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Tale of Two Thesauri: UMTRI's Move to Adopt the TRT
Bob Sweet, University of Michigan Transportation Research Institute
Library



UMTRI

A Tale of Two Thesauri: UMTRI's Move to Adopt the Transportation Research Thesaurus

They were the best of terms. They were the worst of terms.

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UNIVERSITY OF MICHIGAN
TRANSPORTATION RESEARCH INSTITUTE

The Problem

- **UMTRI Thesaurus out of date**
- **Short of staff for updating**
- **TKN era calls for collaboration, networking, uniformity, and a “common language”**

“One of the challenges to finding and managing transportation information is the limited use of common metadata and indexing terminology within the transportation community.”

--NCHRP Project 20-90 problem statement

The Solution

- Adopt the TRT
- TRT is maintained by a team of dedicated professionals
- TRT is increasingly accepted as a standard

Some History

- UMTRI began as HSRI with auto industry money
- In 1967, very few, if any, libraries devoted to highway safety
- Unique, multidisciplinary, “mission-based” collection required “unique classification and indexing technique”

Some History

- High value placed on the information organization and dissemination mission
- Who else but an electrical engineer to develop a thesaurus?

HSRIC Library/Information Center

February 1969

Staff: Don Munro Head Librarian
Nancy Huang Assistant Librarian
Joe Marsh Information Center

Indexers: Alexa Sehr (Head Indexer)
Mike Thall
Vijay Khanna
John Molenaar
Ross Neu

Cataloging
and
Filing: Barbara List (Head Cataloger)
Johnna Beltz (Cataloger)
Valerie Hilton (typing abstracts and subject codes,
etc.)
Joan Magnusson (typing abstracts, subject codes,
making acquisition cards, underlining
catalog cards, filing, etc.)
Mary Devedas (underlining and filing catalog cards,
arranging monthly acquisition cards, etc)
Ann Kostishak (filing catalog cards, etc.)
Gail Goodlow (filing catalog cards, etc.)

Circulation
and
Periodicals: Michelle Shepherd (checking documents in and out, in
charge of periodicals, etc.)

Acquisition: Ann Grimm

People/
Organizations: Helene Rosenburg
Janice Bandrofchak (cutting and mounting for Auto
Safety Conference, filing P.O.
cards, etc.)

Messengers: Ross Allen
Edward Redmer

HIGHWAY SAFETY RESEARCH INFORMATION CENTER
SUBJECT INDEX FACETS

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The Highway Safety Research Information Center

JOSEPH C. MARSH, IV

Head, Highway Safety Research
Institute, The University of
Michigan, Ann Arbor, Mich.

The Highway Safety Research Information Center is an operating center devoted to the problems of communicating information to researchers in the broad field of highway safety. It performs this function by an aggressive acquisition program, a unique classification and indexing technique, and the technical support of a university staff engaged in related research. The Center provides an active facility for information exchange and analysis by assembling and processing information related to all aspects of highway safety research. The background, development, operation, and services of the center are described.

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THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS, UNITED ENGINEERING CENTER, 345 EAST 47th STREET, NEW YORK, N.Y. 10017

D Vehicle

DB	Nonpowered	DHDCB	Locks/Latches
DBB	Bicycle	DHDCC	Hinges
DC	Animal Driven	DHDD	Hood/Decklid
DD	Power Vehicle	DHDE	Fenders
DDB	Rail	DHDF	Bumpers
DDBB	Train	DHDG	Interior/Passenger
DDC	Airborne	DHDGB	Compartment
DDCB	Airplane	DHDGC	Dashboard
DDD	Aircushion	DHDGD	Controls and Handles
DE	Passenger Motor Vehicles	DHDGE	Steering Wheel
DEB	Motor Cycles	DHDGEB	Seats
DEC	Passenger Cars	DHDGEF	Headrest
DECB	Full-Sized/over 117"	DHG	Padding
DECC	Intermediate/112-117"	DHGB	Power Plant
DECD	Compact/106-111"	DHGC	Engine
DECE	98" (Corvette)	DHGCB	Transmission
DECF	Foreign	DHGCC	Rear Drive
DECFB	Over 100"	DHGCD	Front Drive
DECFC	90-100"	DHGD	4-Wheel Drive
DECFD	Below 90"	DHGDC	Fuel System
DED	Buses	DHGE	Carburetor
DEE	Taxicabs	DHGF	Drive Shaft/Clutch
DF	Cargo Motor Vehicles	DHGFB	Exhaust System
DFB	Truck	DHGFE	Muffler
DFC	Trailer	DHGG	Emission Control
DFD	Tractor	DHGH	Governors
DG	Multipurpose	DHGHB	Cooling System
DH	Vehicle Parts	DHGHC	Radiator
DHA	Wheels	DHH	Air
DHAB	Rims	DHHB	Electrical System
DHAC	Tires	DHHBB	Ignition
DHACB	Studded	DHHBC	Distributor
DHACC	Ply	DHHC	Spark Plugs
DHAD	Hub Cap/Disc	DHHCB	Lights
DHB	Brakes	DHHCC	Headlights
DHBB	Drum	DHHCD	Tail
DHBC	Disc	DHHCE	Brake
DHBD	Auxiliary/Handbrake	DHHCF	Turn
DHC	Chassis/Frame	DHHCG	Back-up
DHCB	Suspension	DHHD	Parking
DHCC	Axle	DHHE	Battery
DHCD	Springs	DHHH	Generator/Alternator
DHCE	Shock Absorbers	DHI	Horn
DHD	Body (Upper)	DHIB	Steering System
DHDA	Roof	DHIC	Linkage
DHDAB	Convertible	DHJ	Column
DHDB	Windows	DHJB	Instruments
DHDBB	Windshield	DHJC	Speedometer
DHDC	Doors	DHJD	Fuel Gauge
		DHJE	Oil Pressure
		DHJF	Engine Temperature
			Warning Lights

1967

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		DHJE	Oil Pressure
		DHJF	Engine Temperature
			Warning Lights

2004

D	Vehicles	DEE	Taxicabs
DB	Nonpowered Vehicles	DEF	Trucks
DBB	Bicycles	DEFD	Truck Tractors
DBBT	Tricycles	DEFDC	Cab Over Engine Tractors
DBC	Trailers	DEFF	Straight Trucks
DBCB	Truck Trailers	DEFFB	Pickup Trucks
DBCBG	Semitrailers	DEFG	Articulated Trucks/ Combination Trucks
DBCBH	Multitrailers	DEFGB	Truck Trailer Combinations
DBCC	Travel Trailers	DEFGC	Tractor Trailer Combinations
DBCD	Mobile Homes	DEFGD	Tractor Semitrailer Combinations
DBCE	Boat Trailers	DEFGE	Multitrailer Combinations
DBD	Truck Mounted Campers	DEG	Multipurpose Vehicles/ Off-the-Road Vehicles
DD	Power Vehicles	DEGC	Amphibious Vehicles
DDB	Rail Vehicles	DEGJ	Jeeps
DDBL	Light Rail Vehicles	DEGM	Military Vehicles
DDBR	Rail Rapid Transit Vehicles	DEGT	All-Terrain Vehicles
DDC	Airborne Vehicles	DEH	Special Purpose Vehicles
DDCB	Airplanes	DEH*FICB	Police Vehicles
DDCD	Helicopters	DEH*JL	Accident Investigation Vehicles
DDCDD	Aircushion Vehicles/ Ground Effect Vehicles	DEHC	Cranes/ Derricks
DDE	Track Vehicles	DEHF	Forklifts
DDES	Snowmobiles	DEHG	Farm Vehicles
DDR	Space Vehicles	DEHGF	Farm Tractors
DDS	Ships/ Boats	DEHH	Construction Vehicles
DDSM	Merchant Ships	DEHJ	Snow Plows
DDSN	Naval Ships	DEHK	Fire Trucks
DDSR	Recreational Craft	DEHL	Ambulances
DDSW	Work Boats/ Barges	DEHM	Mobile Medical Units
DE	Highway Motor Vehicles	DEHR	Lawn Mowers
DEB	Motorcycles	DEHS	Ice Cream Trucks
DEBB	Minibikes	DEHT	Tank Trucks
DEBC	Mopeds/ Motor Scooters	DEP	Motor Vehicles by Power Source
DEC	Automobiles/ Passenger Cars	DEPC	Internal Combustion Vehicles
DECDD	Automobiles by Size, Weight	DEPE	Steam Vehicles
DECDF	Standard Size Automobiles/ Full Size Automobiles	DEPF	Turbine Vehicles
DECDDG	Intermediate Automobiles	DEPG	Electric Vehicles
DECDDH	Small Automobiles	DEPH	Hybrid Vehicles
DECDDHK	Automobiles under 1500 lbs	DES	Slow-Moving Vehicles
DECM	Automobiles by Make, Model, Year	DF	Vehicle Parts [includes defects of]
DECMB	Automobile Age	DFJ	Vehicle Front Ends
DECMK	Automobile Make, Model, Year (to be specified)	DFK	Vehicle Side Structures
DECR	Rear Engine Automobiles	DFL	Vehicle Rear Ends
DECS	Automobile Trailer Combinations		
DECT	Three-Wheeled Automobiles		
DED	Buses		
DEDH	Small Buses/ Vans		
DEDJ	Articulated Buses		
DEDK	Double Deck Buses		
DEDS	School Buses		
DEDT	Motor Homes		

An Eye-Opener

- *Adaptive cruise control* rocked our world
- *Speed Control Devices/ Cruise Control* falls under *Base Engine Components*

UMTRI Thesaurus

- **Best of terms**

When it was first created and for most of our history there was no substitute.

Highly granular

- **Worst of terms**

Cultivated Terrain, Prefabrication, Brake Tramp

TRT

- **Best of terms**

 - Maintained by information professionals

 - More widely accepted

- **Worst of terms**

 - Not granular enough

 - No** *Rearward Amplification, Restraint System Injuries, Fatality Patterns, Crash Speed*

So How Do We Do It?

- Do we just stop using UMTRI terms and start using TRT terms?

All items cataloged after this date use TRT?

- How will we find earlier materials indexed with earlier terms?

Airbag restraints (UMTRI)

Air bags (TRT)

- How do we educate users?

Signs at terminals? Notes on search screen?

- Do we even need subject analysis?

Who Ya' Gonna Call?

- Michael Kleiber, Sandy Tucker, Roberto Sarmiento, Paul Burley, Rita Evans
- Michael took us into the deep end. Map all terms.
- 3,000 not 1,500

Let the Mapping Begin

- Sometimes near-equivalent (close enough) terms, but not within a logically corresponding place in the hierarchy.

Billboards (UMTRI); top level is Roads/ Ways

becomes

Roadside advertising (TRT); top level is Management and organization

- If a term was rarely used (yielded few hits in a search), it was easier to go with a close-enough term.

Face Protectors (UMTRI) Protective clothing (TRT)

Mapping, con't.

- In many cases, where UMTRI terms were much more specific, we made the decision to go up in the UMTRI hierarchy to find a less specific term for which there was a good TRT match.

Tire Cornering Power (UMTRI) *Tire mechanics* (TRT)

NVM *Tire Mechanics*

NVMBB *Tire Longitudinal Force*

NVMBBB *Braking Force/ Tire Tractive Force*

NVMBCB *Tire Cornering Power*

Mapping, con't.

- Sometimes, going to a higher level in the hierarchy would mean duplication of terms.

Phototropic glass (UMTRI)

Glass (TRT)

BK *Glass*

BKG *Glazing*

(**use** *Glass*)

BKGP *Phototropic glass*

(**use** *Glass*)

Mapping, con't.

- Sometimes equivalents couldn't be found because we didn't understand the UMTRI terms. We were thrilled when term definitions appeared in TRT, but UMTRI terms never were defined.

*Standing Wave Phenomenon (UMTRI) **

Tire mechanics (TRT)

NVM **Tire Mechanics**

NVMI **Tire Dynamics**

NVMIS **Standing Wave Phenomenon**

**Fifteen hits doesn't earn a trip to Winkler.*

Mapping, cont.

- Some terms were a little too specific, or vague, as evidenced by there being no hits for those terms in the catalog:

Shift Buttons, Cultivated Terrain, Engine Flooding, Magnetic Cores, Prefabrication

Mapping, cont.

- For many UMTRI terms we had to come up with postcoordinate TRT terms to capture the complexity that had been represented by single UMTRI terms or to account for the puzzling tendency in the UMTRI Thesaurus to compound terms and separate them with a slash.

Fibers/ Textiles (UMTRI)

becomes

Fibers (TRT)

Textiles (TRT)

Transmission Fluid (UMTRI)

becomes

Transmissions (TRT)

Fluids (TRT)

The Programming Challenge

- In October, our friends in the U-M Library systems office gave us their typical, “Sure, we can do that.”
- When we went back to them in March (Feb?), we had a new twist (or two).
- Paul Burley was adamant that the value of the UMTRI terms ought not be lost and so suggested that they all remain. It made perfectly good sense to leave them in there, whether they remained in the record as subject headings or simply offered keyword access.
- They systems folks also agreed to our other twist, which was to add MESH terms for those anatomical and biomedical terms that didn't have an equivalent in TRT.

The Programming Challenge

- Margaret Kelly, systems librarian, and Excel to the rescue
- Our spreadsheet included UMTRI terms (with hierarchical codes) and their corresponding TRT terms (with hierarchical codes); it also showed MESH terms and a list of UMTRI terms for which no satisfactory TRT or MESH equivalent could be found.

UMTRI_Thesaurus_and_TRT_terms_3_22_2010.xlsx - Microsoft Excel

Home Insert Page Layout Formulas Data Review View Add-Ins Acrobat

Clipboard Font Alignment Number Styles Cells Editing

C2915 Hper: Resuscitation

	A	B	C	D	E
2924	XTRBC	Contact Lenses		Qtbppc: Contact lenses	
2925	XTRBN	Night Driving Glasses		Qtpsm: Medical equipment	
2926	XTRBS	Telescopic Lenses		Qtbppe: Eyeglasses	
2927	XTRBT	Tinted Lenses/ Sunglasses		Qtpsc: Sunglasses	
2928	XTRC	Hearing Aids	MESH	Hearing Aids	
2929	XTRD	Wheelchairs		Qbdhh: Wheelchairs	
2930	XTRE	Braces/ Crutches/ Canes	MESH	Braces	
2931	XTRE	Braces/ Crutches/ Canes	MESH	Crutches	
2932	XTRE	Braces/ Crutches/ Canes	MESH	Canes	
2933	XTRL	Artificial Limbs		Qtpsm: Medical equipment	
2934	YCC	State-of-the-Art Studies		Ew: State of the art	
2935	YCD	Survey Programs		Xkf: Surveys	
2936	YCDH	Household Surveys		Mg: Households	
2937	YCDH	Household Surveys		Xkf: Surveys	
2938	YCDR	Roadside Surveys		Pmrcpr: Roadside	
2939	YCDR	Roadside Surveys		Xkf: Surveys	
2940	YCDT	Origin-Destination Surveys		Bksa: Origin and destination	
2941	YCJ	Forecasts/ Projections		Epdmf: Forecasting	
2942	YCS	Future Scenarios		Epdmf: Forecasting	
2943	YCK	Case Study		Xkdc: Case studies	
2944	YCL	Demonstration Programs		Xkbrd: Demonstration projects	
2945	YCM	Feasibility Studies		Epdbf: Feasibility analysis	
2946	YCO	Campaigns/ Public Information Programs		Cjx: Public information programs	
2947	YCP	Action Programs		Kwc: Community action programs	

Sheet1 Sheet2 Sheet3

Ready 100%

start 2 Mulberry Yammer Target St... Microsoft ... umtrino... Microsoft ... 9:21 AM

Programming, cont.

- 2 tab-delimited text files, 1 for TRT terms and one for MESH terms
- Extracted copies of all 490,010 UMTRI subject terms from the library's Aleph MARC database.
- Used Perl to compare each 'umitrist' subject term with the source list, and where there were matches wrote the substitute or substitutes to a new file, constructing them in Aleph MARC format for reloading.
- Did rigorous 'stress testing' of the matching protocols, so that 'Pain,' for example, did not match 'Paint.'
- In Excel, combined into one file the untouched copies of the 490,010 UMTRI terms and the new transformed terms produced by Perl program.
- Using Excel, removed duplicates, keeping one copy of the TRT terms and discarding the 'umitrist' or TRT duplicates.

Programming, cont.

- Repeated steps with MESH terms.
- Resulted in a file of 835,114 new and preexisting terms, including the new TRT and MESH terms, and the untouched umitrist, Library of Congress, or other subjects, all written in the correct loading format.
- Copied it back to a text file and used one of the Aleph built-in programs to overlay the block of subject terms in each record with the block of processed terms from the file.

Dénouement

- Now nearly twice as many terms providing subject access for items already cataloged. Redundant? Perhaps.
- Moving ahead with TRT only.
- Still in development; TRT terms not in production catalog.
- No more searching with hierarchy codes.
- Submitted list of 252 UMTRI terms to members of the TRT subcommittee on February 22 for consideration as TRT terms.