SEVERAL AUTHORS HAVE identified Tom Gilbert as the father of human performance technology. We respectfully disagree—and think he would have too. Gilbert was a brilliant and creative professional who made major contributions to the field, and it seems safe to say that HPT would not have progressed as far as it has without him. But he was not alone. Those of us who have been in the field since the early 1960s can identify a number of other contributors who were significant and even crucial to the early development and expansion of the technology.

The early days of HPT were an exciting time. We had a powerful technology that many of us believed could change the world, but it was a new technology and limited in its scope and applications at that stage. Conferences and meetings were characterized by lengthy discussions (sometimes heated, and often extending into the hallways, coffee shops, and bars) about the technology itself, what the field really was, and its potential applications.

If we were forced to point to a single initiator of HPT, it would probably be B. F. Skinner, with the publication of *The Science of Learning and the Art of Teaching* in 1954. But the development of the basic principles that Skinner articulated into a far-reaching technology was the work of many. A number of those people (including Gilbert, Ogden Lindsey, and Dale Brethower) were graduate students under Skinner; others were attracted by the potential power of the principles in Skinner's writings.

Among the candidates for “father” of HPT, in addition to Gilbert, are Lloyd Homme, Jim Evans, Charles Slack, George Geis, Donald Cook, Frances Mechner, Stewart Margolis, Lew Eigen, Bill Deterline, Bob Corrigan, Robert Glaser, Bob Mager, Bob Gagné, Norman Crowder, Bob Morgan, Bob Branson, Walter Dick, Arthur Lumsdain, Dave Klaus, Matt Israel, Jim Holland, Gabriel Ofiesh, and Harvey Block, to mention just a few (including both of us). And they were not all “fathers” either; people like Susan Markle (another Skinner student) were also contributing. In addition several “youngsters” who worked with many of the people listed above also contributed to the growth and development of HPT. These include Brethower, Geary Rummler, Danny Langdon, Joe Harless, Don Bullock, Margo Murray, Stephanie Jackson, and Roger Addison. In this zeitgeist, ideas were pouring in from everywhere. At least a hundred or more names could be added to this list of HPT heroes. It would be impossible to discuss everyone who contributed to the birth of the field, so we have presented just a few of the people we worked with to give a taste of that early formation period.

Many people were involved in the early days of instructional systems design, and just as important, many of them were also working to extend the principles of HPT into other areas: juvenile crime reduction; business operations and management; prison rehabilitation; classroom design; mental health; group processes; Job Corps; and a host of other areas, including continual, disappointing forays into the world of education.

In the interest of capturing some of the heritage of HPT, each of us has written short sections on the contributions of a few HPT pioneers we worked with. We will dispense with the term “father of . . .” and identify some of the people whom we consider to be an important part of HPT history: a few of our HPT heroes.

**DON TOSTI’S VIEW**

Homme is a prime candidate for HPT hero. Homme worked with Skinner on the Teaching Machine Project in the late 1950s. It was he who first recognized that the teaching machine was not necessary for programmed learning; you could just print the program in a book and use a shield to cover up the answer. Homme had “invented” the programmed text, thus simultaneously stimulating one aspect of the educational materials business and dooming another. Exploiting that invention became a major source of funding for early HPT professionals. In fact, the field may never have gotten off the ground without the huge influx of capital invested in programmed text publishing. Within educational publishing, it was the dot-com industry of its time. In 1959 Homme also founded the first HPT company, Teaching Machines...
In 1963 Homme turned his attention to motivation, a neglected area at the time. He promoted the Premack principal of motivation using preferred activities as incentives. Both of us worked with Homme to establish the practices associated with contingency management. A year later, we used those practices and concepts to develop a tutorial center that offered guaranteed learning and received a grant from the U.S. Office of Education to design and create a contingency-managed classroom using behavior technology principles. An important aspect of Homme’s work was his consistent focus on results and accomplishments and a set of analytical and research skills that enabled him to cut through a mass of information to identify the critical factors producing results.

Homme also pioneered concepts that we see today echoed in applications like appreciative inquiry. He developed ways to establish positive self-image, explored ways to establish positive norms in groups through behavior technology, and advocated the use of positive expectancies and demonstrated their power. He coined the term covertants, shorthand for “covert operants,” which helped us use HPT principles to deal with less tangible issues like thoughts and emotions. This work later became part of the foundation of our culture change work.

Slack was another pioneer and key contributor who did not shrink from applying HPT principles to difficult situations. He did extensive and surprisingly successful work with juvenile gangs in New York to reduce crime using behavioral techniques. In 1965, he brought a gang leader to address National Society for Programmed Instruction (NSPI) at the 1965 conference.

Slack was a cofounder with Gilbert of one of the earliest performance companies, called TOR (for Theories Of Reinforcement). While at TOR, Slack, Gilbert, and Dempsey Pennington developed an instructional development model called Mathetics (Pennington & Slack, 1962). Slack later joined Homme and me in developing Job Corps programs and wrote about HPT in popular magazines like EYE. He consistently tried to push the envelope of the technology, applying HPT to social problems like prison reform, therapy and encounter groups, worker habits, child rearing, and community development. He was a frequent presenter at early NSPI conferences and a gifted writer.

In 1960 the University of Pittsburgh was a hotbed of activity for performance technology hero candidates. Among those involved were Homme, Glaser, Evans, Gagné, and Deterline. Evans, Homme and Glaser’s paper on the Ruleg system (1962) was one of the most significant early papers in the field.

Evans later joined Homme in establishing TMI. Evans was a significant early contributor to the field and later became the chief contractor to IBM on the development of customer-focused self-instructional material for their first lines of mainframe computers. He later joined a group that included me and became the director of the Independent Learning School, a successful private school, using individualized instruction and contingency management.

Glaser was also a founder of TMI, but he preferred to stay in the university environment. He went on to develop individually prescribed instruction and established the first regional education laboratory. His two-volume Teaching Machines and Programmed Learning (1962, 1965) is an 800-page summary of the field up to that point.

ROGER KAUFMAN’S VIEW

What is interesting is how many of the people whom we knew well were working at the same time on similar issues within the field and how many interconnections there were. As people moved out from a relatively small number of key university programs, they found themselves crossing paths again as academic colleagues, business partners, or competitors, not infrequently encountering the same people in all three roles.

Gagné was a classically trained experimental psychologist who migrated from his doctorate at Brown University, through applied research venues, to the University of California, Berkeley, and then was lured out of Pittsburgh by Morgan and Branson to Florida State University (FSU). His basic work, especially his learning hierarchy, was part of the bedrock of our field and our research base.

At FSU, Morgan put together the first comprehensive Instructional Systems Design (ISD) higher education program that was a forerunner of HPT; Branson, Briggs, Dick, and I were part of that fundamental group. Morgan was also an experimental psychologist from Ohio State. He became involved with programmed learning in New Mexico, which had become another hotbed of HPT. In the mid-1960s, he left the university to found a programmed
learning company (where he worked with Don Tosti) and then went with the U.S. Office of Education, helping to guide the development of the field from that base.

Morgan, Branson, and I built the Learning Systems Institute, which trained graduate students and conducted national and international research and development programs that resulted in the new education system of Korea, the joint-military ISD process that became the worldwide standard, the basic needs assessment and strategic planning applications and models, and Latin American professional training.

Branson worked with Morgan in New Mexico. They later joined Litton Industries, where Branson ran a large Job Corps Center (Langdon worked for him there) and ended up in competition with another division of Litton headed by Corrigan, who had just independently developed the Tele-Test system. Branson and his associates developed the joint military services ISD process that became the international standard in the noncommunist world.

Not lost from the pragmatics of this group were the contributions of Sidney Pressey and his work with the capacity assessment concepts of World Wars I and II, as well as the growing influences of Gagné and cognitive psychology as a broader base for performance improvement design and development.

Briggs helped develop research-based pragmatic guides for instructional design and performance and media analysis, mentoring many along the way.

Dick developed the most widely used instructional design text. I built, from my doctoral study on the effects of remedial feedback on performance and mastery and my experience in aerospace and human engineering, a system approach model that went beyond a focus on individual performance improvement and thus expanded on the system thinking of Ludwig von Bertalanffy. He was working at the same time that Corrigan was developing unique performance improvement methods and Len Silvern developed a systems model that all proved to be ahead of their time and the prevailing conventional wisdom.

Corrigan was brilliant and an entrepreneur. He was the best curriculum designer I ever met, and he got me involved. He was at Litton, and I was at Douglas. We published my first book (and I think his as well), Why System Engineering (1966), a branching program published by Fearon (famous for publishing Mager's first book on objectives). He did much to shape the field and also insisted on research bases for everything. He read Gagné and got into dialogues with me about him and the other research that was blooming around that time. He also encouraged me to publish (even in the Journal of Programmed Instruction).

Crowder was the inventor of branching programming, the basis for computer-assisted instruction. He called it intrinsic programming. It was based on a coach-pupil model that he had developed in his years of working for the U.S. Air Force on training troubleshooters, under the supervision of Joe Tucker (who worked for U.S. Industries and later went to Catholic University). In the early 1960s, I was part of the Crowder/PeterPipe/George Oehrlein/Wayne Gustafson U.S. Industries group, designing and delivering the "hated" branching programming. At the same time, there were zealots insisting that linear was the only way to go, unless one did express stopping. Little did most of us suspect that the two types of programming were coming together. The Skinnerians were dead right about reinforcement, something we did not want to admit at first. The storage capacity that limited the U.S. Industries AutoTutor was increasingly overcome with computers. This provided better ability to be responsive to learner choices as they progressed through branching programs. Thus branching became practical and is now the preferred mode for computer-based learning.

What is interesting is how many of the people whom we knew well were working at the same time on similar issues within the field and how many interconnections there were.

TOM GILBERT’S ADDITIONAL VIEW

While we believe that designating Tom Gilbert as the “father of performance technology” is simplistic and ignores equally significant contributions of others, he would without question be included in our pantheon of HPT heroes. Interestingly, some of his greatest contributions to the field have been largely ignored or even forgotten today; for example, he assumed that people already have all or most of the necessary responses for many performances in their behavioral repertoires. Improving performance was therefore not primarily a matter of teaching people new things but one of increasing the likelihood of selected behaviors or establishing a particular sequence of actions. The issue to Gilbert was seldom producing competency, but rather increasing the fluency of performance. He also emphasized the power
of simultaneous discrimination and noted the impact it could have on reducing the enormous costs of training and simulation, something we seem to have largely forgotten in e-learning.

Gilbert and Homme were among the early champions of the use of mediators such as mnemonics to facilitate the association between items, another often overlooked instructional design factor. Both also strongly emphasized the need for a primary focus on results and accomplishments rather than actions or behaviors.

Gilbert made significant contributions to the field, as did many others who all deserve recognition. We encourage others to nominate and describe their own heroes. We think there is value in doing so, not only to recognize those who built the technology but to remind ourselves of some of the principles they espoused that we sometimes might forget or neglect.

**A FINAL NOTE**

People sometimes ask why giants like Peter Drucker and W. Edwards Deming are not included among the key contributors to performance technology. The reason is that although they were doing important work, they were working on separate tracks. HPT pioneers were working with a fundamental set of behavioral and system principles and struggling to expand and apply them to all aspects of human performance. Drucker, Deming, and a host of others were working in specific performance areas: management and quality. Over time, many of those tracks began to be integrated with HPT as we stole from them—and they from us.

**References**


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