
**Structured and Spontaneous:
Informal and Formal Influences on Traffic Safety in Ha Noi, Viet Nam**

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Abstract

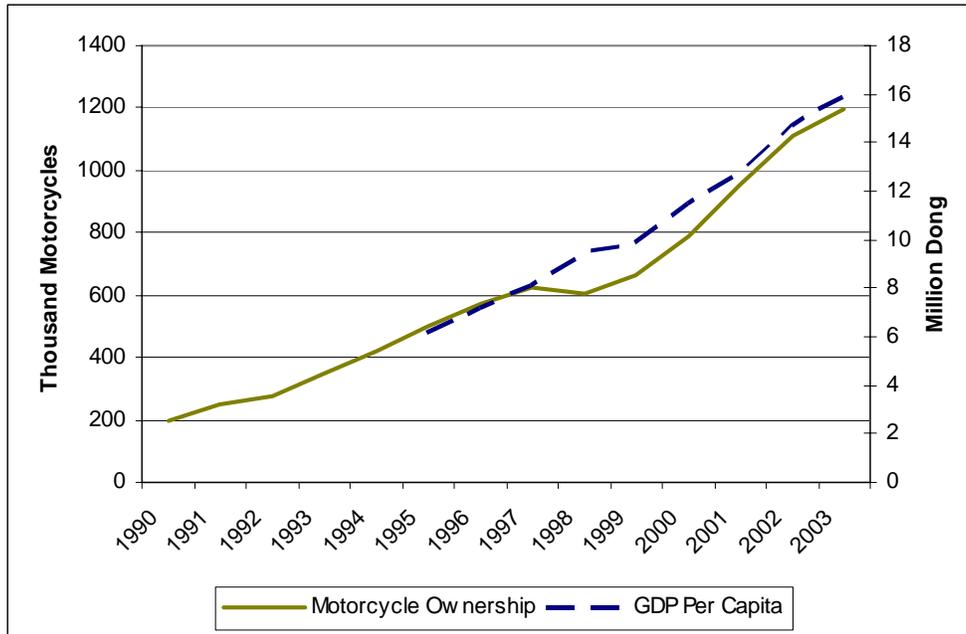
This paper proposes a new paradigm for looking at traffic safety that could be used to evaluate safety impacts and systems in developing country cities with high conflict levels. It addresses street level tactics of traffic safety by positing four components to tell a more complete story about traffic safety from a community level, a story that is currently not used in the professional field of transportation planning. These components include: street design, historic use, perception, and space use. This paper explores theoretical foundations of urban transportation planning in developing cities, specifically on how the tension between structure and spontaneity of traffic safety rules and norms plays out on city streets. Respected transportation planning institutions such as enforcement, engineering and education are commissioned by the government or internationally to use tools and techniques from an engineering framework to improve road safety. However, these typical top-down approaches employed by governments and traffic safety experts ignore informal norms that guide, in Henri Lefebvre's words, the "spatial practice" and "representations of space" from local users of the sidewalk and streetscape. Ha Noi, Vietnam will serve as a model in which to explain the applied methodology for evaluating traffic safety impacts under this new paradigm.

The Context for New Paradigm and the Case of Ha Noi, Viet Nam

With an estimated population of 3.1 million in 2004, Ha Noi is Viet Nam's capital and second largest city (GSO, 2004). Ha Noi's official population grew at an annual average of 3.1 percent from 1994 to 2003, reaching 3.02 million in 2003 (HSO, 2003). High rates of economic growth (*see Figure 1*) have been accompanied by a burgeoning demand for transportation, much of which has been met by growth in motorcycle use. From just over 195,000 in 1990, the number of registered motorcycles in Ha Noi increased six fold to 1.2 million in 2003 (PSUTA, 2005). Motorcycle ownership grew at an annual average of 15 percent from 1990 to 2003, with per

capita ownership nearly doubling from 205 to 398 motorcycles per 1,000 people in 2003 and per household ownership more than doubling to an estimated 1.66 (PSUTA).¹

Figure 1: Motorcycle Ownership and GDP Per Capita, Ha Noi, 1990-2003



Note: GDP and population data before 1995 were not available.

Sources: Motorcycle data are from PSUTA (2005); Population and GDP data are from HSO (1995:2003);

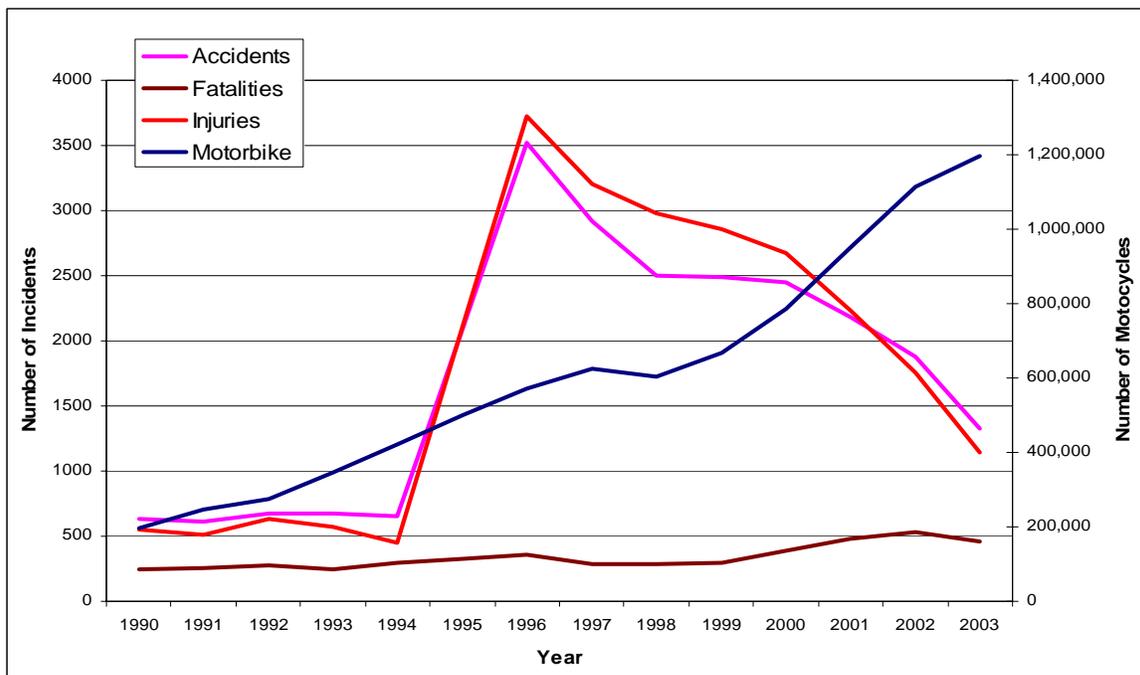
In the last twenty years, rapid economic growth in Ha Noi has dramatically altered the landscape of urban transportation in the city, spurring motorization to match increased demand for personal mobility. Motorization has brought pervasive economic, environmental, and social change to Ha Noi, including at the level of the neighborhood block. It has fundamentally changed allocation of road space from streets and sidewalks dominated by walking and cycling to a setting where the motorbike has become king. Faster average traffic flow speeds triggered by motorbikes (PSUTA 2005) have upset the traditional balance on roads, creating a new space

¹ Household size data are from GSO (2000); with only household size data from a 1999 census available, this calculation assumes a constant household size from 1994 to 2003. Tuan and Shimizu (2005) found a slightly higher per household motorcycle ownership rate of 1.75 based on a 2003 survey of 299 households.

of interaction for pedestrian and motorists. The physical space of this conflict is the target for traffic safety interventions, as injury and death tolls continue to reach alarming rates.

Despite recent improvements in traffic safety in Viet Nam as reflected by traditional indicators such as number of fatalities, accidents and injuries, conflict levels are still one of the highest in Asia (Nantulya and Reich 2002).

Figure 2: Traffic Incidents versus Motorbike Ownership in Ha Noi from 1990 to 2003



Source: *The Study on Traffic Safety in Ha Noi City (JICA – 2004)*

Source: *Traffic Accident Management Agency (Ha Noi Municipal People’s Committee – 2005)*

In 2003, there were a total of 1,331 accidents resulting in 460 fatalities and 1,138 injuries in Ha Noi. A rapid increase in accidents in the mid-1990s (*see Figure 2*) responded to a period when the number of vehicles was increasing rapidly².

² Note that during this time, the city was also devoting more resources to the gathering of traffic accident statistics, so it is difficult to tease out whether the increase in motorbikes or the number of recorded incidents grew at a higher rate.

During 2000-2002, the major causes of accidents included the lack of attention paid by drivers (*e.g.* some are inured to the sea of motorbikes around them), misuse of lanes, as well as low awareness by drivers of traffic safety problems. Although percentage of serious accidents through pedestrian conflict seem small in comparison to other traffic accident causes, broadly defined categories (*see Figure 3*) do not show the true significance of the pedestrian versus motorized mode conflict in traffic safety issues, a reaction which plays out on the streets and sidewalk every day.

Figure 3: Traffic Accident Causes

No.	Cause	Analysis of 373	Analysis of 449	Analysis of 374
		serious accidents in 2000	serious accidents in 2001	serious accidents in 2002
1	Lack of observation	20.37%	48.55%	44.65%
2	Turning	6.17%	5.12%	4.81%
3	Dangerous overtaking	8.04%	8.24%	6.68%
4	Misuse of lanes	12.33%	16.04%	22.19%
5	Speeding	5.90%	4.23%	2.95%
6	Pedestrian conflict	5.36%	4.00%	2.94%
7	Others	39.68%	13.81%	15.78%

Source: The Study on Traffic Safety in Ha Noi City (JICA – 2004)

Toward A New Paradigm of Traffic Safety

The key conceptual assumption imbedded the traditional engineering approach to traffic safety is that high pedestrian accident and injury levels in developing country cities are a result of mixed traffic, lack of education in road crossings, corrupt enforcement and lack of traffic lights/crosswalks/safety infrastructure. Believing that there is a universal solution that can improve traffic safety, many researchers propose a set of city-adapted systematic strategies that include a mapping system, new technologies and better enforcement and lighting.

This paper proposes a new paradigm with the key conceptual assumption that posits that safety is determined partially based on informal rules. For Ha Noi and every other city, since these norms are culturally, politically and historically shaped, the methodology will have to account for Ha Noi-specific characteristics, including the large numbers of motorbikes and their parking facilities, and significant use by the informal sector of sidewalk space. A new paradigm that takes into account the informal norms of the streets is needed in the field of traffic safety.

A Theoretical Space of Traffic Safety

A book chapter by Michael Leaf at University of British Columbia inspired the framework of this new traffic safety planning paradigm. Leaf describes the urban environment of Ha Noi as both structured and spontaneous (Leaf 2000). Structure is seen as the desire for control by the state in various forms through formal planning processes, while spontaneity arises from individual or household decisions, often informal, that may or may not be in accord with state policies. In this paper, the alternative hypothesis for traffic safety in Ha Noi stems from the observation of seemingly spontaneous aspects of the street scene that may give insights in understanding traffic safety in other rapidly growing Asian cities at the structured level.

“Structure versus spontaneity” when applied to traffic safety is as a set of rules in space which set the stage for conflicts on the street. These conflicts occur most saliently from introduction of motorized modes conflicting with traditionally pedestrian and cyclist space. To calm traffic, institutions are fashioned either at the state level or through pressures of international agencies that apply a set of techniques to traditionally “improve road safety.” These institutions use techniques like enforcement, engineering, planning and education, with examples such as placing fines on motorcyclists breaking the law, installing traffic signals, and running safety campaigns on television. As seen in current practice from World Bank, Asian Development Bank and other international aid agencies, reports in this vein are generated ream after ream to address safety from this top-down approach.

A community-level approach to the interactions that take place on the streetscape has not been explored. This would include an understanding of the characteristics of the road, the historic design, the perception of safety from the residents and users of the space, and what the space is actually being used for (whether it be informal vending or motorbike use). Taken one step further, it is teasing out the relationship of how these multiple community-level interactions translate at the surface of the road space, sometimes resulting in accidents, fatalities and traffic conflicts. These informal street characteristics of the spontaneous environment often counter the desired operational impacts of the structured environment, as can be seen in *Appendix A*.

On a theoretical level, the tension between the structured and the spontaneous is what Michel de Certeau describes as the “strategies” and the “tactics” played out in space. De Certeau describes strategies as a manipulation of power relationships to seek authority from an environment (de Certeau 1984). On the Ha Noi streets, this “strategy” presumes motorization in Viet Nam as a symbol of modernization, which the government wholly supports. A decision of this nature necessarily creates a set of institutions that mitigate traffic accidents caused by motorization, but does not question the fundamentals of the use of space. Alternatively, de Certeau claims, “tactics are the art of the weak” (de Certeau 1984). Demonstrations of these forces on the Ha Noi streets emerge at an informal level, through space appropriations from informal vending, or the disinterest of pedestrians to heed traffic safety laws. New sidewalk negotiation tactics must be continuously revisited to find new spatial equilibriums between the motorized and pedestrian environment. In other words, over the course of time, Ha Noi’s “intricate sidewalk ballet”³ has informally evolved from a traditional shared living space where the local ideas of traffic safety are formulated (street vendors, members of the community, local

³ With reference to Jane Jacobs in *The Death and Life of Great American Cities*.

schoolchildren and shoppers), to a formal imposition of roads as a network of passages that link communities together on a city-wide scale.

Another variation of conceptualizing space is expressed through Henri Lefebvre's volume *The Production of Space*, where he makes the distinction between spatial practice, representations of space, and representational spaces (Lefebvre 1991). He defines spatial practice as the "dialectical interaction in the deciphering of space," or the perceived understanding from users acting upon space. Representations of space are conceptions where formal structure defines what is lived and what is perceived, and where a system of verbal and intellectually formulated ideas and implementation play out in space. The representational spaces are where inhabitants and users experience space, and how space is "lived" in, either symbolically or through experience.

In the interplay of Lefebvre's production of space around traffic safety, spatial practice is the *perception* of safety – whether users have a comparative understanding of the dangers and potential for road conflict. Perception can be built on symbolic street cues (width of the street, obstacles) or on historical use of the streets from past eras (industrial, residential from current use or inherited from a century ago). Representations of space are like de Certeau's "strategies," *i.e.* they are the design of traffic safety mechanisms based on an abstract conceptualization of what the space "should" be. Representational spaces are where interactions between formal and informal take place, and for traffic safety they are the quantification of accidents and fatalities that happen in space. This is the "lived" safety, and traffic engineers characterize it by a set of practical, measurable indicators serve as a proxy for understanding the representational space. A conceptual diagram of Lefebvre's theory applied to traffic safety is shown in *Appendix B*.

The interaction of what is "conceived, perceived and lived" collides on the streets and sidewalks in Ha Noi. Using the framework built on the works of Leaf, de Certeau and Lefebvre, a new paradigm to explain the interactions in the traffic safety realm can serve as a fresh way to

view high accident and fatality rates in Ha Noi, and to give voice to spatial practice and representational spaces in field heavily dominated by an engineer- and planner- based representation of space.

Traffic Safety in Ha Noi: A Paradigmatic Place

Although significant practical work has created a conceived notion of what traffic safety should be (*i.e.* international best practices in traffic safety engineering), traditional interventions ignore the perception of safety, and various informal characteristics on which it is based.

To target street level “tactics” of traffic safety, four distinct components tell a more complete story about representational space. For the purposes of this paper, they will be defined as street design, historic use, perception, and space use.

In terms of street design, width and linearity are important variables that can influence the perception and reality of traffic safety. For instance, if sidewalk width is narrow, pedestrians will frequently have to enter the traffic stream on the street, providing more potential for conflict. Linearity can slow speeds of motorized modes, providing a more pleasant walking environment and perception of a safer environment.

Along with street design, a strong historic element in the structures of public spaces affects street safety. In Ha Noi, the dual forces of high economic growth and motorization are recreating spatial tactics of negotiation between historically informal decisions on space into a more ambiguous force which is changing the traditional use of sidewalk real estate. There is need to look back and observe the forces and structures that affect a neighborhood’s development, and to differentiate between neighborhoods assessed. In fact, these new spaces of inquiry are visibly shaped through history, and several distinct neighborhoods can be examined, including the Ancient Quarter, the French Quarter, the Soviet Subsidized area, and the more modern post *doi moi* districts (To 2005). As part of this evaluation, the distinct locations and their characteristics will be studied more closely. As a preliminary attempt at categorizing the

types of historical influences in Ha Noi, a matrix of locations is provided in *Appendix C*. Further questions in research will be developed through collecting data on safety reports from these various areas, and comparing the structures and characteristics to see how historical impacts have influenced today's pedestrian spaces.

The third informal element contributes to traffic safety through perception, or what Lefebvre calls "spatial practice." The user's perceived sense of space is the perceived risk of accident calibrated by user traits such as income, gender and age. This perceived risk is especially difficult to measure because it often happens during a "moment," as humans tend to be very adaptive and change their opinions on perceived risk very quickly. This is the element that is almost impossible to capture historically because it is so intertwined with both precise location and a precise moment in time.

The fourth tactic of informal representation is space use. Depending on whether the sidewalk space is cleared for pedestrians, parked full of motorbikes, or appropriated by street vendors, there is an alternative perceived and actual view of traffic safety. The *use* of the street can be an evocative way of knowing which dominant tactics are countering the conceived representation of space. For instance, if traffic laws are mandating that pedestrians must walk at the crosswalk, but the pedestrian does not distinguish between use of space in the middle of the street and at the crosswalk, then a tension arises between the engineered painting of the crosswalk strip and the pedestrian's use of space based on her own perception of safety.

These four tactics combine to address the missing layer in the traffic safety equation: interaction of informal everyday practices on the street. These tactics will be tested in three different sites in Ha Noi in order to determine whether they have validity and whether they are appropriate independent variables. Three general sites have been chosen, as seen in *Appendix D*, pending further on-site examination of the city structure. Ha Noi is like a palimpsest, where the layers of an ancient manuscript are continuously erased and rewritten, but where remnants of the

past are still represented in its aged pages. Thus, the three sites examined for Ha Noi under this model, the Ancient Quarter, French Quarter, and Post *Doi Moi* District, all have unique street design characteristics based on their histories, which necessarily affect the current day space use (Logan 2000). Whether perception of safety differs between these sites will remain to be seen.

Proposed Evaluation Technique

This paper proposes a systematic evaluation of informal characteristics on the streetscape that contribute to the level of traffic safety in developing cities. Three main themes guide the research: traffic safety during rapid motorization, perception of traffic safety from a range of users, and informal rules that govern the road space.

Theme 1: What happens to traffic safety during rapid motorization? How are formal interventions attempting to mitigate the increasing fatality rates?

Theme 2: What is the perception of traffic safety from the actors on the road? How do street characteristics contribute to this perception of safety? How do user perceptions correlate with the effectiveness of formal measures to control traffic safety?

Theme 3: What are informal rules and norms that contribute to the production of a traffic safety space? What institutions do these informal rules support and which ones do they reject? How do these informal tactics counter the conceived space built by formal institutions?

For example, recent increase in motorbike use in many developing cities has fundamentally changed informal and formal ways of negotiating traffic flow on road space, making it unsafe for users of every mode, especially for pedestrians. The impact of rapid motorization produces a set of informal norms that influences traffic safety differently in various neighborhoods; they are based on characteristic features of the sidewalk and streets including width, regulation of motorbike parking, informal vendors using sidewalk space, linearity of the road, and historical use. These characteristics create a framework to analyze perception of traffic safety, rather than using traditional traffic models that look at safety from the lens of collected

accident data. Formal approaches to improve traffic safety through top-down engineering and planning largely ignore neighborhood-level informal rules of road safety, and thus destroy a critical logic underlying the streetscape in developing cities with high conflict potential.

The Method as Applied to Ha Noi

Ha Noi provides an excellent exemplar of this new traffic safety paradigm and methodology because of its rapid motorization and its well-studied layers of historic streetscapes. Although Ha Noi's motorization is different than other developing country cities due to its strong growth in motorbike modal share rather than auto modal share, the set of formal and informal influences that affect traffic safety remain similar. In Ha Noi, traffic safety issues show how governments and international institutions view their role as a "safety provider" and how the perception of safety is seen very differently from a user perspective. Additionally, introduction of a set of "street characteristic" variables which are not unique to Ha Noi can be tested for their correlation with user perception of safety and actual levels of safety from accident statistics.

Sites to Observe the Production of Space in Ha Noi

Peeling the layers back in Ha Noi's history, one can see the impacts of three major historical periods, all of which have influenced the fixed street design revealed in the city today. As seen in *Appendices C and D*, these are sites that have contained themselves within a small region of the center city that has been occupied by Chinese imperial rule, French colonization and globalization during different stages of a lifetime (Logan 2000). Because effects of these three locations have distinctly altered the streetscape, it is easy to isolate their effects to create general categories to test the hypothesis. The application of this methodology is located in the following sites:

- The Ancient Quarter marketplace formed during the reign of the Royal City of Thang Long (1010-1899 A.D.), the Chinese-ruled precursor to Ha Noi. The "36 old streets" area (now the Ancient Quarter) was deemed the "Commoner's City," with goods and

wares spilling over a network of streets made for pedestrians (Phe and Nishimura 1992). Even today, this area retains its narrow, winding streets and bazaar-like atmosphere. Due to recent historic preservation efforts, a strong internal sense of community from generations of residents living in the quarter, and from interests of tourism, the Ancient Quarter has unique informal features that determine interactions in the traffic safety space. Although motorbikes still run rampant through the 36 old streets, there has been discussion on whether to create a pedestrian-only zone in some or all of the area.

- The French Quarter, constructed during French colonialism (1888-1945 A.D.), created a different street layout and environment. Large, broad streets were designed to lead to palatial French estates, and the grid-network layout created a sense of orderliness. Although trams were introduced, almost all transport was non-motorized, people moved either by foot or by bicycle, and thus the French Quarter remained spatially concentrated (Logan 2000). Today, besides the distinctive gridded boulevards, this area has large hotel and office buildings interspersed with a mix of residential quarters, creating a very different spatial structure than the Ancient Quarter.
- During the period of Soviet influence (1945-1986 A.D.) there are large building complexes and a homage paid toward the state. Because the Soviet sites overlap with the other three sites, and most of the structure has been dismantled and replaced with modern housing and road structure.
- The area established after the new reform area of doi moi (1986-present day) came after several decades of socialism and Soviet support. In terms of housing, the new policy in 1989 to favor private market mechanisms over government-run public housing provided a construction boom without an effective system of control (Logan 2000). These areas have been intensely affected by motorization trends, with roads built wider, but the road space still yet unallocated. Unlike the Ancient Quarter where informal vending is

encouraged, and the French Quarter, where it hardly exists, these post- *doi moi* areas have sidewalks that are constantly renegotiated for vendor space. Simultaneously, the demand for motorbike parking has increased and motorbikes have encroached on the same sidewalk space as vendors and pedestrians. As of yet, there has been a lack of effective regulatory restrictions on motorbike parking. Additionally, these areas have become sites for the introduction of public transportation (bus service) in the late 1990s, which have created a need for sidewalk space to store queues around bus station stops. Current bus service and planned transit has and will continue to create new streams of traffic on the street, providing increased potential for road conflict.

A Closer Look at the Institutions of Traffic Safety

The traditional transportation planner's view on traffic safety is that it can be managed on three fronts: engineering, education and enforcement (the 3 E's). These are the institutions that traditionally regulate and affect the interactions on the streetscape. This proposed method explores these traditional institutions, but also looks at informal institutions that are more difficult to capture, including community initiatives and informal rules and norms. This paradigm will be located in the following institutional realms:

- As traffic safety is the collision of physical trajectories in space, the institution of traffic engineering has often been assigned to design appropriate street structure that can avoid road conflict. For instance, the implementation of a traffic light could be meant to batch traffic so that pedestrians have a right-of-way. These engineering projects each have their own chain of authority that can be traced through research. For example, a traffic light could have been designed and implemented by an international private firm with outside resources. Alternatively, the signal control measure could be designed by local engineers (*e.g.* Transportation Development Strategy Institute) who aim to solve the problem of transportation delay, with traffic safety as a side issue. Other actors such as

international development banks (*e.g.* World Bank) may have broader mandates for country investment, and desire a traffic situation that does not impede economic growth.

- The need for education in communicating new traffic safety measures and laws is also a critical formal institution. The dissemination of information could be done through a government body (*e.g.* Vietnam National Traffic Safety Committee) or through a local media source (*e.g.* Vietnam News) or even through a school training project.⁴
- The creation of a set of rules and the enforcement of those rules are traditional institutions with which to intervene in traffic safety issues. Specific formal laws passed by the Ha Noi People's Committee, as well as who had a stake in enforcing (*e.g.* Municipal Traffic Police) and planning (*e.g.* Ministry of Transportation) the law are all actors in this realm.
- There are sets of community groups organized by neighborhood block. Although they tackle a broad range of issues, they have been known to be especially vocal in the environmental field in Viet Nam (O'Rourke 2001). These community groups are likely the best source of information on indigenous awareness of traffic safety norms.
- A set of informal rules, such as street crossing norms a parent is teaching his/her child can be observed. Although these unspoken institutions are imbedded in cultural understanding, they play a powerful counter to the formal institutions of the 3 E's.

Proposed Methods in the Case of Ha Noi

Using Ha Noi as a model, the methods could include the following:

- Historic Analysis and Data Collection. Collecting current statistics and project documents that have the objective of improving traffic safety in Ha Noi (produced by structured institutions such as the World Bank in the form of aid agency reports, through

⁴ An example is the efforts from the Global Road Safety Partnership. <http://www.grsproadsafety.org>.

city statistics, education campaigns and traffic laws) will provide an institutional lens to evaluate traffic safety in Ha Noi. Several gaps exist here; for example accidents seem to have increased dramatically from 1994-1996, but with more information, one finds that it is only because efforts to collect statistics began during this time. The goal of this exercise is to find the gaps and the missing voices from the data.

- Non-Participant Observation and Regression Analysis. As can be seen in *Appendix E*, street features and space use can be observed by walking through pre-selected streets in the three districts compared in this analysis. By looking at the characteristics next to a dependent variable of accident and fatality statistics, a correlation can be tested between these street characteristics and actual levels of traffic safety. A regression analysis can be performed to determine which characteristics around a sample of streets with similar characteristics (street width, obstacles on sidewalk, motorbike parking blocking roadways, traffic flow) are most significant in determining perception of traffic safety.
- Interviews on Perceived Traffic Safety. At this stage, the interviews will be exploratory research to inform larger survey design. The interviewees will consist of people who use street space and contribute to the informal production of space. The interviews ask about travel patterns from home to a destination and what elements of the environment contribute to the feeling of safety. The objective is to categorize their perceived traffic safety risk based on age, income, and gender, as well as to see the different concerns each population has on accidents rates and various formal measures to improve safety. These methods aim to discover what users deem formal and informal traffic safety rules and policies, *i.e.* they see whether they affect the interviewee's perception of risk. More broadly, this new approach aims to uncover whether there are different types of rules established from each of these three zones and how people begin to negotiate the space between various modes and traffic types.

Contributions of the New Paradigm and Accompanying Methodology

The new paradigm makes a contribution both to field of traditional traffic safety research and the planning literature that studies the everyday spaces of place and time. First, it assesses formal interventions of traffic engineers and provides a new template for looking at the informal institutions that affect traffic safety. In doing so, the research creates a set of two new indicators, which could be used in traditional traffic safety analysis. Second, the research builds on the work of de Certeau and Lefebvre to categorize traffic safety as a space that has the characteristics of “strategies” and “tactics”, as well as the notion of a “perceived-conceived-lived” space.

An Application to Broader Research on Traffic Safety: A New Set of Indicators

Because acknowledgement of traffic safety processes has mainly been instituted through formal channels, a set of indicators have been constructed around measuring the improvement of safety over time. The most commonly institutionalized indicator for traffic safety is the “number of road accidents and/or fatalities per year”. The type of accident or fatality can then be broken down into more specific categories, such as victim’s age, cause of accident (car, motorbike, bus, etc), time of day, and gender. This indicator is accepted worldwide, mainly because it is simple to measure (barring definitional uncertainties about whether a death by road accident means instant or hospitalized, and data collection issues). The main problem with this indicator is that it covers too many diverse landscapes throughout a city, and is usually aggregated so it relates only citywide. Instead, two new indicators will be proposed based on the results of this research. These will serve to give alternative insights into traffic safety.

The first is an “index of road conflict potential” which suggests a correlation between street characteristics that may lead to traffic accidents. This index would have to be calibrated and localized on the level of a street in a specific district. It will be constructed from a series of characteristics, and the “score” that emerges will be an indicator that signals whether the area has a high potential for traffic accidents, thus diagnosing traffic safety hotspots and alerting policy-

makers and community member what needs to be adjusted to create better streets. Despite the complexity of this index, it provides much more information about traffic safety in a certain area than an aggregate indicator of road accidents. The components that would be assembled into the index include the following:

- Existence of sidewalk (binary) and width of actual walkable space
- Percent of road space utilized by motorbike parking
- Traffic flow per hour on the main road
- Number of street vendors per square meter
- Percent of street allocated to residential versus commercial use
- Linearity of streets

Each of the three urban environments that are analyzed in Ha Noi should have different inputs into this index. The data would be collected from many street segments and then correlated with safety statistics. The coefficients would then be used to determine the likelihood of each of these variables to contribute to an accident. From there, the input can be collected on any given Ha Noi street and an index could be generated. For instance, if a high percentage of motorbike parking has a high correlation to traffic fatalities; it can be argued that the current ways in which motorbikes encroach on sidewalk space could have an effect on pedestrian-motorbike conflicts, which increases the potential for traffic accidents.

A second indicator attempts to point out the level of awareness that citizens have about safety of their streets. This indicator would be the “actual versus perceived accident rate.” If the community does not perceive road safety as a problem, there is little reason for members to consider rules or norms that involve caution either as a driver or a pedestrian. One of the main interests of this research project is to gain a community-level understanding of rules and norms for traffic safety. However, this presupposes that citizens actually think that the current situation

of accidents and fatalities is unsustainable. It would be valuable to collect survey information to examine whether people in the varying districts view the area as unsafe by comparing their risk perception with actual traffic accidents statistics. This indicator could be developed based on more precise interview questionnaire formulated by this research project. By asking perceptions of traffic accidents, and then revealing true statistics, the community may gain a better understanding of what reality is occurring on their city streets.

The goal of this process is not to rank the understanding of the community, but to get a sense of what residents and citizens of that community think about traffic safety. It may be to see what sort of “sensitivity” a community has toward traffic safety education campaigns versus engineering or enforcement type solutions to reduce accidents. If a community completely does not perceive the reality of accidents, perhaps it is not the main priority. Thus, any such interventions on traffic safety would not create improvements, because, for instance, death by cholera is so much more deadly than traffic fatalities in that district. Using this indicator could open doors in understanding what issues are occurring in the community of interest, and what interventions *would* be valuable to improve traffic safety.

An Application to Broader Research on the Everyday: Mobility and the Representational Space

The methodology is grounded in the theoretical framework of de Certeau and Lefebvre. Both describe the complex interactions that contribute to the production of space. By applying their themes to traffic safety in Ha Noi, the new approach addresses core themes of a space dominated by a formal force with a “weak” underpinning that refuses to be dominated. Demonstrations of these forces on the Ha Noi streets emerge at an informal level, through space appropriations from informal vending, or the disinterest of pedestrians to heed traffic safety laws. These forces pose a deeper set of problems that cannot simply be solved by a “3 E’s” type of solution. Improved traffic safety is not just the formal elements sliding into place, but also the perception and lived reality created by informal members of the street community. The

interaction of what is “conceived, perceived and lived” explodes on the streets and sidewalks in Ha Noi. The high traffic accidents are a result of multiple factors that produce the streetscape in the different Ha Noi neighborhoods. The interactions are negotiated differently in each of the neighborhoods, as they are influenced by the physical, social and historical structure of the environment. Using the framework built on the works of Leaf, de Certeau and Lefebvre, a new paradigm gives voice to spatial practice and representational spaces in field heavily dominated by an engineer- and planner- based representations of space. But it also allows for a practical application to a theory of representational space that has not yet looked at the institutions of traffic safety.

Conclusion

The goal of presenting this new methodology is to paint a more complete picture of institutions affecting traffic safety in rapidly motorizing developing country cities. It provides an alternative approach to viewing traffic safety from the traditional lens of traffic engineering. In doing so, it provides a spatial framework to understand the interactions between motorized modes and pedestrians in a city neighborhood.

Like strokes of paint on a Jackson Pollock canvas, traffic flows on Ha Noi streets seem unpredictable, but have an underlying logic negotiated by various actors in space. These negotiations produce a piece of artwork on every day living practices. Once in awhile, during stochastic moments, this logic is punctured by road conflicts, perhaps between a motorbike and pedestrian, or a bus and a pedi-cab. This is a result of space both structured and spontaneous. Acknowledging that informal street characteristics shaped by historical, political and cultural elements contribute to traffic safety can assist in the negotiation of space between the structured and spontaneous, reducing random elements that puncture the practice of every day life.

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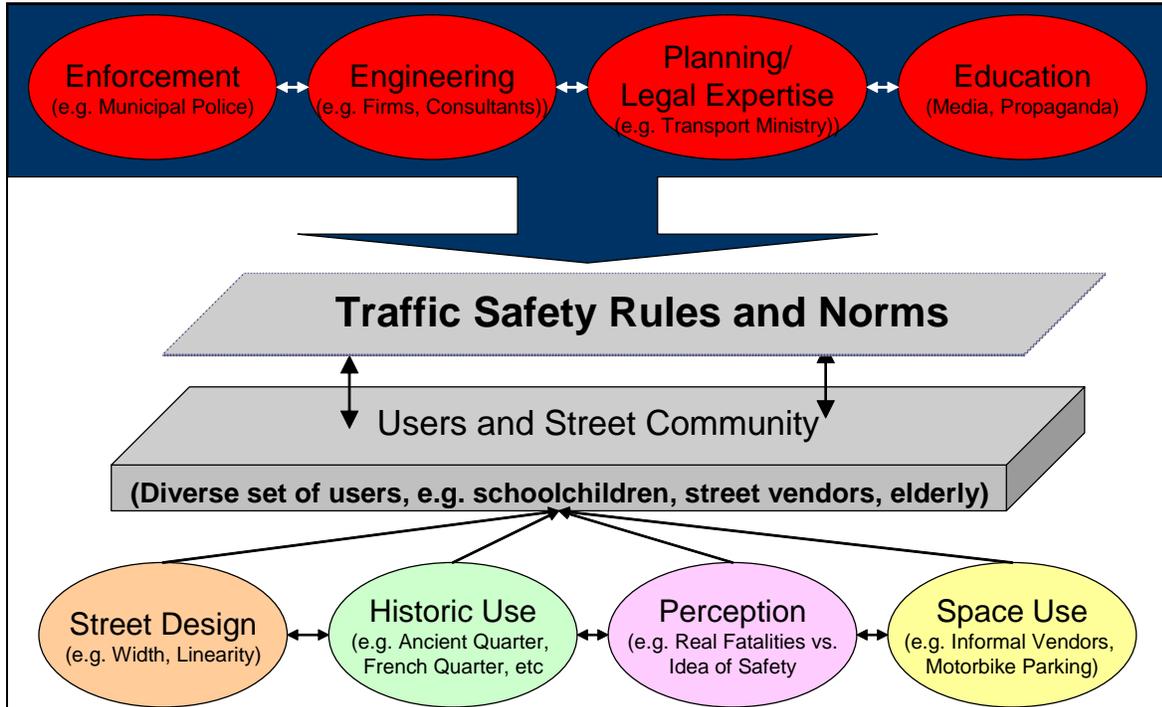
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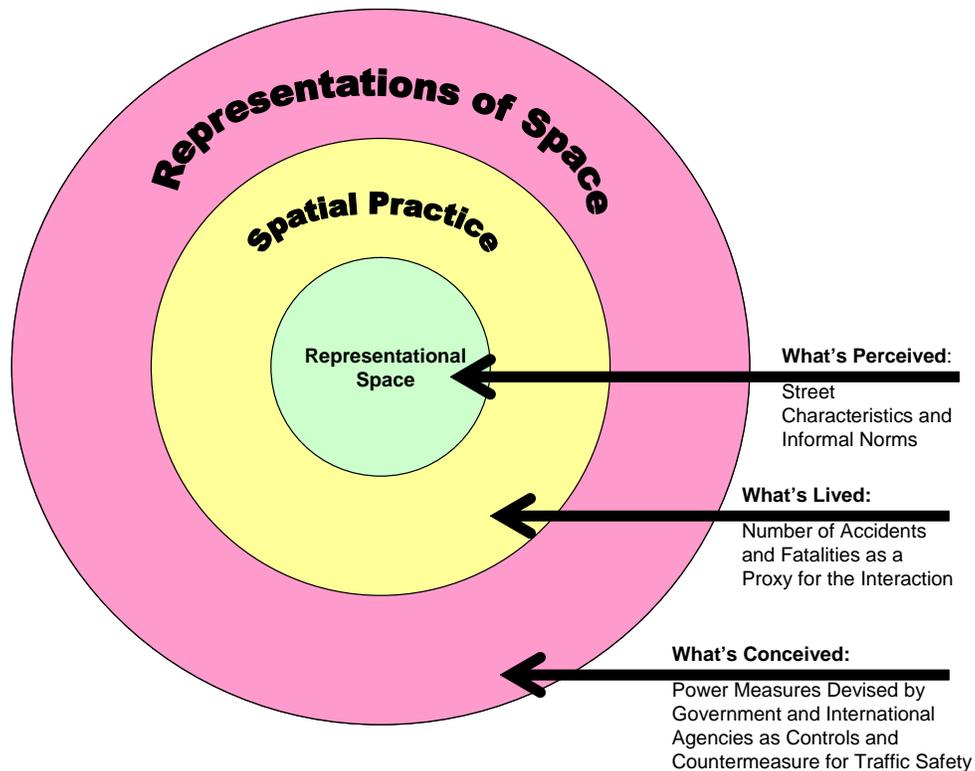
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**Appendix A: Structured vs. Spontaneous –
An Institutional Framework for Traffic Safety in Ha Noi**



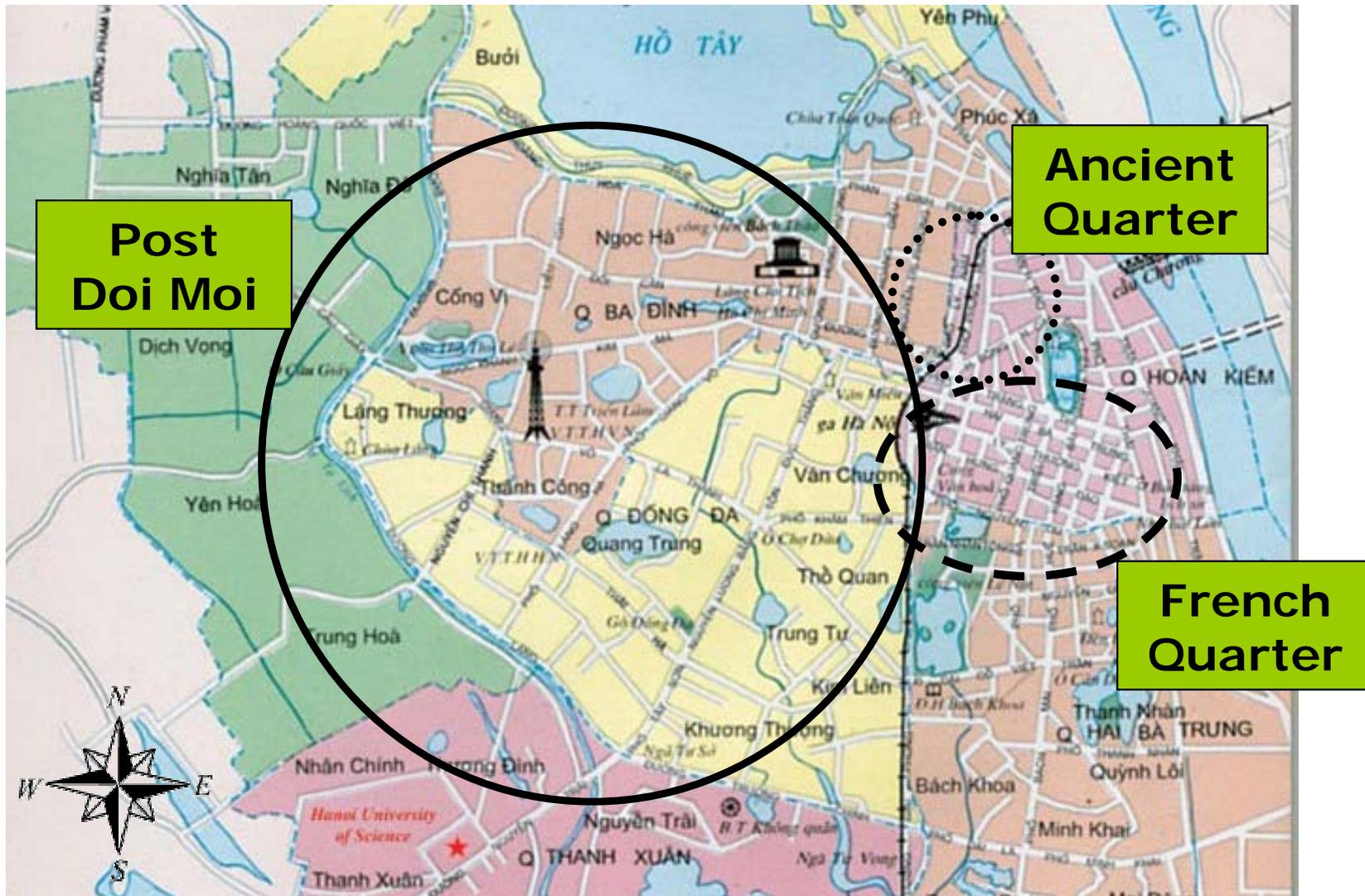
Appendix B: Lefebvre’s Production of Space Applied to Traffic Safety in Ha Noi



Appendix C: Historical Matrix of Formal and Informal Forces Governing the Street Network in Ha Noi

	1010-1888 (Ancient City)	1888-1945 (French Colonialism)	1945-1986 (Soviet Subsidized Period)	1986-2000 (Doi Moi – New Reform Era)	2000 - ? (Rapid Modernization)
Master Plan Street Layout	- vlassic 36 streets of industry and living -small scale, simple architect. (village)	- divided into different kinds to suit each social class such as French soldiers, landlords and small traders	- neighborhood model where living quarters structure is idea of social organization - dense community	- built at max density for full advantage of small expensive land plot, 1993 Law on Land - private interest w/o planned mgmt means lack of public facil.	- development of Master Plans that increase road space and conform with “international standards”
Accompanying Transport Network and Modes	- traffic system with narrow streets spontaneously formed width was ranged from 170 to 300 m	- street system was designed under checkerboard style, some boulevard style, with green trees along the street for peds. - buses and trams were introduced in 1886 and 1899 in Ha Noi.	- government do not allow circulation of private cars - public transportation planned, in reality significant walking and bicycling - streets very friendly to pedestrians (not many other transport modes)	- cars, trucks, mopeds, and bicycles compete in the flow of street traffic, private modes dominate foreground - local pedestrians begin to work in separate neighborhoods and become less associated with community - no public transportation	- public transportation begins to capture ridership (buses) with plans for tram and light rail - pedestrians compete with hostile traffic patterns, safety a huge concern
Political and Economic Forces and Pressures	-feudal regime serve ruling class's political purposes and interests -constant wars (esp against Chinese)	- French occupation and colonialism - large scale public works project (paved roads, drainage, electricity)	- inefficient state-owned enterprises - reinscription of colonial state with symbolism of nationalist and communist regime	- changed from a planned to market economy mechanism - industry, construction, trade and tourism begin to boom - road space allocation does not keep up with GDP growth	- decrees attempting to require attention to traffic safety (helmets, sidewalk encroachment), all quite unsuccessful due to local pressures
Who Uses the Space?	- farmers, artisans, multi-use for job and residential	- colonial French dominate	- “representations of space” with State creating ultimate neighborhood unit	- “representational space” due to increased freedom in creating space for residents/local users	- increasingly users are people on motorbikes shopping, working, rec.
Who Monitors the Space?	- self monitoring villages with agric. production and trad. handicraft -feudal system of payment to rulers	- employment of colonial power, temples and monuments converted into post office and French residential structures	- constant surveillance through State control, including newspaper, speech and living arrangements	- same official who uses and lives with the community, creating state-society contentions	-Global forces, including rapid motorization. - Incomes drives motor vehicle ownership, leading to a disturbance in street priority
Effects on Current Usage of Ped and Public Space (Locations Suitable for Interviews)	- winding streets, now tourist area, strong concentrated social scene. Location: Ancient Quarter (36 streets)	- remnants of grid patterns in the French Quarter Location: French Quarter (Hoan Kiem)	- large monumental open spaces with statue of Lenin and Ho Chi Minh Museum look over the landscape Location: Residential urban villages on the periphery	- vendors have negotiated space which is only informally monitored, taking up significant real estate Location: CBD	- motorbikes demand parking and road space, making less room for local users and more room for passersby Location: CBD

Appendix D: Sites of Inquiry in Ha Noi, Vietnam



Map compliments of Thales Sareco, 2003

Appendix E: Non-Participant Observation of Street Characteristics in Three Different Neighborhoods (Only Two Represented Here)

