Quo Vadis Traffic Engineering

J. AL. HEAD
President, Institute of Traffic Engineers
Assistant Traffic Engineer
Oregon State Highway Department

Quo Vadis traffic engineering? I hesitate to look into the total implication of the subject of this article without first looking in retrospect. A good starting point for introspection is to define the subject. The Institute of Traffic Engineers defines it as:

“Traffic engineering is that phase of engineering which deals with the planning and geometric design of streets, highways and abutting lands and with traffic operation thereon, as their use is related to safe, convenient and economic transportation of persons and goods.”

This means that traffic engineering has an intimacy with people far beyond that of any other branch of engineering. In the expending economy that is confronting all areas of the world today the automobile is so vitally integrated with the people that traffic engineering has as a result thereof the concern for this intimacy with the road user and the public. The road user is more cognizant of the end result of the application of traffic engineering principles than he is of the results of the application of all other engineering concepts involved in road and street building.

In this relationship of intimacy between people and the traffic engineer, is it not appropriate for us to reflect on why God communed with Paul on the Appian Way?—another important road in the mode of transportation of that day. So, on a road this intimacy of God to man brings me to the realization that the traffic engineer must present himself unto God as one approved in his responsibility to the people and more particularly to people involved in transportation.

Let us revert for a moment to that day when God stopped Paul on the Appian Way and said, “Quo Vadis?” (Where goest thou?). Could not we, in traffic engineering ask ourselves, “Where goest thou?”

Where have we been?

Before we can answer the question, “Where are we going?”, should we not look back and analyze “Where have we been?” The development of the operationally sound functional traffic control devices in Europe and America has been a most pronounced and dynamic thing.
I will not delve into the historical aspects of traffic control devices through the utilization of engineering judgment and engineering skills and the desire on the part of those men interested in their perfection, in their operation yet this is what caused the profession of traffic engineering to come into being and to prosper.

The Institute of Traffic Engineers was founded in 1930 because of the need for the development of a profession which could devote its every concern and its every need to the safe and convenient and economic transportation of persons and goods. The outreach of the Institute of Traffic Engineers has been great in these 33 years since its founding. Its outreach has been from a small organization to one with membership throughout the world. The Institute has an expanding research program that is making available to its membership and to other engineers good, sound ideas that can be put into practice so that mankind might better itself.

In analyzing the thought "Where have we been?" so that we might better understand "Where are we going?", one would be remiss if he did not take into account that many parallel lines of endeavor are taking place in different parts of the world. Through these efforts in parallel research quite often identical ideas are developed, but more often than not ideas are developed which can be interchanged and must be interchanged throughout the world so that an idea, developed in one area, is utilized in another. The interchange of these research and practical developments has been and remains a vital concern to many in the profession of traffic engineering. We must, through the exchange of professional journals devoted to the field of traffic engineering, such as "Traffic Engineering" published in the United States and "Traffic Control and Engineering" published in England, disseminate information as it is developed and make it available to all who are interested in the utilization of traffic engineering principles.

The United States has come far and yet it has far to go in the development of standards of uniformity for construction and utilization of traffic control devices. In 1961, the National Joint Committee on Uniform Traffic Control Devices, of which the Institute of Traffic Engineers, the American Association of State Highway Officials, the U. S. Bureau of Public Roads, and others are parent organizations, adopted a manual which when implemented in its entirety will be heralded as a milestone in professional accomplishments. It is the beginning of a brighter future in the field of traffic engineering. Admittedly, some of the ideas as set forth in the manual are in need of improvement, can be improved and must be improved, but it is the genesis for
present-day motor transport operation. It is a bringing together within the confines of the United States, with the largest transportation system in the world, a means of uniformity so that all persons will travel in an atmosphere of understanding and safety.

The Geneva Convention of 1949 was an admirable effort toward developing uniformity of signs, signals and markings as might be used throughout the world. It is unfortunate that all nations could not see their way clear to come together in an area of uniformity of traffic control devices. Yet, there is much to be said for the results that were obtained, and there is much to be said for the practices as evidenced by those who did participate in the final results of this conference. But this is not the point of this discussion. Rather I would like to say that the nations of the world have gotten together and demonstrated that they can get together on developing uniformity. There is yet a considerable void in developing standards, exchanging research, and extending uniformity within countries and between countries. This I believe is the challenge of "Quo Vadis Traffic Engineering?".

Quo Vadis Transportation:

Where are we going in the field of transportation? Where does traffic engineering fit into the total context of transportation? Is traffic engineering to concern itself with all phases of transportation, not only land transport but with air and water as well? Should traffic engineering concern itself with all modes of transportation? Should it concern itself in land transportation not only with highways and streets, but rail as well? These are questions which are currently being studied and which the profession must, in the not too distant future, determine if it is to go forward to new horizons in the same dynamic context as it has risen in the past.

I am of the opinion that traffic engineering must in the first instance be knowledgeable in all media related to the transportation of people and goods, but it should confine its operational outreach to the transportation of people and goods as would related to land transport. This is the area in which the traffic engineering profession has been growing throughout the past generations. It is a field in which it can and will grow in the future. I do not mean to be so presumptuous at this point to speak for the Institute of Traffic Engineers, for it has appointed an Ad Hoc Committee on Scope and Purpose of Traffic Engineering as related to Institute affairs. This Committee will, within its wisdom, make certain recommendations to the Institute of Traffic Engineers which conceivably will have a profound influence on the outreach of our profession in the generations to come.
Quo Vadis Research:

Where are we going in research? Many grandstruants strides have been made. The Congress of the United States, in passing the 1962 Highway Act, recognized the need for extending research by the continuation of the availability of 1½ per cent of the federal aid funds for research work. They also further evidenced this intent to expand research by making an additional one-half of one per cent of the federal aid funds available for research and highway planning and related work if the state so desired. The Road Research Laboratory in England is doing a marvelous outreach. This research work is repeated in universities not only throughout Europe and the United States but all of the continents.

There exists the profound possibility that we are duplicating identical research objectives by virtue of our own desires to accomplish an end result. Could we not stop and pause for a moment and be cognizant of the research efforts of others so that if one institution is better qualified in a particular area of research than another that it be given the support of all? The consummation of a research with adequate financing and personnel so that a job can be done in a minimum of time with the development of an optimum of results is far too often overlooked.

The American Association of State Highway officials and the U. S. Bureau of Public Roads has contracted with the Highway Research Board of the National Academy of Sciences to accomplish a “National Cooperative Highway Research Program” in the United States. In 1962 six basic areas of research were defined:

Problem Area No. 1 deals with translations of the results of the Highway Research Board administered AASHO Road Test. By translating these findings to other conditions in other areas to apply the findings to other environments to “domesticate the findings” is the objective of this research area.

Problem Area No. 2 treats with the consequences of highway improvements as are found in motor vehicle operation in time and comfort and convenience, in community life, in economy, and in other modes of transportation. It is geared to the non-road user as well as the road user concept and the economic consequences therefrom.

Problem Area No. 3 concerns itself with vehicle communications and road safety, as well as problems of congestion.

Problem Area No. 4 has to do with road building materials, not only as to the use of native materials but of the development of synthetic ones as well.
Problem Area No. 5 delves into the perplexing problem of illumination and its import in easing the driving task and making the roadway safer over which to operate.

Problem Area No. 6 involves study of snow and ice removal, looking not only into the traditional methods of removal but also the damage resulting therefrom and what can be developed in the future to solve this most perplexing problem without resultant structural damage.

A seventh area will soon be added dealing with urban transportation in the whole of the urban area. This evidence of the need for research in these fields is going to materially accelerate the availability of knowledge for the decision makers in the United States. Ideas as tools which will materially enhance the relationship of the utilization of the road user dollar will emanate from this $2.4 million annual research effort.

Quo Vadis Idea Utilization:

Absence of idea utilization causes, perhaps, the largest degree of concern over personal and petty jealousies than does any other area in the whole field of traffic engineering. Some of us are quite selfish of our ideas and guard their utilization with zeal. Others of us are prone to spread our ideas without thinking, without concern for their implication or impact upon others. The pooling of ideas, both professional and non-professional, and seeing that they are utilized (especially in the area of research just previously discussed) can do much to bring about a greater understanding of some of the concepts of traffic engineering. Through such an interchange of ideas we can do much to enhance the future of transportation.

One of the drawbacks to date has been an inherent desire to exercise a provincial (or national) concern for our ideas and a disdain for the acceptance of an idea developed by another. We must, through conferences such as the First World Traffic Engineering Conference held in Washington, D. C. in 1960, through the Pan American Highway Conferences, the International Study Weeks in Traffic Engineering, and the International Road Federation's Road Congresses, extend participation to engineers outside of the normal sphere of influence. To do so will do much to extend our ideas and the utilization of these ideas by others, for it is only through understanding that man, through traffic engineering, can assist his fellow man to make his journey for the many needs and wants of his everyday pursuits in a safe and economical manner.

Let us hope that this desire is as strong in one area of this world as it is in another. The sooner the profession of traffic engineering
determines that this is true and that all engineers responsible for the administration and application of traffic engineering principles accept ideas from others then the quicker will the engineer, in his relationship to man, start to accomplish his purpose.

*Quo Vad is Uniformity:*

This field was touched on briefly in discussing "Where have we been?", but it is an area that I personally have become most cognizant of within this past year. I have had the privilege of traveling almost the length and breadth of my own country by automobile and on numerous occasions by air. I have had the privilege of traveling in England and on the Continent. These trips have been not only as an automobile passenger, but more important, as a pedestrian. As a pedestrian in my own country I am constantly exposed to the changing whims of the interpretation and use of laws, of signs, of signals, and of markings.

I appeal to the traffic engineering profession to immediately arouse itself to the need for international and world-wide uniformity of the utilization of signs, signals, and markings. I realize that in the field of signs it is going to be extremely difficult to bring to within an operational context a system of signing that all can utilize. I do feel, however, that it is entirely feasible, practicable, and operational for the traffic engineers of the world to bring themselves together in an understanding of uniformity with respect to markings and signals. There is already an excellent start in the standardization of color, shape, and placement with respect to pavement marking and signalization, and with only a minimum amount of change would we be able to develop world-wide uniformity.

The separation of the pedestrian and vehicular signal through placement is of primary importance since regardless of where we drive a car we are often a pedestrian outside of our knowledgeable sphere and we need uniform direction. It is time that the traffic engineering profession took the leadership in trying to establish uniformity of markings and signals.

The Institute of Traffic Engineers, through the concern of its International Relations Committee, is endeavoring to make available to the traffic engineering profession of the world a media for the interchange of ideas. It is hoped that through this sphere of influence the Institute of Traffic Engineers will have in a small way an opportunity to be a part of the future of traffic engineering and will present itself unto God as a profession approved.
Quo Vadis Traffic Engineering:

So, "Quo Vadis Traffic Engineering?". The future of traffic engineering is dependent on individuals and their ability to interrelate idea utilization. It is the responsibility of these individuals to listen and say to themselves "Quo Vadis." It is the responsibility of these individuals, whether they be members of a professional organization interested in the outreach of traffic engineering or not, to make known to the whole of the body of knowledge their ideas and their research. Only then can others utilize these ideas and these researches for the betterment of man and for the continued outreach for an understanding in standardization and uniformity.

I would be hesitant to say in my limited knowledge that we in the United States are further advanced in any one sphere of influence more than are the engineers on the Continent, for example. I do know, however, that in some areas the traffic engineers in Europe have gone a long way in developing ideas which the traffic engineers in the United States could utilize and benefit from. Conversely, I also know that the traffic engineers involved in research and operation in Europe could well benefit from some of the ideas that have already gone before in the field of traffic engineering research and operation in the United States. In concluding these comments I request you to make known your impressions of "Quo Vadis Traffic Engineering" as you see it. How can we best, as an individual or as the Institute of Traffic Engineers, further the profession of traffic engineering and its outreach so that man can benefit therefrom?