers, approximately 898,630 riders per day. Shibata indicates that public transportation systems play a vital role in metropolitan cities like Tokyo. For example, in

central Tokyo, 80% of the modal share of the railway (including subway) is for commuting. Felson highlights the importance of public transportation for daily commuting and defines public transportation as '*public access transit systems used for daily or frequent commute within urban and metropolitan areas'*.

Insert Figure 1.2 about here

For Levin, Sochor, and Iudici, public transportation should be set in the context of the needs of passengers. As Levin suggests, public transportation includes modes of transport provided for a larger number of travellers, and available for all public use, and is often publicly funded. Systems may also include mobility service, as specific transport services designed for disabled persons can be categorised as public transport, and are often provided as a public paid service and connected to certain timetables and routes.

*Transit environments/settings*

Transit environments/settings are according to Solymosi '*a context where people are busy carrying out their primary goal of traveling using public transport*'. This definition captures the dynamics of daily life and exemplifies the multiplicity of places passengers may encounter during the trip. Felson and colleagues consider the route environment in their definition and transit environments are '*public access vehicles, stations, routes, and their vicinities, including their parking lots and feeder areas*.'

However, most contributors (Gentry, Loukaitou-Sideris, Wiebe, Sedelmeier, Uittenbogaard, Ceccato La Vigne, Landman and others) consider transit environments/settings as static physical places, the physical environment of transit vehicles and transit facilities. As La Vigne states; '*they are constituted by areas in and around transit hubs and pathways'*, and are, according to Uittenbogaard; *'the environment that "hosts" public transportation*. Transit

settings are those spatial places where public transport operates, therefore it is composed of both the precise places, such as a station, and their immediate surroundings as well as along the transit lines on which the vehicles operate.'

Hart and Miethe consider another important dimension of transit environments/settings. They define them as being '*a behaviour setting of human-environment interaction in that encompasses a transportation node or facility*'. Shibata and Levin also highlight the multi-functional role transit environments may have. In Japan, for instance, transit environments/settings are important as shopping areas. The author suggests that Japanese railway companies invest more on the shopping centre business than on transporting passengers, for example *eki-naka* (in station) and *eki-chika* (by station) shopping malls. As a result of this, many people come to the railway stations not only to travel by train but also to engage in shopping or other leisure activities. Levin indicates that transit settings '*are the places for public transport stops and interchanges (underground stations, bus stops, train stations, etc.), and where travellers often also can buy tickets and gain information about the transportation service*'. She places these services in a Swedish context, by suggesting they are environments that also provide various types of services (for example shops, restaurants, and parking) which bring together many people with different errands and purposes, and attracts those who are not travelling.

In summary, transit environments are multi-faceted, they include the transport station or stop (hubs or nodes), and, furthermore, include journeys "*en route*" on board a number of different transport modes, for example bus, rail, and trams. Many studies have shown a relationship between safety and security at transport nodes and their nearby vicinity (Newton, 2014), and therefore the areas around transit stations are also relevant. These have usefully been termed transit environs (Block and Davis, 1996). Moreover, during a transport journey, a passenger

may make changes onto a different line or route, using either the same mode of transport, or even two or more modes of transport (bus to train for example) via a transport interchange. Thus there are interchanges in addition to start and end stations. Therefore, transit settings and environments may include transport hubs, the immediate vicinity of transport stops and stations (transport environs), and travel "*en route*", on-board different modes of transport. However, for the passenger the journey does not stop and start at the point of embarkation or disembarkation, they may for example walk or perhaps even cycle from home to the transit station at the start of a journey, and from transit hubs at the end of the journey to their end location, for example work. If a passenger journey is negatively influenced during any leg of this journey, they may decide not to use public transport systems for future journeys.

According to Newton, and Yu and Smith, these are the environs of public transport systems, and as such encompass the entire range of the *whole journey approach*. For Newton, '*this includes walking to and from stops, the stop or stations itself where public transport is boarded or disembarked, and travel on that vehicle. Stops and stations generally have a defined boundary within which the public transit setting is contained. However, there is a fuzzy boundary near to a transport setting which may be part of the transport environment. This should be based on a user's perspective of whether where and when they are is part of their public transport journey*.' As highlighted by Yu and Smith, they include all parts of vehicles and routes used by passengers and staff during individual trips or as part of the journey from home to the rider's destination and back again.

*Transport nodes*

There were three distinctly different classifications of transport nodes suggested by the authors. A group of scholars considers transport nodes as points on the system; whether fully realized stations or roadside bus shelters (Sedelmeier, Wiebe, Hart and Miethe Ceccato,

Newton) while another group earmark the concept of transport nodes only to main hubs of public transportation network (Loukaitou-Sideris and Shibata). A third group agrees with the second group but extend the definition to include also the surrounding areas of these nodes (Yu and Smith, and Landman and colleagues).

Ceccato, Sedelmeier and Wiebe define transportation nodes as *places where people come together to (dis)embark on a trip in order to reach a destination. Transportation nodes can be bus stops, subway stations, or larger structures where several transportation modes come together, such as a central station or a transportation hub*. Transportation nodes include the station itself but also its immediately surrounding environments and may be considered as part of the transit environments or settings defined above. According to Hart and Miethe, they constitute '*a discrete point along a transportation network (i.e., a hub, stop, or station)*', or in La Vigne's words, they are '*transit stations*.' Newton contends that whilst they are often considered as '*the main hubs of the transport network that connect the routes'* but this should be extended to include all *'stops, stations, interchanges and hubs of the transport network where persons can alight or disembark from a vehicle*.'

For Loukaitou-Sideris, transport nodes are '*places where multiple transportation modes meet.*' Similarly, Felson define them as '*stations, bus stops, and transit centres where passengers transition to or from vehicles*'. Uittenbogaard exemplifies a node by saying that '*nodes are often composed of several parts and not just a platform to enter or exit the vehicle but may for instance also include a ticket gate, shelter, stairs, shops, etc.*'. Shibata adds that they are complex structures, such as underground stations in Tokyo. The author adds, '*in most of these stations, floor plan of the station building has been expanded one-by-one with the increasing number of passengers and the lines connected to the station. Nowadays, the*

*structure of these stations has become very complex and is a challenge for a passenger to find their way*.

Yu and Smith suggest that transport nodes should also include the surrounding area. '*Transit nodes are the points at which riders enter the system or board a vehicle as well as places where they leave the system or disembark from a vehicle. They also include places where individuals move between vehicles or across modes*.' Landman and colleagues extend the definition of transport nodes to encompass the specific types of land use that these nodes impress the urban fabric. Transport nodes generally refer to '*significant areas of concentration of land uses and densities that allow the public to access or change from one transport mode to the other, for example a mixed used area situated around a major intersection which includes a taxi rank, bus stop or long distance bus station and/or train station in close proximity*.'

*Transit crime*

Whilst most police recording systems do not identify transit crime as a unique classification in its own right, some may flag crimes that occurred on a transit system. Some systems have dedicated transit police who work exclusively on the system, such as the British Transport Police (BTP) who police the rail system in the UK, or a number of transit police forces found in Vancouver, Canada, or in Boston and Philadelphia (USA). Therefore any crime that occurs in a transit environment could be considered a transit crime. Smith and Clarke (2000) identify six crime categories typically present in transit settings, and these are crimes against passengers such as theft, robbery, and assault; crimes against employees; vandalism and graffiti; antisocial behaviour; and line of route crimes. The latter of these are not crimes during journeys, more so offences such as metal theft of track which causes service interruptions. In addition, Newton (2004) suggests that it useful to distinguish "en route"

offenses from those at transport nodes. It is important to note however that transport systems are inherently transient, they present often unique environments, and their dynamic nature means that there is a constant flow of potential targets and victims passenger, staff and infrastructure) across a rapidly changing environment. At a simple level of explanation, the environments created during very busy peak travel times and those created outside rush hour in more isolated situations pose very different safety and security concerns. How do contributors of this book define *transit crime*?

There is more of a consensus in the definitions of transit crime provided by the authors. Most adopt a simple definition of transit crime, as crime within transit environments or settings (Felson and Loukaitou-Sideris). However there is some discordance about the acts this may encompass.

Drawing from his Swedish case study, Uittenbogaard defines transit crime as '*any crime and acts of public disorder occurring at or in the immediate surroundings of transit settings'*. Levin completes the first definition adding that '*transit crime includes all types of crimes during the bus/tram/train trips or in connection to public transport areas e.g. at stations, bus stops, underground station. Certain crimes tend to occur in transit areas e.g. pickpocketing, fraud, assault, sexual harassment and racist violence*.'

In the United States, Wiebe and colleagues suggest that these crimes are likely to include all cases of '*violence (assault, rape), theft, and physical aggression in transportation settings, committed against passengers, workers, and police in those settings*.' Shibata also characterises transit crime based on their case study. As a crime generator, they suggest, railway stations concentrate many possible targets leading to many criminal activities such as groping or pick pocketing in crowded train cars or luggage lifting in railway stations. There is also occasionally trouble between passengers during rush hour.

In the UK context, Newton argues that strictly speaking '(*transit) crimes do not include terrorist events, or antisocial behaviour or disorder incidents that are not crime per se. The latter two should be recorded as terrorist or ASB incidents and not crime.*' Likewise, Gentry defines transit crimes as '*personal or property offenses that occur within a transit environment or within a transit mode'*. Loukatou-Sideris considers this '*crime taking place on transit vehicles or at transit settings'*

Another interesting feature when comparing these definitions of transit crime was the fact that scholars did apply different measures to where crime can be found to be considered as transit crime. For example, Landman and others define transit crime by '*various types of crime that occur within a transit setting, i.e. within or outside a transport interchange, station or bus stop or within a bus or train*.' This is a fairly limited area in comparison to La Vigne, and Hart and Miethe's definition, for example. La Vigne describes transit crime as '*personal and property offenses occurring in and around transit vehicles, stations, and settings*.' Likewise, according to Hart and Miethe, transit crime is '*a criminal offense that occurs along a transportation network, at a transportation node, or within the transit environment.*'

Newton point out that '*the walking environment and the area in the immediate vicinity of a stop or station may be part of a user's transport journey and thus a place where crime could occur. However it is unlikely that a crime in this area would be flagged as a transit crime as such on police crime records*'. Thus, Newton define it as '*any crime offence (as notifiable by the country of location) that occurs within the boundaries of the public transport setting.*

**Concluding remarks**

The aim of this book is to illustrate safety and security conditions in transit environments from an interdisciplinary perspective, through the use of both theoretical and empirical

studies. The book is divided into six parts and twenty chapters. Section One sets out the scope and purpose of the book. Instead of trying to compress the richness of the terms safety and security into a homogenizing standard, neglecting the existence of multiples concepts coming from an interdisciplinary field of research, in this book, we reveal some of the differences of authors' conceptualization of basic concepts in safety and security. The book is perhaps the first edition devoted entirely to crime and perceived safety in transit environments from an international and interdisciplinary perspective. In the next chapter the theoretical background for the book is presented drawing mostly from urban criminology and sociology but also from geography, psychology, architecture and urban planning.

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