
Curriculum Vitae

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Homepage: <http://TomOD.com>

27 November, 2021

The latest versions of my CV, Publications List and Syllabi are at
<http://TomOD.com>.

international affairs.

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1 Academic & Institute Appointments

- Hertie School of Governance; Berlin, Germany
2016S Guest Lecturer, Master of Public Policy Program
2016W- ... Guest Lecturer, Master of International Relations Program
Syllabus: http://www.umich.edu/~twod/hertie_s2016
- Freie Univrsität; Berlin, Germany
2016S- ... Faculty, Berlin European Studies Program
Syllabus: http://www.umich.edu/~twod/fu_s2016 Syllabus
- American Institue of Contemporary German Studies (AICGS)
2015 AICGS/DAAD Fellow. April-May, Washington, DC
Project: *U.S. expert perspectives on German energy vulnerabilities*
- Freie Univrsität; Berlin, Germany
2014 Faculty, John F. Kennedy Institute of North American Studies
Post-graduate seminar: The USA in the Global Oil System: The formation and impact of American energy policy
- Parental-Leave Year
2012-13 Resident in Berlin, Germany
- The New School University; New York City
2010-11 Part-Time Faculty, Graduate International Affairs (GPIA)
2010-11 Instructor, Environmental Economics, Lang College
2008-09 Visiting Scholar, Graduate Economics Department
2006-07 Part-Time Faculty, Graduate International Affairs (GPIA)
2005 Visiting Professor, Graduate Economics Department
- The Ohio State University; Columbus, Ohio
2011 Visiting Professor, International Studies & Middle East Programs
- U.S. Fulbright Scholar, Venezuela
2008 Bureau of Educational and Cultural Affairs, U.S. Department of State
The Political Economy of Oil in Internal & External Policies of Bolivarian Venezuela
- Universidad Central de Venezuela; Caracas, Venezuela
Jan 2008 - Dec 2009 & Jul - Aug 2011
Profesor Asociado, Centro de Estudios del Desarrollo (UCV-Cendes)
(Center for the Study of Development)
- University of Michigan, Ann Arbor, Michigan
2001-08 Associate Member, Michigan Center for Theoretical Physics (MCTP)
2004-07 Lecturer, Residential College (RC)
2001-04 Visiting Assist. Professor of Physics

- Energy & Environment
 Science, Technology & Society (STS)
 Center for Middle East and North African Studies (CMENAS)
- 2002 Post-Doctoral Research Fellow, Center for the Study of Complex Systems (CSCS)
Sustainable Mobility/Transportation Extraordinary grant: Ford Motor Co. Research Labs
- 2002 Post-Doctoral Fellow, Rackham Summer Interdisciplinary Institute (RSII)
 Project & grant: “Emergence in the Natural and Social Sciences, and Humanities”
- 2000-01 Post-Doctoral Research, Applied Physics Program, Prof. R. Clarke group
 X-Ray synchrotron studies of exotic semiconductor materials.
 Advanced Photon Source (APS) at Argonne National Laboratory (ANL) with
 AT&T Labs, Murray Hill, NJ & Howard University Physics Department, DC

2 Education

2.1 Natural Science

- Ph.D., Experimental Nuclear Physics, University of Michigan. 2000
 Thesis: *A Superconducting-Solenoid Isotope Spectrometer for Production of Neutron-Rich Isotopes (^{136}Xe on C at 30MeV/u)* <http://www.umich.edu/~twod/thesis>
 Award: *Terwilliger Distinguished Dissertation Prize*, “Best thesis,” by Physics Faculty
- M.S., Physics, University of Michigan. 1991
- B.S., Physics, Honors, University of Michigan. 1988
 Thesis: *Thermodynamics of a large building*

2.2 Social Science

- Political Science, Canisius College, Buffalo, NY. 1969-70
- Political Science, China Studies, State University of NY at Buffalo. 1970-74

3 Publications

3.1 Recent Publications (2015 to present)

1. Available at: <http://www.umich.edu/~twod/publications>

3.2 International Affairs & Political Economy

1. “US-EU Cooperate on Iranian Nonproliferation” **IP Journal**, 18 Aug 2014.
<https://ip-journal.dgap.org/en/ip-journal/topics/us-eu-cooperate-iranian-nonproliferation>
2. “Addressing Europe’s Energy Dependence on Russia: Globalizing gas market, creating OECD strategic reserves could make embargoes history,” **IP Journal**, 6 May 2014.
<https://ip-journal.dgap.org/en/ip-journal/topics/addressing-europes-energy-dependence-russia>
3. “Energiewende vs. Shale Gas: Can German industry compete?” **IP Journal**, 30 Dec 2013.
<https://ip-journal.dgap.org/en/ip-journal/topics/energiewende-vs-shale-gas>

4. “Competing with China in Latin America: Is Germany losing its high-tech advantage?” **IP Journal**, 19 Aug 2014.
<https://ip-journal.dgap.org/en/ip-journal/topics/competing-china-latin-america>
5. “Beijing ups Venezuelan oil investments, but refuses Chavista leaders’ plea for a cash bailout” (ChinaDailyMail.com)
6. “PDVSA Post-Chavez: Will Partnerships with the Private Sector and Chinese Experts Boost PDVSA Oil Production?” (Americas Quarterly, Web exclusive)
7. “Caracas & Maracaibo: Venezuela’s Private Sector Anxious to Invest if PDVSA Builds Confidence” (Americas Quarterly)
8. “Competing with China in Latin America: Is Germany losing its high-tech advantage?” (German Council on Foreign Relations, DGAP)
9. “China y Amrica Latina: Quién gana y quién pierde?” (Petrogua 2014, Spanish)
10. “Bolivarian Venezuela’s Oil Policy and Iran: A Failed Energy Alliance,” *Middle East Economic Survey: Energy & Geopolitical Risk*, May 2012.
http://www.mees.com/system/assets/000/001/656/original_Geopolitical_Risk_May_2012-3.pdf
11. Book Review: “The Petroleum Triangle: Oil, Globalization and Terror,” By Steve A. Yetiv; Cornell University Press, 2011, for *Middle East Journal, Summer 2012 Edition*.
http://www.umich.edu/~twod/writing/mej_petroleum_triangle_08jun12c.pdf
12. “China’s Angst over Iran Sanctions: Beijing’s go-it-alone oil security could fail during any U.S.-Iran conflict,” *Op-Ed; Middle East Economic Survey, MEES-Vol53 n23, 7 June 2010*.
http://www.umich.edu/~twod/writing/china_iran_sanctions_22mar10aa.pdf
13. Book Review: “International Relations of the Persian Gulf,” by F. Gregory Gause III; Cambridge University Press, 2010, for *Middle East Journal, Summer 2010 Edition*.
http://www.umich.edu/~twod/writing/mej_persian_gulf_gause_02jun10b.pdf
14. “The Political Economy of Oil in the U.S.-Iran Crisis: U.S. Oil-Security Interests vs. Iranian Regional Interests,” *Preprint, The New School, Grad. International Affairs; 2009*.
http://www.gpia.info/files/u16/0_Donnell_2009-05.pdf
15. “Political Economy of the Globalized Oil Order: How ‘Objective Conditions’ Drove the OECD and OPEC from Confrontation to Collusion,” *ISA conference paper, 13 pp.+figures, NYC; 2009*.
16. “Global Oil to 2030: A Quantitative Assessment in the Context of International Affairs,” T.W. O’Donnell. *International Relations and Security Network (ISN) 2 May 2007*.
<http://www.isn.ethz.ch/pubs/ph/details.cfm?lng=en&id=30696>
17. “The Political Economy of the U.S.-Iran Crisis: Oil Hegemony, Not Nukes, is the Real Issue,” T.W. O’Donnell. *Z Magazine V19, no.6, June 2006*.
18. “Understanding the Washington-Tehran Deals: These on-again, off-again talks involve partial deals about the pacification of Iraq, not a ‘Grand Bargain’,” *Petroleum World for Latin America, Sunday Feature, 17Feb08; Updated: Z Magazine Online April 2008*.
<http://www.zcommunications.org/understanding-the-washington-tehran-deals-by-tom-odonnell>
19. “The ‘New Nationalism’ Oil Strategy of Chavez and Mommer: Can China, Iran and International Oil Companies Enable Venezuela to Escape the Markets of ‘El Imperio’ and Reverse PDVSA Production Declines?,” *ISA conference paper, 6 pp.+figures, NYC; 2009*.

3.3 Physics, peer reviewed (Full list on request: 38 papers)

- 38 “New experimental approach for heavy and superheavy element production”, M. Barbui, *et al*, *J. Modern Phys. E V. 18, No. 4* (2009) 1036104.
- 37 “Symmetry energies, pairing energies, and mass equations”, J. Jänecke and T.W. O’Donnell, *Nuclear Physics A 781* (2007) 317-341.

- 36 “Damping mechanisms of high-lying single-particle states in ^{91}Nb ”, H.K.T. van ter Molen, *et al*, *Phys. Rev. C* **75**, **014311** (2007).
- 35 “Isospin inversion and p-n pairing in self-conjugate nuclei $A = 58$ to 98 ”, J. Jänecke and T.W. O’Donnell, *Phys. Letters B* **V. 605**, **Issues 1-2**, 6 January 2005, Pages 87-94.
- 34 “Symmetry energies and the curvature of the nuclear mass surface” J. Jänecke and T.W. O’Donnell, *European Physics Journal* **v25** (2005) 79-80.
- 32 “Symmetry and pairing energies of atomic nuclei.” J. Jänecke, T.W. O’Donnell and V.I. Goldanskii. *Nuclear Physics A* **728** (2003) 23-51.
- 31 “Isospin inversion in $N = Z$ nuclei and deuteron-like and α -particle-like structures.” J.Jänecke, T.W. O’Donnell, and V.I. Goldanskii, *Phys. Rev. C* **66**, **024327** (2002).
- 29 “Measurement of L/K Ratio in ^7Be Electron Capture.” P.A. Voytas, C. Ternovan, M. Galeazzi, D. McCammon, J.J. Kolata, P. Santi, D. Peterson, V. Guimaraes, F.D. Becchetti, M.Y. Lee, T.W. O’Donnell, D.A. Roberts, S. Shaheen. *Phys. Rev. Letters* **88**, **012501** (2001).
- 23 “Experimental Apparatus for the Study of the Effects of Strong Longitudinal Magnetic Fields on the Dose Distribution of Clinical Photon and Electron Radiotherapy Beams.” D.W. Litzenberg, B.W. Fraass, D.A. McShan, J.M. Moran, T.W. O’Donnell, D.A. Roberts, R.D. Becchetti. *Phys Med Bio* **V46 no.5**, **pp. N105-N115**, (2001).
- 16 “Isotope Yields with a Solenoid-Based Fragment Mass Analysis System - Prospects for Exotic Isotope Studies in the $10 < Z < 30$ Range,” T.W. O’Donnell, F.D. Becchetti, J. Brown, J.W. Jänecke, M.Y. Lee, R.S. Raymond, D.A. Roberts, R.S. Tickle, H.C. Griffin, and R. Ronningen. *Nuclear Instruments and Methods in Physics Research A* **422** (1999) 513-517.

4 Selected Public Lectures & Talks

4.1 Energy, Political Economy & International Affairs

4.1.1 2012-13

- **New School University, Observatory on Latin America** - New York City, April 14, 2013. Public Lecture: “The Legacy of Hugo Chavez: Is ‘Oil-Socialism’ in Venezuela a Sustainable Alternative Development?”
- **U.S. Department of State, Washington, D.C.** April 11, 2013. Presentation: “Energy in the Western Hemisphere: Venezuela’s Energy Future”

4.1.2 2011

- **The Ohio State University, Middle East Studies & Latin American Studies** - Columbus, OH, 13-14 August, 2011. Two-day seminar: “Environment, alternatives & social-justice: Teaching about Oil to a New Generation”
- **Latin American Studies, Masters of Arts Program, The Ohio State University** - Columbus, OH, May 18, 2011. Lecture: “Latin America in the Global Oil System”
- **New School University** - New York City, February 24, 2011. Public Lecture: “Arab Democracy Uprisings: Causes, Prospects & Consequences.” Moderator & Organizer. Video: <http://www.gpia.info/egypt>

- **Association for International Development, The New School** - NYC, March 25, 2011. “Food or Motor Fuel? A Political Economy of High Food Prices and Shortages,”
- **Graduate Economics Department, New School University** - NYC, February 14, 2011. Lecture: “Venezuela: The Political Economy of Socialism under Hugo Chavez”
- **Latin America Program, Hudson Institute** - Washington, DC, February 9, 2011. Panel: “The Petroleum Sector and Social Tensions in Venezuela.”
Video: http://www.hudson.org/index.cfm?fuseaction=HUDSON_UPCOMING_EVENTS&id=824
- **Faculty Womans’ Club, U. of Michigan**, Ann Arbor, February 7, 2011. Lecture: “One Global Barrel: From Oil Market to Geopolitics”
- **Water (Dis)courses Event: The New School** - NYC, February 6, 2011. Talk: “Oil Under Water: Pollution and Dykes of Venezuela’s Lake Maracaibo.”
Video: <http://waterdiscourses.wordpress.com/2011/02/08/we-have-video>

4.1.3 2010

- **Human Security Workshop, The New School** - NYC, October 7, 2010
Talk: “The Global-Era Collective Energy Security System”
- **The Middle East Institute** - Washington, DC. September, 22 2010
Lecture: “China’s Angst Over Iran: The Energy Nexus” Video: <http://www.youtube.com/watch?v=VeQTyX01FhI>
- **Middle East Studies Program** - Ohio State University, Columbus, OH, June 26, 2010
Daylong Workshop: “Oil in the Global Economy” http://www.ced.osu.edu/Global_Oil
- **York University, Historical Materialism Conference** - Toronto, May 13, 2010
Talk: “Failures of the Bolivarian Model: A class analysis of Venezuelan elections on 2Dec07, 23Nov08, 2Feb09 and (30Sept10)”
- **Latin American Student Club: The New School** - NYC, May 3, 2010
Lecture: “The Political Economy of Petroleum in Bolivarian International Affairs”
- **Latin American Program, The Hudson Institute** - Washington, D.C., 25 April 2010
Talk: “Chinas Energy Policy in Latin America” Video: http://www.hudson.org/index.cfm?fuseaction=HUDSON_UPCOMING_EVENTS&id=766
- **The Left Forum, Pace University** - New York City, March 20, 2010. “Obama-Clinton’s ‘Crippling Sanctions’ v. Ahmadinejad’s Nukes: What Deal Could Avert Catastrophe?”

4.1.4 2009

- **Hudson Institute** - Washington, D.C., Sept. 22, 2009. *Petro Caribe and Petro Diplomacy of Hugo Chavez*. Panel on Central American Democracy Video: http://www.hudson.org/index.cfm?fuseaction=HUDSON_UPCOMING_EVENTS&id=707
- **Waterpower XVI** - Spokane, Washington, July 28, 2009. Keynote speaker, Opening session: *The world’s primary energy resources: What’s available and where; now and in the future.*
- **School of Natural Resources and Environment** - U. Michigan, Oct. 2, 2009. *Plentiful oil, congestion and the failure of bio-alternatives - What is to be Done?*
- Faculty Lunch Lecture in Environmental Ethics.
- **Middle East Studies & Latin Am. Studies** - Ohio State U. Sept. 30, 2009. Public lectures:
(i) Oil in the U.S.-Iran Crisis, (ii) Oil in Hugo Chavez’ Bolivarian domestic and foreign policies.

- **Latin American Studies Center** - U. Michigan, Ann Arbor, Sept. 28, 2009
- Invited lecture *The International Policy of Chavez: Can Iran, Russia, China and the International Oil Companies save Venezuela from the global market of 'El Imperio'?*
- **Center for Middle East & N. African Studies** - U. Michigan, Sept. 28, 2009.
- Public lecture: *Oil in the U.S-Iran Crisis: U.S. oil-security interests vs. Iranian regional interests.*
- **Asociación Venezolano de los Hidrocarburos (AVHI)** - Caracas, April 15, 2009
- Invited Lecture : *The Global Political Economy of Petroleum and Bolivarian Venezuela.*
- **Embajada de Holanda** - Caracas, March 12, 2009
- Luncheon talk, with Luís X. Grisanti (Pres. AVHI, Venez. Hydrocarbon Assoc.): *A Retrospective: Domestic Struggles Over Venezuelan National Oil.*
- **Residence of Ambassador of Norway** - Caracas, February 10, 2009
- Breakfast talk: *The Petroleum Sector in Venezuela: Present and Future.*
- **The New School University GPIA & ISN-ETH Zurich** - New York City, March 6, 2009
- Seminar, Economics of Security Study Group: *Global warming & congestion, plentiful oil & failure of bio-alternatives: What is to be done?.*
- **International Studies Association (ISA) Convention** - New York City, Feb. 15-18, 2009
- Panel, Oil and Natural Resources: *How Objective Conditions Drove the OECD and OPEC from Confrontation to Collusion and a Market-Centered System Resting on U.S. Gulf Hegemony.*
- Panel, Latin America and the World Economy: *The New Nationalism Oil Strategy of Chavez and Mommer*
- **Centro de los Estudios del Desarrollo - Universidad Central de Venezuela (CEDES-UCV)** - Caracas, Jan. 22, 2009. Lecture: *La nueva PDVSA, antes y durante la crisis mundial: El petróleo en el desarrollo y las relaciones exteriores de la Venezuela bolivariana.*
- **Escuela de Derecho, Universidad Central de Venezuela (UCV)** - Caracas, January 20, 2009. Lecture: *El petr?leo en el desarrollo y las relaciones exteriores de la Venezuela bolivariana.*

4.1.5 2008

- **Asociación Fulbright de Venezuela** - Hotel Tamanaco, Caracas, November 11, 2008
- Invited talk, with José Toro Hardy (Fmr. Director PDVSA): *La crisis y el petróleo en las relaciones exteriores entre los EEUU y Venezuela.*
- **University of Mass. at Amherst** - Amherst, Mass, Sept. 30 & Oct. 1, 2008. (i) Political Economy Research Institute (PERI): *Iran, Iraq & Venezuela: The Political Economy of Globalized Petroleum.* (ii) Environmental Institute: *Global Warming, Plentiful Oil and the Failure of Bio-Alternatives: What To Do?*
- **Universidad de Valle, Facultad de Ciencias Naturales e Exactas** - Cali, Colombia, June 25-27, 2008. Lecture series: Análisis Situación Mundial Del Petróleo: (i) *Venezuela, Irán e Irak: La estrategia hegemónica petrolera de los EEUU.* (ii) *Ambiente, Biocombustibles y el Precio de Petróleo* (VII Coloquio sobre Investigación Ecológica en el Dep. de Biología) (iii) *Conversatorio.*
- **Universidad de Cauca** - Facultad de Ciencias Naturales, Popayán, Colombia, June 23, 2008
- Lecture: *Ambiente, Biocombustibles y el Precio de Petróleo.*
- **Venezuelan Fulbright Association** - Hotel Tomanaco, Caracas, June 3, 2008. Lecture: *La Economía Política del Petróleo en Venezuela: Facciones de OPEP, Los EEUU y China.*

- **India China Institute** - New School Universtiy, NYC, March 18, 2008. Roundtable: *China's petroleum 'Go Abroad!' policy, and its national oil companies in globalized markets.*
- **Left Forum 2008** - Cooper Union, New York City, March 14-16, 2008 Panel: The Iran Crisis & Continuing Threat of War Post-NIE: Chair & Discussant).

4.2 Philosophy, Physics, Information Theory, Sociology, History & etc.

- “Quantum Computers and Reality: Deutsch’s Anti-Positivist Campaign for Explanation, Apart From His Many-Worlds Interpretation,” *Forum on the History of Physics, American Physical Society (APS) Conference*, Joint Meeting of Nuclear and Astrophysics Sections, Albuquerque, NM. April 2002.
- “Phase Transition in Computing Cost of Over-Constrained NP-Complete 3-SAT Problems,” **American Physical Society, March Meeting**, Indianapolis, IN, March 2002.
- “Marx, Computers and the End of Industrial Unionism,” **The American Sociological Association (ASA) National Convention**. Washington, D.C. August, 2000.
- “Twentieth-Century American Wars,” Invited speaker, three classes **University of Michigan Department of History**. Ann Arbor, MI, Fall 1999

5 Selected Teaching & Syllabi

1. Spring 2016-present
(Fall semesters with Corona interruption 2020-21) **Geopolitics of Global Oil & Gas Markets** Masters of International Affairs Program, Hertie School of Governance-Berlin, Germany http://www.umich.edu/~twod/hertie_f2016/
2. Spring 2016-present
(Fall & Spring semesters - with Corona interruption 2020-21) **Energizing Europe: 21st Century Renewable & Fossil Transformations** European Studies Program, FU-BEST: Freie Universität-Berlin, Germany http://www.umich.edu/~twod/fu_s2016/
3. Summer 2014
The USA and the Global Oil System: Formation and Impact of US Policy John F. Kennedy Institute, Freie Universität-Berlin, Germany http://www.umich.edu/~twod/oil_s2014
4. Fall 2011 **Revolution and Wars: Geopolitics of Middle East & North Africa, 1951-2011** The New School, NYC. Grad. International Affairs http://www.umich.edu/~twod/mena_f2011
5. May 2011
From Saudi Arabia to Venezuela: Energy Resources, Market Factors & Conflicts The Ohio State University, Columbus, OH, International Studies http://www.umich.edu/~twod/oil_osu/flyer_osu.pdf
6. Spring 2011
Geopolitics of Global Oil The New School, NYC. Graduate International Affairs http://www.umich.edu/~twod/oil_s2011
7. Spring 2011
Environmental Economics The New School, NYC. Lang College, Environmental Program <http://www.umich.edu/~twod/environ/>
8. Spring 2010, Fall 2011
Latin America in Development The New School, NYC. Graduate International Affairs <http://www.umich.edu/~twod/latam-f2010>

9. Summer 2007
Global Energy in Crisis: The Global Oil System, the US, EU and Middle East The New School, NYC. Graduate International Affairs <http://www.umich.edu/~twod/oil-ns>
10. Fall 2006
Oil, Nukes, Democracy: U.S.-Iran Relations U. Michigan: Middle East & N. African Studies; History; AAPTIS; RC <http://www.umich.edu/~twod/courses>
11. Fall 2006, 05, 04
Energy and the Environment U. Michigan: RCNaturalSci 264.; Program in the Environment 264, Urban Planning 264, University Michigan. <http://www.umich.edu/~twod/energy>
12. Summer 2006
Energy in Crisis The New School, NYC. Graduate International Affairs <http://www.umich.edu/~twod/ns-oil>
13. Winter 2006, 04, 03, 02; Fall 2001
Steam Engines % Computers: From Industrial Proletarians to Information Workers Residential College (RC), U. Michigan. *Senior Seminar*, RC Social Science 460, History 498, Sociology 495 <http://www.umich.edu/~twod/steam>
14. Winter 2005, 2001
Social Dimensions of Science, Technology and Medicine: Lectures on the history of technology & class formation from mid-feudalism to Information Revolution (1000-2000 AD) Residential College (RC), U. Michigan. SocialSci 260; Science, Technology & Society (STS). Co-taught. http://www.umich.edu/~twod/sof/sts_275.html
15. Summer 2005
The Global Oil System and the Middle East New School for Social Research: Graduate Economics Dept. <http://www.umich.edu/~twod/oil>
16. Fall 2005
The Global Oil System and the Middle East U. Michigan: Middle East & N. African Studies; History; RC, Geology, <http://www.umich.edu/~twod/oil>
17. Winter 2004
Global Political Economy of Oil and the Iraq War Residential College mini research course, U. Michigan Special Topics RC Inter-Divisional 350, & UROP 260. <http://www.umich.edu/~twod/oil2004>
18. Winter 2004
Iraq: One Year Later Residential College mini research course, U. Michigan Special Topics RC Inter-Divisional 350. Co-taught. <http://www.umich.edu/~twod/iraq>
19. Fall 2001 **The Intellectual History of Information, 1680–2001:** A Story of Mathematics, Logic, Philosophy, Physics and Computer Science,” Residential College (RC), U. Michigan http://www.umich.edu/~twod/sof/rc-fys_index.html

6 Professional & Academic Societies

- The German Council on Foreign Relations (DGAP), Berlin

7 Languages

- Human: English (native), Spanish (fluent), German (working), French (reading), Mandarin (2.5 years)
- Computer: Multiple programming languages; data acquisition-and-analysis including machine- and assembly-like languages; simulation and visualization languages (expert-level IDL); etc.

8 Professional & Consulting Projects (Environmental, Energy, Nuclear Medicine, Radiation Safety)

1. 2003-2005

Health Physicist, oversight responsibilities for:

1. Health & safety in the operation and decommissioning of Ford Nuclear Reactor at Phoenix Memorial Program
2. Engineering/North Campus radioactive research licensing, training, and monitoring The University of Michigan, Ann Arbor (50% appointment)

2. 2000-2001

Consulting Physicist for installation plan and calculations:

BigSol, 36cm-bore Superconducting Solenoid device for production and collection of new, exotic neutron-rich isotopes and new heavy elements
Texas A&M University (TAMU) Cyclotron Institute, College Station, TX

3. 1993-94, 1995

Consulting Physicist ($\geq 50\%$).

Special projects, modeling of doses, airborne radioisotope dispersal, accident remediation
U. Michigan Medical School and Hospital

4. 1991-1992

Consulting Physicist, Positron Emission Tomography (PET) Cyclotron (50%)
With D. Norton, P.E., Chief Engineer, University of Michigan Medical School
Gaseous ($^{11}\text{CO}_2$) radioactivity containment project

1. Model and design ≈ 1 Mega-\$ radioactivity containment systems
2. Oversight of contractors, and commissioning with Chief Engineer

5. 1990-1991

Commissioning and Evaluation Group (Engineering. Physics)
University of Michigan Management and Design Department, Medical School
Dean's 20-Year Forecast Project
Develop thermodynamic-efficiency and useful-lifetime testing for
 ≈ 2 -million-ft² bio-medical research facilities
Project head: D. Norton, P.E.

6. 1990-1991
Consulting Physicist, University of Michigan Medical School Facilities and Design Office,
Medical School Laboratories air-quality study. Director: H. Beaumont.
7. 1989-1990 Consulting Physicist. *ibid.*
Evaluation of U. Michigan nuclear research reactor waste-water treatment proposals
For Director, Engineering Services: J. Janvesa, P.E.
8. 1988-1989 *ibid.*
Analysis of automated fire suppression and emergency ventilation system failures
Material Science Laboratories, University of Michigan.
9. 1988-1989 *ibid.*
 1. Heat-load analysis, redesign of environmental systems for Ancient Papyrus Archives.
 2. Design & construction-oversight of winter 'free cooling' systems in Graduate (Hatcher) Libraries.
 3. Redesign of trace-metal-free seawater/environmental laboratory, Department of Geology
10. 1986-1987
Physics Department research Cryogenics Laboratory
Responsible for liquification of ^4He & repair, optimization of ultra[low temperature devices
Prof. K. Terwilliger, Associate Chair for Research (50%).
11. 1982-1991
Self-Employed: Engineering and skilled-trades services:
 1. Large building energy heat-load assessments
 2. Maintain & operate industrial-sized steam boilers
 3. Maintain & operate LiBr steam-absorption & freon refrigeration systems,
pneumatic and electric controls, computer control and monitoring systems,
ventilation (HVAC), cooling tower water treatment.
12. 1981-1982
Detroit Medical Center
Computer-controlled HVAC and emergency power-generation systems. control systems