One Look at the Evolution of Industrial Psychology

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There I was, a new PhD on his first job, teaching general psychology to sophomores at Ohio State University under the direction of Dr. Dockery. I was delighted to have a professional job; jobs were hard to come by in those days, for the depression from the 30's was still in evidence. As a PhD student, I had been given no training (except by example) in how to teach college students. But I proceeded on this career with the usual self-confidence and a text by Dr. Dockery. I knew I would eventually be building a testing center for vocational guidance that would be much like that at the University of Minnesota, my home grounds. But this story is getting way ahead of itself. What experiences had led to this setting and how did those experiences facilitate research in industrial psychology?

In the 1930's, I attended the school system in a suburb of Cleveland, Ohio. My mother had decided I should become a lawyer and had already made contact with a Cleveland law firm. I knew nothing about the requirements of a lawyer, but she felt it would be a fine occupation for me. When I was a junior in high school, she began studying books on psychology; especially interested in the causes and course of deviate behaviors. Unknown to our family at the time, she was sensitive to the course of a brain tumor from which she died within a year, leaving her family at the height of the depression.

My father had grown up on a family farm near Flint, Michigan and was among the first graduates at the local high school (and the first in his family). He abandoned the farm and took to building tops for buggies. When automobiles were created shortly thereafter, he started a company to build automobile tops. Later, when auto companies started designing their own tops, my Dad built side curtains to keep out the wind and rain. But again, the auto companies took over that function. While I did not directly live through this evolution, I heard the many facets of its operation and their implications in being the manager of employees as he created other auto repair business. But, while I observed the workers, being a supervisor never attracted my attention. My father never urged me in that direction, nor did he pursue Mother's interest in law. He was just curious about what would become of his son who was an above average student. Despite the great financial pressures of the thirties, he managed (I can't imagine how) to send me to Western Reserve University.

In my freshman year the student prize came my way, in Chemistry, a subject I had undertaken only to meet the science requirements. My chemistry professor and my Father were both upset that I did not continue pursuit of this subject as a profession. Instead, as a Sophomore, I went on to other subjects: biology, English, political science .... and psychology! The latter proved interesting but not overwhelmingly so. In my junior year, educational psychology offered in the Women's college was more interesting! But what really shifted my attention to psychology?

The head of the Department, Dr. Roland Travis, asked me to help him conduct a study on reaction time, the response to bodily movement when blinded. The building and operation of special equipment to measure the reaction time was fascinating. Putting fellow students through the tests, recording the results, and assisting in documenting the results were all quite exciting. Imagine later seeing my name as joint author on reprints!

Another event sold me on psychology. Dr. Travis asked me to be in charge of running a lie detector demonstration as part of the WRU exhibit during the summers of 1936 and 1937 at the Cleveland Great

Lakes Fair. Successful demonstrations were very exciting and there was a lot to learn from the failures (including how to explain them to the audiences).

Other courses went well enough to earn a Phi Beta Kappa key and graduation with honors. The fun of starting a College tennis team, serving as president of my fraternity and meeting the girl I was to marry, all added to college enjoyment. But not to a clear understanding of future vocations.

Earning money from the lie detection demonstrations enabled me to consider entering graduate school for advanced psychology (for which my interest was developing). But there was little or no knowledge of the options for a graduate to earn a livelihood. I certainly didn't want to work in the mental hospital our class observed.

The University of Minnesota offered slightly more stipend than other colleges ($300 a year as I recall). From a vocational point of view, I did not have information on what fields their graduates entered, nor was information available about other schools' graduates. I had only to rely on Dr. Travis' recommendation that the University of Minnesota had excellent professors on the staff in psychology.

The University in 1937 required broad coverage of the fields of psychology, no one referring to industrial psychology. The professors were excellent: Dr. Richard Elliot, head of the Department and Teacher of theoretical psychology; Dr. Miles Tinker, experimental psychology; Dr. Charles Bird, social psychology; Donald Paterson, individual differences; Howard Longstaff, advertising and industrial placement and selection; Starke Hatheway, clinical Psychology; John Darley, student counseling; B.F. Skinner, clinical Psychology; and William Heron. Instruction in statistics was offered by Palmer Johnson in the Department of Educational Psychology.

While at this time no professors were offering a course in industrial psychology, it is interesting to note that all but Dr. Elliott had interests in some practical applications of psychology. For example, Dr. Tinker who was my advisor for both M.A. and Ph.D. degrees taught all the experimental courses, but his personal research was in the field of factors that affected reading. He contributed considerably to the design of printing to facilitate rapid and accurate reading.

Since my courses at Western Reserve University had included all the experimental psychology courses, only one additional such course was needed to meet the requirements for this field at the University of Minnesota. For unknown reasons the courses in the growing field of sample statistics attracted my attention and were all completed. This work was under the guidance of Dr. Palmer Johnson. This subject led me to the many London publications of Dr. R.A. Fisher and Dr. F. Yates.

The possibility of obtaining accurate evaluation of variations in small samples intrigued me. It would open up new possibilities for research. Dr. Tinker was one of the first to accept and utilize those "new" statistical designs, and we often joined hands in understanding and applying Dr. Johnson's concepts. The methodology later became common and invaluable in industrial research where large samples are usually not available.

The new methods were not well known either by fellow psychology students or the professors. This led me to create an example of their application to a psychological problem to demonstrate their value. The idea led to a Ph.D. thesis, "An Application of Factorial Design to a Psychological Problem." Its contribution to future industrial work was its discussion of the effects of test reliability on the interpretation of studies involving factorial design.

The course closest to what became industrial psychology was offered by Donald Paterson who recounted the personnel problems encountered in the Army research during World War I. He provided my first contact with the issues and conditions that would have to be faced in the real world of industry.

In general, the experiences encountered in the doctorate did not directly prepare me for working in industry. Their problems were not understood nor was I acquainted with any history of related studies previously conducted. Yes, I had heard of the work of Morris Viteles with streetcar conductors in Philadelphia. Though born in Russia, he was an early contributor to industrial psychology in the United States.

But the problems of a criterion and the detailed steps of job analysis, formation of tests, etc. were not adequately understood. I was more interested in testing as it applied to college student guidance. This returns us to the experience as a general psychology instructor and the war-time efforts to use psychology in the placement of civilian workers.

The fall semester at Ohio State barely got under way when December 7, 1941 greeted us with the attack upon Pearl Harbor. Students and faculty all turned to identifying ways in which they could help their country. An advanced graduate student, Charles Gibbons, and I wondered if tests could be used in selecting and placing new employees at the Curtiss-Wright Aircraft Company in Columbus, Ohio. Our meeting with their Director of Personnel met with complete failure and many questions: What do psychologists know about selecting aircraft employees? What tests are available to select such employees? What do we know about the jobs at Curtiss-Wright? We were asked to call back in a week with answers to all the questions. That week identified our lack of knowledge in this field. Our return phone call revealed that the Director of Personnel also wasn't equipped to deal with the upcoming problems. He was fired!

Where next? I paid a visit to the nearby base at Wright-Patterson air field outside of Dayton, Ohio. They were beginning to set up a personnel staff and one of its goals would be to create methods for placing new employees in the jobs for repairing and overhauling aircraft. Roger Lennon from the World Book Company had just come aboard and would soon head this activity. Would I please take the test being given to all new applicants, Army Alpha? (My M.A. thesis had involved the administration and manual scoring of hundreds of the same form.) When I readily answered all the questions correctly, I was greeted as a super genius. (They didn't even ask if I had prior experience with the tests.) So the end of the school year in June 1942 found me at an entirely new kind of work at Wright Field - a form of industrial psychology.

The Air Service Command grew rapidly with repair depots throughout the United States, often at locations that had no personnel with aircraft experience (e.g. Rome, Georgia; Ogden, Utah; Spokane, Washington). Our applicants included many older men, women of all ages, and few with work experience.

There were no validated tests, no norms, and no experienced personnel to administer or interpret the tests. Some tests with apparent validity came from the U.S. Employment Service but were not available for our use. Other sources provided scattered examples, but not with relevant validation or norms. We had to start from scratch with a staff that had little or no experience with job analysis item development, criteria, norming, and establishment of standards. Previous testing experience, if any, came from school settings.

Finding relevant staff personnel was very difficult. We were fortunate to have Roger Lennon as our leader. His experience with testing at World Book Company proved invaluable, especially that related to item and test construction, and related statistical analysis. Other staff members included Dr. William Biel, Dr. Ruth Cruikshank Bussey, Dr. James Karslake, and Dr. Evelyn Potechin Perloff. Staff members often had little parallel practical experience , but we all enjoyed learning in a hurry.

The work included not only all aspects of test development and validation for placement of personnel, but also methods of application. Staff members were assigned to report to distant airfields, select and train local test office administrators, and advise on special research activities for that area.

Similar types of research were launched in the Army, Navy, and public organizations. Few opportunities existed to coordinate these activities as we all struggled to meet the demands of the War. While the demands of chaos were met, remember that at the same time "industrial" psychology was being reconceived and applied. Staff members were being trained, and new ideas about management of personnel were being conceived. The War wasn't all bad!

At the end of the War, industry was suddenly swamped with the problems of rebuilding their organizations, their products, and their selection and training of a new staff. Some of their staff members, returning from military experience in personnel procedures, were rushed into directing similar assignments in civilian operations. (They found that the military tasks had been different, and the civilian training and supervision of staff did not involve the strict, dictatorial system of management.) Many companies turned to the military organizations to locate staff with experience with "The great personnel management that had won the War!"

Among the organizations seeking such a person was Owens, Illinois Glass Company. On their staff was my Ohio State friend, Charles Gibbons. They asked me to join their Company but I soon found it was only to prepare me for transfer to their subsidiary, Owens Corning Fiberglass, a new and growing organization. (It soon became an independent corporation.)

In my first experience with the new Company, (1945), its Personnel Director greeted me in our first meeting with the question: "Can you tell me what in heck does a psychologist do in industry?"

What a question to start a new job! Nobody had ever told me the answer. Charlie Gibbons hadn't told me what problems a psychologist worked on. But the question led to some wonderful experiences. I asked to sit in on the personnel staff meetings and to visit Owens-Corning plants around the country. I soon became acquainted with the conditions that were faced in day-to-day operations: selection of staff, training of staff, evaluation of personnel, the compensation system, promotion steps, etc. My dear Ph.D. had never prepared me for these procedures and conditions what was involved, what worked well, how to make them better, how was psychology related to them, how did employees react to these situations?

I was very fortunate that I was not immediately requested to solve any of the problems. I was given, instead, access to visit many managers, to learn their perspectives on these problems, to visit other companies (especially Charlie Gibbons and his new assistant, Reign Bittner) and reading all the kinds of material offered to personnel management trainees today. When I was a graduate student, I knew I could never work harder than I was doing. Not true: the need to learn more and learn it fast is an important demand upon a newcomer to a company.

Let me recount how some psychology was used as a new worker. The Company had recently begun the use of a new test in the selection of hourly plant employees. I was told not to get involved with this program; it was entirely under the direction of the Training Director in our department (not a psychologist). My curiosity about the test led me to sub-rosa locate some data on the reliability of the test (no data found on its validity). The administration of the test was ingenious and loved by the supervisors, but I found it had very low reliability. I published the results without revealing the source of the data. The article did not reduce the popularity of the test. Instead I was flooded with requests from many companies for information to locate and purchase the tests. This response reflects on the state of industrial psychology in 1947!

Curiosity about the employee reactions to the various personnel programs led to the development and administration of an employee attitude survey in each plant. This type of survey had been conducted in the Owens Illinois Company and proved to be helpful. Why? I think it was because their Director of Personnel was so eager to find weaknesses, admit the need for improvements, and support their development. I learned how important this outlook is for any activity a psychologist undertakes.

And then a telephone call was received. Would I care to learn about an opening for an industrial psychologist at the Chesapeake and Ohio Railway? Peter Drucker, their personnel consultant, was helping to build a new personnel program at the railway and had recommended that a psychologist be employed to direct a related research program. Dr. Joseph Tiffin, well known in industrial psychology through his textbook had been offered the job but had decided not to take it. He offered my name, among others, as a possible candidate (this shows how few with company experience were available).

The program at the Railway had been launched by Robert Young, a financier dedicated to bringing many new improvements to the operation of the railway. Mr. Young appointed Charles Hook, Jr. (son of the head of an Ohio Steel Co.) to direct the development of a new personnel program and suggested Peter Drucker assist in its development. Under Mr. Hook, several experts (none psychologists) had been appointed to develop special programs: e.g. training, wages and salaries, employment. He now wanted a psychologist to evaluate each of these programs and the overall changes in the personnel program.

Again, my major duty was to learn the present personnel practices on the Railway, and the new programs the staff specialists were devising. Two experienced railroad men were added to the staff to assist all of us in this learning. Later the total program developed I was appointed to Assistant to the Vice President, Personnel and Dr. William Kendall came on as Director of Personnel Research.

Two years elapsed and progress had been made slowly. The staff was new to railroad life and the railroaders were new to the possible roles of the personnel staff. We didn't properly understand them and vice versa. It is essential that the newly employed psychologist learn the "world" of his new setting from a modest, understanding point of view. It is so easy for the new Ph.D. to think he now knows it all and that he is prepared to solve all the problems. Within our two years, the new group had "won over" only a few of the old-timers.

But now Mr. Young faced financial collapse and committed suicide. The personnel staff from Mr. Hook on down no longer had strong top support. Gradually its members sought other employment, wiser but not having succeeded in its basic goals.

So where does a psychologist with limited business experience go when industrial psychology has not yet established itself in very many companies? The list of possibilities is still in my file: Penn State College (Where Dr. Bruce V. Moore was eager to launch a program in this new industrial psychology but other faculty members were not supportive); other colleges were even less eager; companies generally were shy about getting involved in this new field, it had not yet proven itself. But one company was looking for help.

Pat Waters, in the sales department of the Prudential Insurance Company, had been seeking to build a high quality sales force whose numbers had declined so greatly during the War. He had achieved some success in creating an improved staff but wished to have professional help in further building the selection program and in developing other activities he felt were needed. Mr. Waters had a B.A. in Business but more importantly an eagerness and skill in promoting new programs. He had rapidly learned the statistics and tools of industrial psychology as they existed at that time. His enthusiasm led to the approval of my appointment as his Assistant Director of Agencies Research.

Again there was a need to learn procedures of another company; what psychology could be applied to its particular setting; and how to get along in another company.

Repetitious as it may be, let's note three activities that were so important to an industrial psychologist in getting started in a company:

1. Learning the personnel and other procedures of the company, especially in the Sales Department. Learn about the products and goals of the company. I should have taken the professional insurance sales courses offered in the industry rather than feeling that all I need to know is psychology.

2. Learning all the various ways that psychology might be able to help with the company's problems. At any time one may attend a departmental or other meeting and learn of problems outside of the present research. Be ready to share your knowledge with others.

3. Learn how to offer these items without letting others think you feel you know everything. It is so easy for a Ph.D. to regard himself as superior to all the BA's, MA's, etc., even if they have 25 more years of company experience. Instead offer to look into the problem and learn what actions are possible and effective. But don't seem to trample into others' responsibilities. Be a helper. Maybe go to the fellow with the problem after the meeting, discuss how you might help but make the fellow feel he will get credit for any improvements. Building effective relationships with others in your department is just as important as any psychological practice. Psychology departments should teach good and bad strategies for dealing with others within and outside the company being served. While I was still learning these strategies, I was floored to find how poor new Ph.D.'s I hired were in this field. As new members of the research staff, I regularly asked them to attend meetings of other groups in the company, but as a newcomer they were asked not to be eager to show how smart they were. Their presence at the meeting helped to remind me not to make offensive comments or suggestions. Post-meeting discussions of this matter helped to train both of us on this matter, could new Ph.D.'s be made more aware of this facet of the new job before being launched from the university.

Prudential Research Program

Below is a brief recounting of the major research activities in the two sales departments of Prudential from 1949 to 1966 to reflect some increasing activities of industrial psychology.

Agent Selection

There was a continuing effort to create new tests to be administered in local sales offices. The tests were scored in the central research office and pass/fail results were reported back. For a criterion, reliance was placed primarily on the length of survival in the job, though level of sales was also explored. Many field studies tried to understand the wide variations in successful individual performance and why they occurred. Far more work involving new methods was needed.

Manager Selection

Parallel research was later conducted on the selection of sales managers. Field studies revealed that successful managers performed in quite different ways. There is not one pattern of operation that fits all good managers. The job is not the same in all locations and thus does not have the same requirements. I wish I knew more about what was learned on this subject after I left Prudential.

Agent Attitude Surveys

Frequent surveys were conducted on the attitudes of Agents. Year to year variations were identified. Most useful were the post-survey field interviews that sought to understand better the changes that occurred.

Surveys of Sales Managers were also performed but seemed to be less useful. Regional Managers felt they already fully understood the outlook of their Agency Managers.

Agent Training

The limited amount of research completed revealed only that we did not understand the relationship between the content of the courses, its methods of administration, and the variations tied to individual personal style of performance. Why do we tend to think that the same course is appropriate for all trainees?

Marketing Research

The Agency Research Staff was given the opportunity to conduct studies for marketing research. They were primarily designed and performed by non-psychology staff members, those trained in economics. In addition to designing measures of the sales potential of geographical areas, the impact of various advertising methods and strategies was evaluated. Efforts were made to tie together Agent reaction to the advertising and the general public responses. At this point psychological insights began to make contributions to plan and interpret the research. Studies of regular frequency sought to evaluate Agent and public reaction to the planned advertising material. These served to make continuing improvements in the advertising strategies.

Relation to the Life Insurance Agency Management Association (LIAMA)

The Life Insurance Companies had formed a Research Group to conduct studies in all types of studies, many directed to the same kind of work as conducted in Prudential. The LIAMA studies were largely

conducted across all member companies. Certain statistics were collected across all member companies on a regular basis. This was very helpful for it allowed a company to compare its data on a broad basis. The Research Unit was headed during my period at Prudential by an outstanding psychologist, Dr. Raines Wallace. He provided excellent guidance as to the kinds of studies where psychology could be used to gain insight into Agency management. He worked closely with a committee of research personnel representing many companies. Through Dr. Wallace, significant growth of industrial psychology was made. Dr. Paul Thayer later followed Dr. Wallace at LIAMA and made similar contributions.

"No Name" Group. In 1954 about ten psychologists working full time in business or industry formed a group that met for two days three times a year. While this schedule and number of members has varied, the group has grown and exists to this date. It has played an important role in the development of industrial psychology. Meetings usually began by each member reporting his current activities. He might ask for suggestions on how to deal with certain work, both things to do and what to avoid. The willingness to share ideas has been amazing and the protection of information has been excellent. If a member wished to spread information beyond the group, for example, to other members of his company, he contacted the originator for approval. Perhaps a special meeting within one's company was arranged.

Criticism of one's work is freely and warmly exchanged. Many strong friendships have been formed. The fact that the group has existed so long (36 years) speaks well for its effectiveness.

Employment in a company has not continued as a requirement for membership. Memberships may have continued even if the person moved to a university, a consulting firm, or a research service firm. Many members who moved felt they could not maintain either their time or their professional loyalty to the group, and then resigned. When new members were needed, the group sought persons with industrial experience, their abilities evidenced by papers at Division 14 meetings or publications. The odd title for the group originated when the original members did not want to establish fixed officers, rules or subject matter. For each meeting one member was asked to set up the next meeting: schedule, location, any special program topics, plant or office visits, guest speakers from within his company or outside, and hotel and meal facilities. Rarely was a meeting held at a resort or recreational facility but rather in or near company quarters. Members are not required to prepare papers or distribute their company reports. Yet it is quite likely that members will bring written materials from their research.

Why has this group been successful? Haven't the Division 14 meetings accomplished the same thing? First of all, it should be noted that most No Name members also regularly attend Division 14 meetings and have served as its officers and committee members. This suggests that the roles of both groups are important. The No Name group assures a high level of presentations of one's work. Its discussions are more open. The group is small, permitting everyone to participate in the discussions. APA meetings permit wider professional contacts and attendance at meetings in other fields of interest. No Name is by, for and of industrial psychology. It has meant a lot to my development.

Division 14 has also meant a great deal to me, especially in its earlier days and my earlier days. Service on many committees proved useful to understanding a broader number of members and their activities. They have been part of my "family". It allowed me to be aware of the varieties of people within industrial psychology. The wide kinds of settings have shown many different roles for industrial psychology. It is not all one "thing", not serving one purpose, not attracting one "kind" of person. These

variations are not taught in the university. It is very difficult for any professor to maintain knowledge of the growing diversity.

A most helpful experience was service as the Secretary of the Division. (1961 - 1963) It was a great way of becoming acquainted with all the various activities of the Division. It also revealed how industrial psychology was advancing: growing membership, broader fields of activity and new research methods. Becoming President of Division 14 (1964) perhaps had more prestige, but it definitely gave more opportunity to steer Committee directions by suggesting additional areas of advancement. The job made one think about the whole field of psychology, and thank goodness for excellent members who served as committee chairmen.

The job also led to another field of service that provided even broader perspective; membership on the APA Professional Board of Affairs (1965-1967). It revealed the various problems faced by APA members in all their various fields. one duty of the Chairman of the Board (1968) is to report to the APA Board of Directors at the end of the year the major movements within the profession and their direction. It took no genius to present a picture of the increasing sources of friction between the Divisions, of a few Divisions with larger numbers of members controlling: presentations to Congress; Division control of subjects presented; control of election of Association officers; promotion of APA services needed by members in those Divisions, etc. Perhaps these outlooks reflected only being from a Division of low membership and prestige. But I believe they also reflected what happened in APA in the next 20 years as the American Psychological Society was formed and other friction arose. The Board of Directors in 1968 did not really hear my concerns and no action was taken on the examples of rising problems. Shall we claim it is all for the good of professional psychology?

"Back on the farm", after 15 years at Prudential my own personal life was changing. Both Dr. Rains Wallace and I received the opportunity to broaden beyond the field of insurance by joining the American Institutes for Research. AIR was formed in 1947 as a non-profit research organization by a leader in many fields of psychology, Dr. John Flanagan. As the AIR Vice President for Research (1964) and later the Vice President, Air provided the chance to become better acquainted with all its various fields of study: education, mental health, overseas studies. And working with John Flanagan provided a more extensive view of many fields of education and psychology.

Rains Wallace became President of the organization in 1968. In 1972, my work was directed to industrial psychology studies. Independent work was continued in that field through 1983 when I became President of my own BB Research Institute. This led to a wide variety of studies in many different companies and is still continuing in 1990.

The main subject during this period tied to the formulation and growth of the Equal Employment Opportunity Commission. With the establishment of the EEOC was the need to formulate statements of its role and how the Commission would operate to achieve its objectives. An EEOC Subcommittee was formed to draft statements to establish its position, especially with regard to testing. The Committee contacted the APA who in turn contacted the President of Division 14. Out of the blue and with very little advance explanation of its purpose, an Advisory Committee was assembled. As I recall, the Committee included myself, another psychologist (who worked on divorce cases), a teacher and two others (one a black person). In its first and only day of meeting, the Advisory Committee was introduced to each other in the morning, and given a statement for its objectives. In the afternoon it tried to draft a statement concerning the use of tests. The committee was assembled in groups of 2 or 3 who then

presented its section to the EEOC Committee Head. There was no opportunity for discussion between Advisory Committee members, and no time for it to discuss its crude drafts with EEOC. Nevertheless, a month or two later without further interaction with the Advisory Committee, EEOC issued its first Guidelines for Equal Employment. These guidelines were issued before I knew what had happened (e.g. I never saw a draft of the statements issued) but it had a major impact on the rest of my research life.

Midway in EEOC work

No training had been received on the role of an expert witness in court. What does he do in preparation for giving testimony? In what ways can he help the lawyer? What does he say? What should he avoid saying? What should his attitude be toward the Judge, toward the opposing lawyer, toward the plaintiff? How technical should his answers be? Psychologists in the University should be given at least some instruction in this field.

And in 1962 lawyers needed some instruction about tests and about the statistics involved. The lawyers and I both had a lot to learn about each other's profession. It was a challenge and a very interesting experience. The most important task was not to show in your answers how much you knew about the subjects involved but how to be most helpful to the judge in understanding the answers. How does an expert witness demonstrate that he is quite knowledgeable in the field but at the same time make his replies simple and clear to the Judge? This need was especially important in the 60's and 70's when the EEOC problems were new to the courts. As an expert witness you must hope that your co-worker (lawyer) knows the abilities and attitudes of the judge. Since those decades, many lawyers and judges have become quite fluent in the subject.

At the outset my cases were all in support of the plaintiff but the later requests for services nearly all came from the defending companies. My response to requests for assistance was to obtain as much relevant information as possible. Good information was often hard to find; It had never been obtained by either party. The expert witness had to instruct the lawyer on what would be relevant information and how to obtain it. Next came planning what and how the information should be presented. These steps were generally far more time consuming that the testimony.

But the courtroom process isn't just the fun of determining the truth. To be sure, it is a contest to show that you know what information is most relevant and that you properly learned all about it. But too often it may be a battle where the opposing witness and lawyer try to show that you are not very smart and not well prepared. This may lead you to decide to go back to a less combative setting. After about fifteen cases, I was much less interested in the testimony phases of a case but intrigued by methods of gathering relevant, conclusive information.

After a large number of cases had been published in the law journals, a challenging task was to understand the information presented in the case, how it was interpreted and how the judge reached his conclusions. The latter step is hard to follow. You see why some case decisions are challenged and later overruled. In one situation the first judge ruled against "me", but on appeal six years later his decision was overruled. But today, three years later, all of the data the appeals court requested has yet to be assembled.

These experiences over 20 years explain why I both enjoyed the expert witness work and on the other hand wouldn't look for any more. But psychologists need far more instruction in this unique little bit of industrial psychology.

Language Requirements

A major struggle in graduate school was to learn enough French and German written language to enable one to read psychological articles in these languages. While these exams were fair, they were the last time those languages were used for psychology advancements. I have found knowledge of these languages most useful when on foreign travel (including meetings of the International Society of Psychology). Would it have been better to rely on undergraduate language courses and brush up on their study just prior to the visits?

The Future of Industrial Psychology

The reader is probably fully aware that in the 1970's and 1980's the industrial psychologist was dealing with a broader range of problems. This led to changing the name of our Division to Industrial and Organizational Psychology. But this change was only a very minor shift compared to what is needed.

I urge you to read "Chaos" by James Gleick. The book describes how entirely new outlooks are now altering the sciences of mathematics, physics, biology, weather, and many related fields. Preconceptions of matter are leading to major revolutions in how to conceive our world. Reading about these evolving outlooks presents all psychologists with new points of view. We must reconceive what an employee is. We must reconceive what a manager is. We need new conceptions of our criteria. And to be successful in these areas, we must reconceive what a person is. Great new opportunities lie ahead of us.

Our research is now being limited by our conceptions of man. Many of our social structures (pay systems, employee benefits, the Labor Department, the IRS, educational systems, companies, unions) all rely on certain undeclared assumptions about the nature of man. The psychologist along with other scientists must lead in making new assumptions, which may seem like wild "chaos" but will lead to new worlds. Our research is now making piddling contributions.

Think of the great need for new outlooks as the countries of Europe (and other continents) demand alternative conceptions of man. Our own country is faced with many related problems: declining educational performance, drug usage, new family structures, increasing crime, inadequate company/union solutions, overcrowded prisons, crowded mental hospitals, etc. All great problems, but look at the titles in the articles in our industrial psychology journals!

What is producing, forcing this inadequate response to the needs we have for truly venturesome research? Could it be the Ph.D. thesis structure that requires that the research from beginning to end be done in a year or two? Could it be the college system that requires the faculty to put out many papers and books in a short time? Can the professor risk a project that seems to alter some basic principle we now hold about people? How many company psychologists can get their officers to support a crazy new way of dealing with employees? How can these psychologists get time to devote to reconceiving the nature of man? If our research must be conducted within the confines of our present "people structures" (offices, schools, plants, etc.), what is the likelihood that changes can be studied? The physicists, etc. in Chaos could at least manipulate the equipment within his own laboratory to make real

contributions to understanding the laws of matter! While the psychologist looks only for "feasible" and "practical" settings for studies.

We must seek new perspectives on what we are doing. We cannot continue to walk off with a smile from a validation study in which we predict less than 40% of the variation in the performance measure. Being pleased with results greater than chance is not an acceptable standard of performance.