# **Curriculum Vitae**

# (Updated January, 2019)

### **Eric von Hippel**

#### **Education**: University of Vaasa Ph.D 2018 (Hon) Technical Universität Hamburg-Harburg Ph.D 2013 (Hon) Copenhagen Business School Ph.D 2007 (Hon) Ludwig-Maximillians Universität München Ph.D. 2004 (Hon) Carnegie Mellon University Ph.D. 1974 Massachusetts Institute of Technology 1966 S.M. 1964 Harvard College B.A **Professional History:** Portugal National Medal of Science 2020 Visiting Professor, Harvard Business School 2017 - 2018Schumpeter School Prize 2017 "Innovation Luminary" EU Award 2015 Fellow, Open and User Innovation Society 2014 -Humboldt Foundation Research Prize 2013 -International Research Advisor, Technological 2013 -Innovation Center, Tsinghua University, China Welling Professor, George Washington University 2009 - 2010 Faculty Associate, Berkman Center 2009 - 2014 Fellow, Berkman Center for Internet and Society 2007 - 2009 Harvard Law School T Wilson Professor of Management, MIT-Sloan 2006 - Present Professor of Engineering Systems, MIT 2006 - Present 2003 - 2006 Head, Innovation and Entrepreneurship Group Professor, Sloan School of Management, MIT 1985 - Present Sir Walter Scott Distinguished Professor, Australian Grad School of Management, UNSW 1997 - 1998 Co-Founder, MIT Entrepreneurship Program 1994 - 1996 Fellow, Canadian Institute for Advanced Research 1995 - 1997 Associate Professor, Sloan School, MIT 1979 - 1985 1973 - 1979 Assistant Professor, Sloan School, MIT Consultant, McKinsey and Company 1970 - 1972 Co-Founder and Engineering Manager, 1966 - 1969 Graphic Sciences Inc.

### **Publications:**

Potts, Jason, Dietmar Harhoff, Andrew Torrance, and Eric von Hippel (2021) "Social welfare gains from innovation commons: Theory, evidence, and policy implications" MIT Sloan School of Management Working Paper.

von Hippel, Eric (2021) "Supporting user innovation within 'systems of use" MIT Sloan School of Management Working Paper.

von Hippel, Eric and Sandro Kaulartz (2021) "Next-generation consumer innovation search: Identifying early-stage need-solution pairs on the web" *Research Policy* <u>Volume 50</u>, <u>Issue</u> <u>8</u>, October 2021, 104056

Stock, Ruth, Shannon Heald, Christian Holthaus, Lennart Gillert, and Eric von Hippel (2021) "Need-solution pair recognition by individuals: Evidence, and a cognitive mechanism explanation" *Research Policy Vol 50, Issue 8 104068* 

Sichel, Dan, and Eric von Hippel (2021) "Household Innovation and R&D: Bigger than You Think" *Review of Income and Wealth*, Vol 67 no 3 <u>Volume67, Issue3</u>, pp. 639-658

Chen, Jin, Yu-Shan Su, Jeroen P.J. de Jong, Eric von Hippel (2020) "Household Sector Innovation in China: Impacts of Income and Motivation" *Research Policy* Vol 49 103931

Demonaco, Harold, Pedro Oliveira, Andrew Torrance, Christiana von Hippel, and Eric von Hippel (2019) "When patients become innovators" *Sloan Management Review* Spring, pp. 81-88.

Gambardella, Alfonso and Eric von Hippel (2019) "Open sourcing as a profit-maximizing strategy for downstream firms" *Strategy Science* Vol 4, no. 1 March 2019, p. 41-57 (https://papers.ssrn.com/sol3/papers.cfm?abstract\_id=3046727)

Torrance, Andrew, and Eric von Hippel (2018) "A Meeting of Innovation Minds" *Northwestern Law Review* (Vol 112, pp. 177-186)

Von Hippel, Eric, Jeroen de Jong, and Daan Rademaker (2017) "Household Sector Innovation" Mohammed Bin Rashid Centre for Government Innovation, UAE, (July)

von Hippel, Eric, Harold Demonaco, and Jeroen de Jong (2017) "Market failure in the diffusion of clinician-developed innovations: The case of off-label drug discoveries" *Science and Public Policy*, 44(1), 121–131 doi: 10.1093/scipol/scw042

von Hippel, Eric (2017) Free Innovation MIT Press, Cambridge, MA

von Hippel, Eric (2017) "Free Innovation by Consumers – How Producers Can Benefit" *Research-Technology Management* (January-February) pp 39-42.

von Hippel, Eric (2017) "The Free Innovation Paradigm – Lessons for China" Frontiers of Engineering Management - forthcoming

Gambardella, Alfonso, Christina Raasch, and Eric von Hippel (2016) "The user innovation paradigm: impacts on markets and welfare" *Management Science* <u>http://dx.doi.org/10.1287/mnsc.2015.2393</u>

von Hippel, Eric, and Georg von Krogh (2016) "Identifying viable 'need-solution pairs': Problem solving without problem formulation" *Organization Science*, 27(1), pp. 207–221 <u>http://dx.doi.org/10.1287/orsc.2015.1023</u>

Stock, Ruth Maria, Eric von Hippel, and Nils Lennart Gillert (2016) "Impacts of Personality Traits on User Innovation Success." *Research Policy*, 45 757–769.

von Hippel, W., Hayward, L. E., Baker, E., Dubbs, S. L., and von Hippel, E. (2016). "Boredom as a spur to innovation" University of Queensland Working Paper.

von Hippel, Eric (2016) "Novel policies required to support free household sector innovation" OECD Blue Sky 3 Conference, Ghent, Belgium Conference Proceedings

de Jong, Jeroen P.J., Eric von Hippel, Fred Gault, Jari Kuusisto, and Christina Raasch (2015) "Market failure in the diffusion of consumer-developed innovations: Patterns in Finland." *Research Policy* 44, no.10 (December): 1856-1865.

Torrance, Andrew and Eric von Hippel (2015) "The right to innovate." *Michigan State Law Review* 2015:793 pp. 793 - 829.

Oliveira, Pedro, Leid Zejnilovic, Helena Canhão, and Eric von Hippel (2015) "Innovation by patients with rare diseases and chronic needs. *Orphanet Journal of Rare Diseases*, 10(1):41 DOI: 10.1186/s13023-015-0257-2

Stock, Ruth Maria, Pedro Oliveira, and Eric von Hippel (2015) "Impacts of Hedonic and Utilitarian Motives on the Novelty and Utility of User-Developed Innovations." *Journal of Product Innovation Management*, Vol. 32 Issue 3, p 389-403.

Hienerth, Christoph, Eric von Hippel, and Morten Berg Jensen (2014) "User community vs. producer innovation development efficiency: A first empirical study," *Research Policy* 43 p. 190-201

Kuusisto, Jari, Jeroen P. J. de Jong, Fred Gault, Christina Raasch, and Eric von Hippel (2013) *Consumer Innovation in Finland: Incidence, diffusion and policy implications*. Proceedings of the University of Vaasa, Finland. Reports.

Raasch, Christina and Eric von Hippel (2013) "Innovation process benefits: The journey as reward" *Sloan Management Review* (Fall) pp 33-39.

Füller, Johann, Roland Schroll, and Eric von Hippel (2013) "User Generated Brands and their Contribution to the Diffusion of User Innovations." *Research Policy* 42, pp. 1197-1209

De Jong, Jeroen, P. J., and Eric von Hippel (2013) "User Innovation: Business and Consumers" Chapter 5 in Fred Gault, Ed., *Handbook on Innovation Indicators and Measurement* Edward Elgar Publishing

Raasch, Christiana, and Eric von Hippel (2012), "Modeling interactions between the user and producer innovation paradigms: User-contested and user-complemented markets for innovation" MIT Sloan School of Management Working Paper. (http://papers.ssrn.com/sol3/papers.cfm?abstract\_id=2079763)

von Hippel, Eric (2012) "The role of lead users in innovation" in David Teece and Mie Augier, Eds, *Palgrave Encyclopedia of Strategic Management*, Palgrave Macmillan Ltd, UK.

von Hippel, Eric, Jeroen P.J. de Jong, and Stephen Flowers (2012) "Comparing business and household sector innovation in consumer products: Findings from a representative survey in the UK." *Management Science*, Vol. 58, No. 9, (September), pp. 1669–1681

Baldwin, Carliss Y. and Eric von Hippel (2011) "Modeling a Paradigm Shift: From Producer Innovation to User and Open Collaborative Innovation." *Organization Science*, Vol. 22, No. 6, November–December, pp. 1399–1417

von Hippel, Eric, Susumu Ogawa, and Jeroen P. J. de Jong (2011) "The Age of the Consumer-Innovator" *Sloan Management Review* (Fall) vol. 53 Nr 1 pp. 27-35.

von Hippel, Eric, and Georg von Krogh (2011) "Open innovation and the private-collective model for innovation incentives." Chapter 9 in Rochelle C. Dreyfuss and Katherine Strandburg, Eds. *The Law And Theory Of Trade Secrecy: A Handbook of Contemporary Research.* Edward Elgar, Cheltenham, UK.

Oliveira, Pedro and Eric von Hippel (2011) "Users as Service Innovators: The Case of Banking Services" *Research Policy*, vol. 40, Nr 6, pp. 806-818.

Füller, Johann, Roland Schroll, and Eric von Hippel (2011) "Brands as User Generated Content: Evidence and Implications." MIT Sloan School of Management Working Paper (January).

Flowers, Steven, Eric von Hippel, Jeroen de Jong, and Tanja Sinozic (2010) "Measuring user innovation in the UK: The importance of product creation by users." Research report, (April) NESTA, London, UK ISBN 978-1-84875-081-4.

Von Hippel, Eric (2010) "Users as Sources of Invention," *Handbook of Economics of Technological Change, Volume 1*. Bronwyn H. Hall and Nathan Rosenberg, eds, Elsevier B.V. Press.

de Jong, Jeroen P. J., and Eric von Hippel (2009) "Transfers of user process innovations to

process equipment producers: A study of Dutch high-tech firms" *Research Policy* (September) Vol 38, No 7 pp 1181-1191

Gault, Fred and Eric von Hippel (2009) "The prevalence of user innovation and free innovation transfers: Implications for statistical indicators and innovation policy" MIT Sloan School of Management Working Paper #4722-09 (January)

Von Hippel, Eric and Chen Jin (2009) "The major shift towards user-centered innovation: Implications for China's innovation policymaking" *Journal of Knowledge-based Innovation in China* (January) Vol 1, No. 1 pp.16-27

von Hippel, Eric (2009) "Adapting policy to user-centered innovation" Chapter 23 in Dominique Foray, ed. *The New Economics of Technology Policy* Edward Elgar Publishing, pp. 327-336

Von Hippel, Eric (2009) "Democratizing Innovation: The Evolving Phenomenon of User Innovation," *International Journal of Innovation Science* No. 1, Vol 1 pp. 29-40.

von Hippel, Eric, Nikolaus Franke, and Reinhard Prügl (2009) ""Pyramiding": Efficient Identification of Rare Subjects." *Research Policy* No. 38, pp 1397-1406.

Füller, Johann and Eric von Hippel (2008) "Costless Creation of Strong Brands by User Communities: Implications for Producer-Owned Brands." MIT Sloan School of Management Working Paper 4718-08 (September)

Fauchart, Emmanuelle and Eric von Hippel (2008) "Norms-based intellectual property systems: The case of French Chefs," *Organization Science* Vol. 19, No. 2, March–April pp. 187–201

Von Hippel, Eric and Joseph Paradiso (2008) "User Innovation and Hacking" *Pervasive Computing* IEEE CS Vol 7 No. 3 (July-September) pp 66-69.

Von Hippel, Eric (2007) "Democratizing Innovation: The Evolving Phenomenon of User Innovation" Chapter 8 in *Science, Technology and Innovation Indicators in a Changing World: Responding to Policy Needs*, OECD, pp 125-138.

Von Hippel, Eric (2007) "Horizontal innovation networks – by and for users," *Industrial and Corporate Change*,16:2

Demonaco, Harold and Eric von Hippel (2006), "Reducing medical costs and increasing quality via toolkits for patient self-management". *PLoS Med* 4(4): e104.

Franke, Nikolaus, Eric von Hippel and Martin Schreier (2006) "Finding Commercially Attractive User Innovations: A Test of Lead-User Theory" *Journal of Product Innovation Management* Vol 23 pp. 301-315.

Von Krogh, Georg and Eric von Hippel (2006) "The High Promise of Research on Open Source Software," *Management Science* vol 52, No. 7 (July) pp. 975-983.

Von Hippel, Eric and Georg von Krogh (2006) "Free Revealing and the Private-Collective Model for Innovation Incentives," *R&D Management* vol 36, No. 3, pp. 291-302.

Demonaco, Harold, Ayfer Ali and Eric von Hippel (2006), "The Major Role of Clinicians in the Discovery of Off-Label Drug Therapies" *Pharmacotherapy* Vol 26, No. 3, pp 323-332.

Baldwin, Carliss Y., Christoph Hienerth and Eric von Hippel (2006) "How user innovations become commercial products: a theoretical investigation and case study" *Research Policy*, Vol 35 No. 9 (November) pp. 1291-1313

von Hippel, Eric (2005) Democratizing Innovation, Cambridge, MA: MIT Press (April).

Lüthje, Christian, Cornelius Herstatt, and Eric von Hippel (2005), "User-innovators and "local" information: The case of mountain biking," *Research Policy*, Vol 34, No. 6 (August) pp. 951-965.

von Hippel, Eric (2005) "Democratizing Innovation: The evolving phenomenon of user innovation" *Journal für Betriebswirtschaft* (January) 55: pp. 63-78

Henkel, Joachim and Eric von Hippel (2005) "Welfare Implications of User Innovation," *Journal of Technology Transfer* Vol 30 Nos. 1-2 (January) Pages 73-87.

Von Hippel, Eric (2005) "The best way to innovate? Let lead users do it for you" *Inc Magazine*, September

von Hippel, Eric (2005) "Open source software projects as user innovation networks - no manufacturer required." in *Perspectives on Free and Open Source Software*, edited by J. Feller, B. Fitzgerald, S. Hissam, and K. Lakhani. Cambridge: MIT Press.

Hessler, Curt, Eric von Hippel and James Bessen (2004) "U.S. Supreme Court *Amici Curiae* Brief of Innovation Scholars In Support of Affirmation In The Case of Metro-Goldwyn Mayer Studios, Inc. *et al., Petitioners, vs Grokster, Ltd., et al., Respondents*" No. 04-480, (March)

von Hippel, Eric and Georg von Krogh (2003), "Open Source Software and the "Private-Collective" Innovation Model: Issues for Organization Science" *Organization Science* 14 (2)208-223.

Lakhani, Karim and Eric von Hippel (2003) "How Open Source Software Works: "Free" User-to-User Assistance," *Research Policy* Vol 32 No. 6 , (June) Pages 923-943

Franke, Nikolaus and Eric von Hippel (2003), "Satisfying Heterogeneous User Needs via Innovation Toolkits: The Case of Apache Security Software" *Research Policy* Vol 32, No. 7, (July) pp.1199-1215. Von Krogh, Georg and Eric von Hippel (2003), "Open Source Software: Introduction to a Special Issue of Research Policy," *Research Policy* Vol 32, No. 7, (July) pp. 1149-57.

Harhoff, Dietmar, Joachim Henkel and Eric von Hippel (2003) "Profiting from voluntary information spillovers: How users benefit from freely revealing their innovations," *Research Policy* vol 32, No.10 (December) pp.1753-1769

Lilien, Gary L., Pamela D. Morrison, Kathleen Searls, Mary Sonnack, Eric von Hippel, (2002) "Performance Assessment of the Lead User Idea Generation Process," *Management Science*, Vol 48, No 8 (August) pp. 1042-1059.

Von Hippel, Eric and Ralph Katz (2002), "Shifting Innovation to Users Via Toolkits" *Management Science*, Vol 48, No. 7 (July) pp 821-833.

Thomke, Stefan and Eric von Hippel (2002) "Customers as Innovators: A New Way to Create Value" *Harvard Business Review*, Vol 80 No. 4 April pp 74-81.

von Hippel, Eric, "Innovation by User Communities: Learning from Open Source Software," *Sloan Management Review*, July, 2001.

von Hippel, Eric (2001) "Perspective: User toolkits for innovation," *The Journal of Product Innovation Management*, 18, pp 247-257.

Morrison, Pamela D., John H. Roberts and Eric von Hippel (2000), "Determinants of User Innovation and Innovation Sharing in a Local Market," *Management Science*, 46, 12 (December), pp1513-1527.

von Hippel, Eric, Stephan Thomke and Mary Sonnack (1999) "Creating Breakthroughs at 3M" *Harvard Business Review* 77, No.5 September-October, p. 47-57.

von Hippel (1998) "Economics of Product Development by Users: The Impact of "Sticky" Local Information" *Management Science*, vol 44, No. 5 (May) p. 629-644

von Hippel (1998) "Explorations of the Impact of "Sticky" Local Information on the Locus of Innovation – a Progress Report," in N. Franke and C.-F. von Braun, editors, *Innovationsforschung und Technologie-management: Konzepte, Strategien, Fallbeispiele*, Springer.

Thomke, Stefan, Eric von Hippel and Roland Franke (1998) "Modes of Experimentation: An Innovation Process – and Competitive – Variable" *Research Policy*, Vol 27 p. 315-332

Churchill, Joan, Eric von Hippel and Mary Sonnack (1998) *Lead User Project Handbook: A practical guide for lead user project teams* MIT Sloan Working Document (available under a Creative Commons license from: <u>https://evhippel.mit.edu/teaching/</u>

Tyre, Marcie and Eric von Hippel (1997) "The Situated Nature of Adaptive Learning in Organizations" *Organization Science*, vol 8, No 1 (January-February) p. 71-83

von Hippel, Eric and Marcie Tyre (1996) "The Mechanics of Learning by Doing: Problem Discovery During Process Machine Use." *Technology and Culture* 37 no.2 (April) p. 312-329.

von Hippel, Eric and William Riggs (1996) "A Lead User Study of Electronic Home Banking Services: Lessons from the Learning Curve." MIT Sloan School of Management Working Paper # 3911-96 (June).

von Hippel, Eric and Stephan Schrader (1996), "'Managed' Informal Information Trading: The Oil Scout System in Oil Exploration Firms." *International Journal of Technology Management*, Vol 11, Nos. 1&2 p.209-218.

von Hippel, Eric (1995) "User Learning, 'Sticky Information', and User-Based Design, MIT Sloan School of Management Working Paper #3815-95 (May).

von Hippel, Eric and Marcie Tyre (1995) "How "Learning by Doing" is Done: Problem Identification in Novel Process Equipment." Vol 24, No.1 *Research Policy* (January) p. 1-12.

von Hippel, Eric (1994) "Sticky Information" and the Locus of Problem Solving: Implications for Innovation" *Management Science* 40, no.4 (April): 429-439

Riggs, William and Eric von Hippel (1994), "The Impact of Scientific and Commercial Values on the Sources of Scientific Instrument Innovation," *Research Policy* 23 (July): 459-469.

von Hippel, Eric (1993) " Concurrent Market Research for New Product Development," Sloan School of Management Working Paper # 3576-93 BPS, June.

von Hippel, Eric (1993)" The Creation of Needs for New Products and Services", Sloan School of Management Working Paper # 3374-92-BPS, January 1992.

Herstatt, Cornelius, and Eric von Hippel (1992), "From Experience: Developing New Product Concepts Via the Lead User Method: A Case Study in a "Low Tech" Field", *Journal of Product Innovation Management*, 1992;9: 213-221.

von Hippel, Eric (1990) "Task Partitioning: An Innovation Process Variable," *Research Policy* 19, 407-418.

von Hippel, Eric (1990) "Predicting the Source of Commercially Valuable User Innovation Via "Lead Users", in *Advances in Telecommunications Management*, Edited by M. Saghafi and A. Gupta, JAI Press, Greenwich Connecticut

von Hippel, Eric (1989) "New Product Ideas from 'Lead Users," *Research Management*, 32, No. 3 (May-June): 24-27.

von Hippel, Eric (1988) The Sources of Innovation (New York: Oxford University Press).

Urban, Glen L., and Eric von Hippel (1988), "Lead User Analyses for the Development of New Industrial Products," *Management Science* 34, no. 5 (May):569-82.

von Hippel, Eric (1987) "Cooperation Between Rivals: Informal Know-How Trading," *Research Policy* 16: 291-302.

von Hippel, Eric (1986) "Lead Users: A Source of Novel Product Concepts," *Management Science* 32, no. 7 (July):791-805.

von Hippel, Eric (1986) "Tools for Thinking About the Sources of Innovation in Ceramics Materials and Processes," *Proceedings of the American Ceramics Society*, 88th Annual Meeting.

von Hippel, Eric (1985) "Testing the Correlation Between the Functional Locus of Innovation and Appropriable Innovation Benefit," MIT Sloan School of Management Working Paper No. 1688-85, Cambridge, Mass. (August).

von Hippel, Eric (1985) "Learning from Lead Users," in *Marketing in an Electronic Age*, ed. Robert D. Buzzell (Boston: Harvard Business School Press), 308-17.

von Hippel, Eric (1984) "Generation and Evaluation of Novel Product Concepts via Analysis of Experienced Users," Marketing Science Institute, Cambridge, Mass. (December).

von Hippel, Eric (1983) "Increasing Innovators' Returns from Innovation," in *Research on Technological Innovation, Management and Policy*, ed. Richard S. Rosenbloom, vol. 1 (Greenwich, Conn: JAI Press,), 35-53.

von Hippel, Eric (1982) "Appropriability of Innovation Benefit as a Predictor of the Source of Innovation," *Research Policy* 11, no. 2 (April): 95-115.

von Hippel, Eric (1982) "Get New Products from Customers," *Harvard Business Review* 60, no. 2 (March-April):117-22.

von Hippel, Eric (1982) "Get New Products from Customers," in *The Management of Technological Innovation*, ed. Alan M. Kantrow and Richard S. Rosenbloom (Boston: Harvard Business Review Press), 138-43.

Finkelstein, Stan N., Eric von Hippel, and Jeffrey R. Scott (1980) "Projecting the Impact of the 1976 Medical Device Amendments on Innovation in Clinical Chemistry Tests," *Journal of Technology Transfer* 5, no. 1 (Fall):1-9.

von Hippel, Eric (1980) "The User's Role in Industrial Innovation." Chap. 3 in *Management* of *Research and Innovation*, ed. Burton V. Dean and Joel D. Goldhar, vol. 15 in <u>TIMS</u>

<u>Studies in the Management Sciences</u> (Amsterdam: North-Holland Publishing Company), 53-65.

von Hippel, Eric (1979) "Reducing the Cost of Product Development by Recognizing - and Benefitting from - Customer R&D," *PDMA* 4, no. 2 (March).

von Hippel, Eric (1979) "A Customer-Active Paradigm for Industrial Product Idea Generation," in *Industrial Innovation: Technology, Policy, Diffusion*, ed. Michael J. Baker (London: Macmillan), 82-110.

von Hippel, Eric and Stan N. Finkelstein (1979), "Analysis of Innovation in Automated Clinical Chemistry Analyzers," *Science & Public Policy* 6, no. 1 (February):24-37.

von Hippel, Eric (1978) "A Customer-Active Paradigm for Industrial Product Idea Generation," *Research Policy* 7, no. 3 (July):240-66.

von Hippel, Eric (1978) "Users as Innovators," *Technology Review* 80, no. 3 (January):31-39.

von Hippel, Eric (1978) "Successful Industrial Products From Customer Ideas: A Paradigm, Evidence and Implications," *Journal of Marketing* 42, no. 1 (January):39-49.

von Hippel, Eric (1977) "Transferring Process Equipment Innovations from User-Innovators to Equipment Manufacturing Firms," *R&D Management* 8, no. 1 (October):13-22.

von Hippel, Eric (1977) "Successful and Failing Internal Corporate Ventures: An Empirical Analysis," *Industrial Marketing Management* 6, no. 3 (July):163-74.

von Hippel, Eric (1977) "The Dominant Role of the User in Semiconductor and Electronic Subassembly Process Innovation," *IEEE Transactions on Engineering Management* EM-24, no. 2 (May):60-71.

von Hippel, Eric (1977) "Has a Customer Already Developed Your Next Product?," *Sloan Management Review* 18, no. 2 (Winter 1977): 73-74. Reprinted in *IEEE Engineering Management Review* 6, no. 8 (September 1979): 5-16.

von Hippel, Eric (1976) "The Dominant Role of Users in the Scientific Instrument Innovation Process," *Research Policy* 5, no. 3 (July):212-39.

von Hippel,Eric (1974) An Exploratory Study of Corporate Venturing - A New Product Innovation Strategy Used by Some Major Corporations (Ph.D. Dissertation, Carnegie Mellon University, 1973) (Ann Arbor, Mich: University Microfilms).

# Patents:

The following patents describe electromechanical inventions related to facsimile. These were embodied in approximately 15,000 facsimile transceivers produced from 1967 to 1977.

von Hippel, U.S. Patent No. 3,369,691 *Electro-Sensitive Printing Resin Control System*, Issued October 10, 1972.

von Hippel, U.S. Patent No. 3,640,482, Paper Feed Mechanism, Issued February 9, 1972.

von Hippel, U.S. Patent No. 3,541,579, Electronic Stylus Feed Mechanism,

Issued November 17, 1970.

von Hippel, U.S. Patent No. 3,533,249, *Scanner Speed Conditioning Unit*, Issued October 31, 1970.