**CV – Thomy Nilsson, Professor Emeritus (June 2023)**

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57 Nilsson, T. (2022) A Glance at the Dance of Photons: The Physics of Light for Vision and Photometry. Press Books, CC-BY, ISBN 978-1-988692-62-3 (being modified).
56 Nilsson, T, (2022) Design strategies for epidemic containment. In: A pandemic education.  Jennifer Sills (ed.) Science, 375 (6585), p. 1087.
55 Nilsson TH (2020) What came out of visual memory: Inferences from decay of difference-thresholds. Attention, Perception & Psychophysics, 82 (6), 2963-2984.
53 Nilsson TH (2014) Spatial multiplexing: Solving information bottlenecks in real neural systems and the origin of brain rhythms. International Journal of Adaptive, Resilient and Automatic Systems, 5, 52-75.
52 Nilsson TH (2009) Photometric specification of images. Journal of Modern Optics,
  56, 1523-1535.
51 Weeks LE, Nilsson TH, Bryanton O & Kozma A (2009) Current and future concerns of mid and later life parents of sons and daughters with intellectual disabilities. Journal of Policy and Practice in Intellectual Disabilities, 6, 180-188
48 Nilsson TH (2006) Standards for color legibility. in A. Robertson (ed.)  75 Years of the CIE Standard Observer, CIE X030:2006, Vienna: International Commission on Illumination, ISBN 3 901 906 517.
47 Nilsson TH (2006) An Introduction to Neurophysiology. in: W Karwowski (ed.) International Encyclopedia of Ergonomics - 2nd Ed., N.Y.: CRC Press, 412-424.
38 Cohen AJ, Bailey B & Nilsson T (2003) the importance of music to seniors.
Psychomusicology, 18, 89-102.
37 McDowell I, Hill G ...., Nilsson T, ..., and Kozma A. (2002) Patterns of caregiving for people with dementia: The impact of changing cognitive and residential status.
Gerontologist. 42, 643-652.
36 Nilsson TH (2001) Evaluation of target acquisition difficulty using distance to measure required retinal area.  Optical Engineering, 40, 1827-34.
32 Nelson TM, Nilsson TH, Piercey DJ, Johnson T, Frascara J, Delano SS, Sone ES  & Bravo MV (1999) Improving perception of letters and visual structure of language. Perceptual and Motor Skills, 88, 515-530
31 Nilsson TH, Nelson TM & Carlson C (1997) Development of fatigue symptoms during simulated driving.  Accident Analysis & Prevention, 29, 479-488
28 Lindsay J, McDowell I, ..., Nilsson T, ... & Kozma A (1994) The Canadian Study of Health & Aging: Risk factors for Alzheimer's disease in Canada. Neurology, 44, 2073-2080.
23 Nelson TM, Nilsson TH & Hopkins GW (1987) Thermal comfort: advantages
and disadvantages.  American Society for Heating Refridgeration and Airconditioning Engineers Journal, 93, 1039-1054.
22 Nilsson TH (1986) The pinhead mirror: A previously undiscovered imaging device? Applied Optics, 25, 2863-2864.
8 Nilsson TH, Richmond CF & Nelson TM (1975) Flicker adaptation shows evidence of visual channels selectively sensitive to temporal frequency. Vision Research, 15, 621-624.
7 Nilsson TH (1975) Limits to understanding? [letter] Science, 189, 503-504.
6 Nilsson TH (1972) Effects of pulse duration and pulse rate on hue
of monochromatic stimuli.  Vision Research, 12, 1907-1921.
3 Nilsson TH (1971) Temporal dispersion in the visual system.
    Journal of General Psychology, 84, 59-75.
1 Nilsson TH (1969) Transistorized timer for sensory-behavioral research.
Behavior Research Methods & Instrumentation, 1, 256-257

A Short “Biopic”
Interest in consciousness began with: Nilsson TH (1963) Change in EEG Driving Frequency and Recognition of Change in Flicker Frequency. [B.Sc](http://B.Sc). Honors Thesis, Rensselaer Polytechnic Institute.  Subsequently a research assistant at Columbia University, I built a visual stimulator used in a series of experiments that discovered the P300 cortical evoked potential wave, which was the first brain response linked to a cognitive decision.  My Masters Thesis at the University of Alberta failed to find evidence of scanning in visual consciousness from aliasing effects in two flash interval difference-thresholds.   Instead the results demonstrated that visual temporal discrimination was limited by the distribution of conduction velocities in the optic nerve.  My mentor at the U of A, Thomas Nelson, was a former colleague of Howard Bartley, who had discovered the first relationship between cortical activity and the subjective perception of brightness.  Contrary to then current neuroanatomical emphasis in vision, Bartley championed the effects of neural dynamics in perception.  On that basis my dissertation discovered the changes in color of monochromatic light induced by different flash durations.
The discovery of spatial frequency channels in vision by Campbell & Robson in 1968, led me to find the first evidence of temporal frequency channels.  Together these characteristics of the visual system imply that the visual system uses holographic processing to greatly expand its information handling capacity (Nilsson, 1975).  Still the sizes of neural pathways needed to bring a Fourier analyzed image to the visual cortex and share it with other brain areas for recognition do not seem adequate.  Over years I developed a neural network model which demonstrated how a two-dimensional array of inputs could be accurately transmitted with 1/16th the number of connections.  This received US patent  # 60/938,035 and led to: Nilsson TH (2010) An anatomical prerequisite for consciousness: Convergent-divergent transmission nets.  Association for Scientific Study of Consciousness, U. of Toronto.  Subsequently I applied this neural networking method to develop a model that explained some 20 years of research on visual memory.  Using different methods of measuring difference-thresholds, it consistently showed for color and shape that the neural basis of a memory that matched a pervious input must be very similar to the sensory response to that input. Even as memory faded over periods up to 24 seconds.  This direct subjective evidence is consistent with cortical responses studies which, of course, are only correlational!