Urban environment and traffic

The Brundtland Commission reported in 1987, when highlighting the rapid growth of cities, that the problems relating to urban life indicated that “our century is one of urban revolution” (World Environment Commission, 1991, p.262).

The traffic question, with its impact on the life and death of people who live in cities, has a coinciding relationship to the health conditions of its inhabitants, considering that the morbidity and mortality rates refer expressly to external causes, among which traffic mortality is included. Two thirds of the so-called traffic accidents that result in injuries have taken place within urban areas (Marín & Queiroz, 2000).

While propitiating a major integration of communities, traffic is also an artful way of population control, vying with discovery attempts for new therapies and medicines which aim at reducing exposure to diseases, and consequently to death. Traffic is the second cause of mortality in the country. “In Brazil the mortality rate by traffic accident, in 1994, was 18.9 (for each hundred thousand inhabitants), being higher than the one in the USA (18.4), in France (16.5), in Argentina (9.1), and others” (Marin & Queiroz, 2000).

DENATRAN data indicates that during first half of 2001 there was a total of 9,704 deaths, keeping in mind that this data does not include the complete registers of all states. Pires et al. (1997) reports that about two thirds of the hospital beds in Brazil's orthopedic and trauma departments are occupied by victims of traffic accidents, revealing a huge scale of avoidable mutilations.

Without a doubt, the traffic problem is a public health problem (Marin & Queiroz, 2000) and one of the major problems of the urban environment. Speeding has been reported as one of the major factors responsible for accidents and for the pedestrian mortality rate (Almeida e Freitas, 1995).

The definition proposed by Rozestraten (1998) indicates that traffic control is the “joining of people and vehicle displacement on public roads, within a conventional system of laws, that aim at assuring the integrity of its participants” (p.4). This author emphasizes three sub-systems that integrate the traffic system: the road, the vehicle and man - the man being the most complex integer, and capable of disorganizing the entire system. The Brazilian Traffic Code (Law 9.503) defines traffic as “the utilization of the roads by people, vehicles and animals, isolated or in groups, leading or not, to circulation, stop, parking and loading or unloading operation aims.”
Analysis perspective

The verification of different levels of complexity in nature, and the efforts of different subjects to understand the phenomena, have shown that the search for correlations between variables belonging to the same level, while reducing holistic approaches, are opposite when they relate phenomena that involves different levels of complexity (Ávila-Pires, 1998). Bergandi (1992) and Bertalanffy (1973) emphasize the existence of emergent properties inaccessible to analytical processes.

Each individual and each group of people exposed to a certain law has a part in the way this law is transmitted, made operational, noticed, respected, followed, and improved. This interaction is mediated by the perception that individuals and groups have of the law. Individuals and groups perceive laws differently, according to the context of their own personal needs and experiences. The perception of the risks involved in traffic is also mediated by the context in which these risks are defined, spread, and shared, and their behavior toward them will be based on those perceptions.

In the relationship established between the individual and his surroundings, the various aspects of risks shared by certain groups are highlighted. (Douglas, 1982; Lima, 1995). By understanding risk perception, one can better understand the way a lay person perceives risk, combining their personal belief and value system which gives meaning to threatening occurrences (Lima, 1998; Pidgeon et al., 1992).

Silcock et al. (1999) approaches the drivers’ point of view about speed limits, indicating that 85 percent of those interviewed declared that they exceed the limits occasionally, though they have admitted that speeding is illegal. The researchers identified an inner speed limit that is “frequently, but not always, higher than the propagated limit” (p.45). There were several reasons appointed for speeding. Some of the participants gave reference to the vehicle, the road conditions and other drivers, as well as to errors in the established speed limit, though mainly to the ability of other drivers. The authors emphasize that though these reasons appear, there was no overall acceptance of speeding and a dichotomy was identified between “my” speed (for which there was a reason) and the speeding of others (which was not always acceptable). Silcock et al (1999) indicates that there is a tendency to distinguish between “dangerous drivers that speed” and “capable drivers that speed”, considering that the investigated drivers placed themselves in the last category. This perception enhances the idea that speeding in moderation is not a harmful practice (id., p.46). The authors have concluded that these images and stereotypes of speeding drivers allow individuals to draw away from the problem and put the blame on someone else. “Our research suggested that the lack of any apparent reason (to the driver) for a specific speed limit is a factor that leads to infraction.” (id., p.50)

The objective of the research was to make explicit the interaction between the speed laws and the speeding behavior, identifying the factors involved in this relationship that are mediated by the drivers’ perception about speeding, its personal meaning, noticed risks, and effectiveness of the established control to halt speeding and create a change in his driving behavior.

Twenty drivers who received more than 9 tickets for speeding, along with sixteen drivers with no speeding tickets, were interviewed. The interview schedule contained 25 items, and the qualitative analysis indicated the convergences and divergences between the two groups whose analysis was based on the factors which affect risk perception as explained in the attached literature on control, confidence, seriousness of risk, harm extension and

What is speeding?

Definitions that exclusively consider the law were made explicit by two infractor drivers. The other ones show definitions arranged in three sub-divisions.

1) Definitions that make reference to the road as being a determinant for speeding. “There is an ideal speed for each place, each region, due to the structure. The speeds are fixed adequately. There are technical laws that establish that. I don’t know when, in a street, you are safe at 60 or 80; these are technical determinations. I find myself unable to judge if the streets have adequate speeds or not.”

2) Definitions that refer to the law or the road, but show ambivalence, indicating a particular point of view that distorts what the law determines, were indicated by seven drivers. In the perception of these drivers, the speed they drive at should not be considered speeding. The definitions that consider the road as an important factor to exceed the top speed, confirm the idea of reinterpretation of the expert knowledge by lay people. In other words, drivers take into account the factor indicated by the law (type of road), but with particular features.

“I think it depends on the roads. On an open road, speeding is over 80.”
“To surpass the limits, according to the speed limit signs. I was going between 62 and 70 when I got a ticket. What is the difference between 60 and 70? It’s just a little bit. In the past, it was 80 on the road; nowadays, it’s 110. It proves that speed limit signs are not always right.”
“Not respecting the speed limit sign. But if you are free on the road....”
“Over the allowed speed. In my case, I was going 68, 69, and just once at 71, they shouldn’t charge for that.”
“To surpass each one’s limits. Where you can drive at 70, you can drive at 70. Each person defines (his own limits). But there must be laws [And after thinking] To surpass the established limits set by the code. My tickets are for driving at 67, 69, 72 and 75, nothing like 80, 90, 100.”
“It is the speed that’s not compatible with the sign. To drive at 70/80 on an open road is not speeding.”
“To surpass the limits allowed by law. Over 110 on the road. In the city it would be 70, like at Av. das Torres. I have never surpassed that. It should be. I still think that passing through the radar at 65, and at 75 is not speeding. Over 80 in the city (would be speeding). The present limit is not excessive enough to be serious.”

3) Characteristics of individuals who have a tendency to contend against the code of law, are defined by ten drivers. These characteristics identify the inner factors that are taken into account by the driver when he assumes a specific speed. Among these factors are “control” and “confidence” as applied mainly to the driver, himself, or to his car, as relating to the issues in the definition of “speeding”. These factors appear in literature as important issues for risk perception.
“It is to surpass the local limit where there is a possibility of using the vehicle to its fullest potential. The speed limit sign doesn’t matter ... it’s the moment and place. The sign is only a reference.”

“When you go in excess of the stipulated speed, you must have total control of your car.”

“It is to drive at a speed not compatible with the road’s safety conditions. With a car in good condition, the limit should be at least 80/90 on open roads. The ideal would be to let the driver decide (the rate of speed).”

"It’s driving in a manner in which you cannot control of the vehicle. You must use some judgement [or good sense] to drive faster than the speed limit; you must feel it is safe to do it."

“Going faster than the specific limit, in any circumstance, is considered speeding. Depending on the conditions of balance, health and expertise, 30 km/h can be considered speeding. On one hand, determined by the individual and local conditions, and on the other hand, by the speed itself. Why would you drive in the city at 100 or 120? One must relegate fast speeds to open roads.

At Flamengo Filling, for instance, if you drive at 60, it’s if your car had stopped!”

“It’s not having control at an emergency to turn or stop the vehicle.”

“Speed concepts change a lot with time. I didn’t feel I was doing anything wrong by speeding.”

“It’s when you surpass your own limits, or your car’s. The car has a pre-determined maximum speed limit. The car might be able to go as fast as 220, but at 180 it may have surpassed the limit it was built to endure ... and the road, as well. The speed limit sign is not necessary. There are plenty of speeding conceptions.”

“It’s when you surpass 90 or 100 in the city. On open roads 70 is not speeding, not even 80.”

“When the speed is out of control, then the car is also out of control. When it is raining it can be 60, 70. On an open road, 120 to 130 in a nice car it is not speeding.”

It is important to identify in each of these definitions of speeding the present variables as being the speed sign, the competence of the driver himself, the control carried out on the driver, and his particular confidence level.

The researched infractor drivers ignore the meaning of the speed limit signs. One of the pointed reasons is the lack of credibility in the top speed determination, which was confirmed by Silcock (1999). Ignorance of the parameters that guide these determinations, was expressed by a driver when he affirmed that “in past times it was 80 on the road, nowadays, it’s 110. It proves that the signs are not always right”. It shows that the confidence in the institutions that must define the speed limits was affected and, in consequence, the risk perception gets committed by this disbelief, making the drivers bind themselves by internal, personal criteria, not taking into account technical or legal parameters as a guide for their analysis.

Drivers interpret speed limits differently from the ones established by law, frequently above the stated limit, corroborating the research of Silcock et al. (1999), and alleging that the established values should not be considered as speeding. In other words, the infractor drivers refer to the lack of credibility in the capable institutions, in relation to the speed limit determinations and, consequently, have an explicit lack of credibility in traffic signs, making them lose their power to guide the driver in the speed limit to be obeyed.
This was confirmed when one of the drivers said, “I didn’t feel I should have been fined for speeding”, translating a denial of the legal meaning of the traffic fine and the meaning in terms of risks when exceeding the speed limit. Even though the tickets exist (and there were 9 of them), this driver rejects the expressed law that was broken, because there is no trust in the determination of the imposed limit by the law, and while at the same time he is showing his contempt for the legal institutions, he is assured that his behavior doesn’t present risk to the other traffic integrants. This testimony reveals that the perception of risk – the possibility of causing harm to other people or even receiving a ticket – is minimized, leading to the disregard of legal measures current from the risk behavior (speeding). The center of the risk perception for this driver is his own behavior, but he doesn’t establish a relationship between his risky behavior, that of his speeding, and the harm to which he exposes the other integrants of the traffic system. Although this driver has identified the accidents as a possible risk from speeding, he doesn’t identify the fact that his speeding is related to them. His nine infractions refer to speeds that exceeded the top “one in fifty percent,” meaning that they were excesses that occurred in places with electronic slope, where the speed limit is between 30 and 40km/h (at the time the fines occurred). If, in these places, the speed is lower (than on other roads or also in the remainder of the same road) it is because it was determined that the risks are higher. But this driver articulates a personal limit, “absolute” and decides that to drive at 60 Km/h, for example, in that place, is not speeding: “Less than 60 is not excess in the urban area.” In this driver perception there is a confidence in the speed limit of 60 Km/h in the urban area that puts certain guarantees or immunizes against risks, to the point of allowing him to conclude that even being involved in accidents, other factors contributed, not the speeding. This goes for Lima’s (1998) indications when he pointed out important factors in the determination of risk perception – control, risk minimization, and confidence, including credibility in the instances that should manage threats.

Another identified variable refers to the belief that these drivers can establish the acceptable speed limits, proceeding from several parameters technically praised and, almost always, self-referred (“I didn’t feel I should have been fined for speeding”). They proceed from questionable presuppositions when they indicate that they are “conscientious drivers”, “competent drivers”, “drivers with a good sense” and drivers in condition of “balance, health and expertise” to whom one should allow to fix the speed limits. When one defines speeding as “driving in a way that you don’t have control” he is affirming that the driver, himself, is the surveyor of this limit, and that there isn’t an external determination that presupposes the integrated analysis of variables, not even a regulating agent of the relationship among the members of a society, at the same time that one affirms that if the driver has the control there is no risk. The drivers suppose the whole control of the vehicle, and so the control of the risks is centralized within him. Silcock et al. (1999) emphasizes that the perception about the drivers´ capability reinforces the view that driving moderately is not a dangerous practice and it was made explicit by the drivers when they emphasized the control, centralized in the capability and skill of the driver, as a justification to the determination of the speeding in the limits which are always over the ones stipulated by law. When the driver takes control unto himself, it makes him minimize the risks that he is exposed to and to which he exposes others. This minimization of the risks that people insist to ignore leads to a perception of invulnerability, and then to the perception that injury “just happens to others”, as Lima (1995), Jackson & Mukerjee (1974), Lehman & Taylor (1987) points out. The perception of omnipotent control over the surroundings fuels the perception of invulnerability to injury.
According to the driver, the responsibility for committing the infraction is never his, or the equipment is not working properly ("I think the measurement is not correct, my speedometer is not correct"), or the equipment was put there on purpose to “catch” the driver, or the speed limit is not adequate, or the road is not adequate, or the synchronization of the traffic lights “leads” to a higher speed over the one that is allowed ("To get all the traffic lights green I need to drive at a speed a bit over 60.") In other words, there is a displacement of responsibility to external factors that makes the driver obscured, in that he stops noticing that he is the only one capable of making the basic movements inside the vehicle – to accelerate or brake, determining the speed in which the vehicle will run. Some drivers claim that radar was put “at a descent in the road" in order to “catch the driver", making patently sure that it is not the driver who drives the vehicle but the force of gravity, against which neither him nor the radar should be opposed. Or even, indicate that the direction of the road determines the speed, like the driver who said that “it is a descent there; you are automatically over 60”. This displacement of responsibility for the infraction to external factors is opposite to taking internal control for the determination of the top allowable speed.

When opposing the ideas of “supposed” control by the infractor drivers, one verifies that there are no fundamental notions of the braking process and the influence of reaction time in this process. Even if his reflexes are good, different speeds portend different risks with increased potential.

One of the drivers affirmed, “I don’t see any risk; I have a good psychological balance, good motor coordination, I have never been involved in an accident. You have to know how to control your car.” This driver, contradictorily, indicates that he didn’t get involved in accidents, appointing the relationship between speeding and accidents. But, though this idea is subjacent, one needs to analyze that this same driver affirms that “3 to 4 m is the distance I take, it doesn’t matter the speed, I don’t get closer to the front car.” In other words, from a technical point of view, the risk of accidents (collision with the front car) is always present in this case, considering that 3m would be just related to the distance traversed by a car driving at 10Km/h, during the reaction time, and that there is also the need of adding the braking distance (in dry or wet asphalt). In this case, the risk perception is contaminated by the lack of specific knowledge about the braking process, beside the inclusion of other factors like “psychological balance” and “good motor coordination,” as well as the “absence of involvement in accidents” as excuses for not seeing the current risks of speeding. It looks as if these factors immunized the driver from the speeding risks. In part, these personal explanations confirm the research which shows that the risk control, centralized in the driver himself, leads to an idea of risk minimization, when it is he who is the one managing this threat. As this driver affirms that he has never been involved in an accident, that he has a good motor coordination and psychological balance, he is not afraid (Lima, 1998) and he articulates personal mechanisms of control that outstrip the threatening possibilities of speeding. The listed factors by this driver can be indicated in the same analysis of Costa (1997) when he verifies that the involvement in effective relationships interfere in the risk perception of contracting AIDS, indicating that the more trust one has in the partner, the more the vulnerability to AIDS perception diminishes. This driver establishes a similar relationship, amplifying the number of involved factors: the good motor coordination and psychological balance, as well as the absence of accidents, diminishing the vulnerability to speeding risks, and leading to the affirmation that “there is no risk at all".
For the other drivers who ignore the technical aspects of braking, but on the other hand identify the risks, one verifies at the same time that there is no acceptance of the fixed speed limits, as if these threats and inherent speeding risks were of “other” speeds, and not the ones defined by law. The strategy of reducing the risk in face of high levels of threats analyzed by Lima (1998), Taylor (1983, 1989), Taylor & Brown (1988, 1994) and Dejours (1987), though it refers to different kinds of threats from the ones seen in traffic, can be observed when the drivers refer to risks related to high speeds, and not to the limits fixed by law.

It is possible to identify the risk of a pedestrian being hit or killed in traffic, but this risk is different when driving at different speeds. The probability of a pedestrian dying as the result of being hit by a car is different if the car's speed is 30Km/h or 60Km/h. There is no association of risk and specific speed by this group of drivers; for them, these generic risks are associated to speeds that are higher than the ones fixed by law, and higher than the speed at which they drive.

The confidence in their own expertise and in their self-capability of controlling the vehicle obscures the perception of the inherent speeding risks. And, contradictorily, the ticketed drivers identified the risks of speeding, but these identified risks refer to “other” excesses and not the ones defined by law or even to his own excesses. It means that the risks inlaid in the top speeds allowed by law, are not being perceived by the drivers. The risks just come to be perceived from speeds internally defined. The infractor drivers judge themselves capable of defining different limits according to perceived risks.

**Infractors and non-infractors drivers**

Drivers who know the law, observe the speed limit signs and still speed are just a few. Personal definitions or personal distortions related to the law dominate the speech of both the infractor and the non-infractor drivers. In other words, it doesn't matter whether or not a driver has committed one or more infractions, the perception he has of the parameter that guides the speeding is the same to both groups. The center from where regulations emerge is the driver himself, meaning that the speed in traffic becomes an individual phenomenon to which most people have their own recipe. Just two drivers (one from each group) restricted themselves to referring to the law as a guide for speeding. Even those drivers who acknowledged the speed of 60km/h, as recommended in the city, distort the law once there is not a static definition of a standard top speed for the whole city. There are definitions, respecting the several characteristics, allow the variations to appear.

This data confirms the research of Silcock et al (1999) and furthers the investigation, noting that there is no difference of speeding perception among the infractor and non-infractor drivers.

Lima’s research (1993, 1997) of the correspondence between objective and subjective risks indicates that the higher risk objective corresponds to a higher conscience threat. Still, on the other hand, there is a perception that this risk is more controllable.

In the instance of traffic, the closeness and daily acquaintanceship with risks provoke a denial, while the risks are identified, but they refer to different speeds from the one in which the driver drives at. This denial of the daily risk can be visualized in the same direction of the defensive strategies pointed out by Dejours (1987), and they are also in agreement with Lima (1998) when he noted that the high levels of threat (traffic is the
second cause of mortality in Brazil) produce cognitive strategies for risk minimization. Though threat is constant in traffic, there is no correspondence between objective risks and perceived risks once drivers generically consider perceived objective risks, but out of context of the inlaid different speeds potentiality, because in their perception, it is not their speed that offers risks. This implies an acceptance that there is a minimization of risks, or even their denial, associated to an incorrect perception of a larger control, centralized in his expertise and capability as a driver.

According to Wynne (1996), the perceptions and answers to the risks are related to the confidence lay people have in the institutions that give support to the expert knowledge. And, in this case, confidence is very minimized once the drivers of both groups intend to reinterpret the law, identifying different top speeds from the ones established.

This way, the inputs relating specifically to the perception drivers have of speeding, of the meanings, of the involved risks and of the braking process at different speeds were analyzed, making explicit their interaction with the behavior of being ticketed or not, denoting that there are no differences between infractor and non-infractor drivers.

The non-infractor drivers, though, identify speeding in the same way infractor drivers do, although they reveal a better acceptance of external supervision, while they identify the necessity of regulating instances for the conflictive relationship of struggle for space that takes place in traffic. As they notice a reduction of speed since the implementation of electronic supervision, and as they associate the reduction of speed to the reduction of accidents, these drivers see the supervision and tickets as positive factors, and dispose themselves to obey the speed limit signs, even though they may have different internal parameters, possibly suggesting higher speed limits in some cases. And maybe this can explain that risk perception associated to speeding definitions, though being similar, results in different behavior.

It is possible to notice that infractor drivers are conscious of the traffic risks, but when they make an association to different speeds, they reveal the cognitive bias approached by Lima (1995), Weinstein (1981), Taylor & Brown (1988), Langer (1975), whose research show that the cognitive construction of the personal invulnerability relates to an unreal optimism (“there are no risks”), like an over evaluated self-perception (“the problem is the others”), in conjunction with an exaggerated perception of control over the environment. The minimization of risks and the consequent perception of invulnerability to them, besides over-valuing personal control over events, finds explanation on the necessity of maintaining the mental balance, as pointed out by Taylor (1983, 1989), Taylor & Brown (1988, 1994), and Dejours (1987). The behavior change becomes difficult to these individuals that are more exposed to danger once they develop these cognitive strategies of minimizing the risk and the personal immunity to threat, feeding a vicious circle of bigger and bigger exposition to risk.
Final concerns

Although the drivers perception of both groups expel the definition of speeding enclosed in the law, when one makes the speeding definition personal, it is possible to identify that the group of non-infractor drivers tend to indicate reasons of acceptance for the limits and supervision imposed, adopting a behavior of non-exceeding the top speed, and being more alert to the speed limits.

Infractor drivers who speed perceive the risks involved in doing so, as well as define speeding in the same way that non-infractor drivers do. Both driving groups tend to reinterpret the law, identifying different top speeds than the ones fixed by law, whose parameters are over the legal limits established. This data confirms the research done by Silcock et al (1999), and furthers the investigation by indicating that there is no difference of speeding perception for infractor and non-infractor drivers.

The personal definitions prevail on the speech of drivers, infractor or not. The center from where regulations emerge is the driver himself, meaning that the speed in traffic turns out to be an individual phenomenon.

Traffic control, a public phenomenon for excellence, converts itself, or perverts itself, into an individual, personal, private phenomenon.

These individual parameters are sustained by the perception that the driving activity control is centralized in the driver’s expertise and not in an articulation of the several factors involved and regulated by law that organizes the harmonic acquaintance of the traffic integrants.

Infractor drivers, besides defining self-parameters of speeding, intend to define who, where and what instrument is or is not adequate to measure the infraction. The incorrect information about the braking process confirms that though drivers intend to establish rules for top allowed speed determinations, they ignore the basic mechanisms for its definitions.

When both groups of drivers identify the risks from speeding, they focus on the same generic risks present in traffic when an infraction or an accident happens that causes damage or injury, ranging from light consequences to death. Drivers displace the risks from the context in which they were identified and that served as a basis for its inclusion in the legal context (top speed fixed by law) because they make association with different speeds. So, it is not about the same risks. The risk of pedestrians being hit by a car in traffic varies, according to different speeds. This reinterpretation of the law, identifying different top speeds, shows a shakiness in trust in relation to the institutions that are responsible for making these definitions.

The group of infractor drivers, when putting themselves as the subject of the infraction, reveal several mechanisms to analyze the speed limit signs and the existing supervision. They also reveal a denial of their risky behavior as a disqualification of the supervision in relation to the insistence on the responsibility of external instances to provide a more adequate supervision. At the same time that they deny the responsibility, they see themselves obligated to give up in face of the applied evidence that led to the tickets. At the same time they centralize the control of the driving activity and define what speeding is for themselves, displacing this control when it refers to optimizing the behavior of traffic.
Although non-infractor drivers were not questioned about tickets, they were questioned about whether or not they exceeded the top allowed speed and about electronic supervision. Drivers are ambiguous, admitting they speed occasionally, but at the same time, they show an agreement with electronic supervision, and some of them also suggested it should be more intensive.

This difference in electronic supervision functions as well as the differences of hetero-perception highlighted by non-infractor drivers, suggesting that the acceptance of supervision and the realization that it is in the public interest, can be meaningful mechanisms that result in different behavior. When one perceives the supervisory mechanism as being helpful to the public and to traffic control, rather than taking away individual freedom, it is possible to adopt different behavior that is compatible with the law.

From this research it is possible to notice that the electronic supervision, functioning as an instrument to halt speeding, was useful on a) the perception of the infractor drivers by way of imposition, b) the perception of the non-infractor drivers, through the acceptance of a regulating mechanism that guides traffic, and c) the technical analysis of the responsible institutions of the supervision management by the verification of the reduction of speed and accidents.

This way the input signalization is mediated by the supervision and its acceptance or rejection, modifies the information process, resulting in risky behavior or not. The electronic supervision makes the mediation once that its presence signals the potential risk and the public gain that comes from the obedience to it. This mediation was identified by the infractor drivers when they mentioned that their concern was about the presence of the “radar” and not about the speed, making it apparent that the discriminative stimuli of the “traffic sign” was displaced by the “radar.”

In summation, speeding has shown itself as an individual phenomenon, revealing a distortion in the public sense of traffic. Individualism preponderates over collective questions in both groups, though the supervision mediation draws different conclusions.
Bibliographic references


