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Examining the Scientist – Practitioner Divide in Psychology: A Transactional Analysis Typology of Scientists

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Abstract

Using transactional analysis models of ego states (Berne 1961, 1964), the author proposes a typology of scientists, and diagrams 14 types based on integrated ego states, contaminated Adult, and single ego state with dual exclusion. The typology is presented as the latest in what could be called the psychology of science, whose exemplars include Thomas Kuhn (1962/2012) and Abraham Maslow (1969). Psychology of science is differentiated from philosophy and theory of science, and existing research into the personality of scientists is explored. Of major importance is the apparent divide between scientist and practitioner in clinical and counselling psychologies.

Based on Feyerabend's (1970) infamous quip about science that "anything goes", the author shows how using a proposed transactional analysis of scientist types, Feyerabend's comment can be understood three ways: Parent: "Scientists shouldn't be so serious"; Adult: "It seems that anything goes"; and Child: "No rules!" It is only in their integration (PAC) that Feyerabend's meaning can be understood. So, too, for the psychological practitioner, whose practice cannot be divorced from its scientific foundations. The author concludes by using the proposed typology to suggest how the same categories applied to practitioners may explain their responses to research.

Keywords

psychology of science, scientist/practitioner, researcher/practitioner, importance of research, Paul Feyerabend, transactional analysis, typology

Introduction

Philosophy of Science and Psychology of Scientists

Philosophers and scholars have been arguing about knowledge since the beginning of recorded history, probably earlier. During the Fifth Century BCE, Heraclitus observed a river and saw a process. Parmenides objected, calling it a thing.

Since that time, arguments about the nature of knowledge (epistemology), and reality (ontology), and how to determine each (methodology) have filled manuscript pages and lecture halls. Contemporary theoretical and practical differences may be seen in Figure 1, where the *x*-axis is the continuum of epistemology (from Rationalism to Empiricism) and the *y*-axis is the continuum of ontology (from Analytical to Continental; see Radnitsky, 1983).

In any scientific community, battle lines develop at points of metascientific contention. In the history of psychoanalysis, Fritz Perls (1969) observed that resistances could be oral and Freudians disagreed. Gestalt Therapy was the consequence. To Perls, the disagreement represented a cavern of distance between psychoanalysis and Gestalt Therapy. But, to the behaviourists, psychoanalysis and Gestalt Therapy are identical in that they are both nonexperimental psychologies.

Today the logical empiricists conduct experiments with fMRI machines while phenomenologists examine experience by asking open-ended questions. Each, however, has its own heated battles within boundary lines.

The above conflicts concern the theory and philosophy of science, and appeal is generally made to philosophical argument. Once the argument has been made and agreement reached, such metascientific discussions are dropped until someone like Martin Heidegger comes along and upsets Edmund Husserl's system, or Edward Tolman comes along and upsets Fred Skinner's system, and the theoretical and philosophical discussion must occur once again.

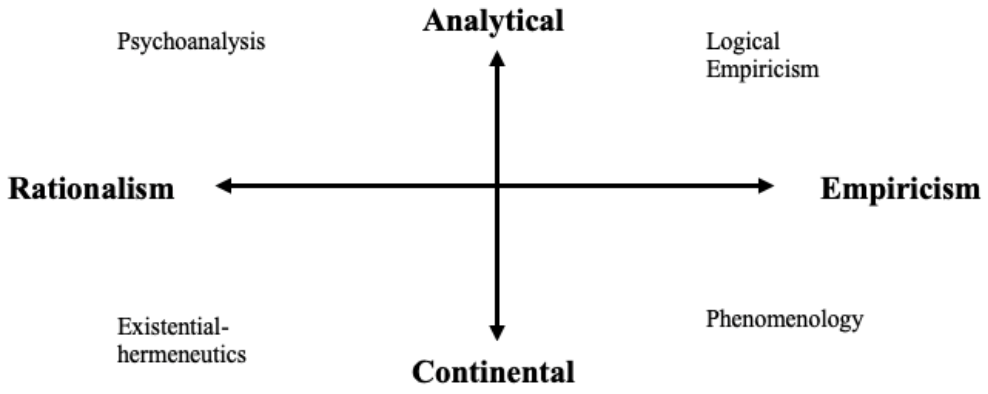


Figure 1: Contemporary Schools of Metascience: A Simplified Diagram

Other metascientific treatises have been written on the *practice* of science. These approach what could be called a psychology of scientists - a title once used by humanistic psychologist Abraham Maslow (1969) in *Psychology of Science: A Reconnaissance.* The most famous analysis of scientific practice is Thomas Kuhn's (1962/2012) *The Structure of Scientific Revolutions*. In it Kuhn differentiates between two types of scientist: Normal and Revolutionary. Normal scientists operate within established boundaries with established protocols, and publish in established journals. Revolutionary scientists break with the establishment. Normal scientists are rule-bound, systematic, and careful, whereas Revolutionary scientists are spontaneous, creative, and unafraid to take risks.

Normal and Revolutionary scientists can be seen in all branches of science - revolutions can occur in physics, medicine, botany, and even the humanities (e.g., Wolfe, 2011). A scientist (or philosopher) cannot leap from one category to the other, of course. They are trained into a community where they enjoy membership for a period of time. Disappointment with the community develops until it is no longer tolerable, a rupture occurs, and a new scientific community eventually emerges. The scientific community develops and grows until its members become Normal scientists themselves. The bidirectional arrow in Figure 1 captures this movement back and forth. The progression may be seen in transactional analysis, captured by Karpman (2006). TA sprang out as revolution from Freudian psychoanalysis. It developed methods, procedures, and training protocols, and has even developed its own revolutionary off-shoots.

While Kuhn and Maslow have provided a helpful analysis of the scientist's practice, there is much room for improved understanding and variability of types. Few authors have addressed this question directly. McNie, Parris, and Sarewitz (2016) propose that research typology might be considered against three activities of knowledge production, learning and engagement, and organisational and institutional processes, and that the focus of any of these may vary from science-centric to user-centric. Kobori, Ellwood, Miller-Rushing and Sakurai (2019), whose focus is ecology, refer to the way the general public contribute to scientific knowledge by pointing out how technology allows volunteers to participate in ways that were previously accessible only to experts. This means that a typology of scientists might be equally applied to understand non-scientist volunteers, or practitioners who are themselves not trained in scientific methods.

Clarification of Terms

The Science Council (2020) in the UK provides a definition of a scientist as "... someone who systematically gathers and uses research and evidence, to make hypotheses and test them, to gain and share understanding and knowledge" (np). They add that this may be further defined by how they go about their work (such as through statistics or data), what they are seeking to understand, and where they are working. They also suggest there are 10 types of scientist, albeit this typology seems targeted at children considering careers: Business, Communicator, Developer, Entrepreneur, Explorer, Investigator, Policy, Regulator, Teacher and Technician. The Wise Campaign (2020), with a mission to increase gender diversity within scientific roles, extends the Science Council types and proposes that they are linked to personality types.

When used throughout this article, the word 'scientist' will be used to refer to those who have trained as researchers using established methods, experimental and otherwise, for the purposes of increasing knowledge. As Rogers (1961) describes the scientist-practitioner, they are "pursuing aims, values,

purposes, which have personal and subjective meaning for [them]" and they ask "How can I tell whether this tentative belief has some real relationship to observed facts?" (pp. 216-217).

'Practitioner' will refer to those who apply discovered or known principles professionally (e.g., in teaching, therapy, consulting, coaching, etc).

Personality of Scientists

A more precise psychology of scientists can be found by examining the latter's personality. Examinations of scientist personalities have occurred along three primary axes: the sorts of scientists who commit fraud, the sorts who are creative, and the practitioners who ignore the research upon which their practice is based. The audience drawn to the word 'research' in this journal's title will be interested in the second axis; the audience drawn to the word 'practice' will be drawn to the third. The audience in general is urged to avoid the first axis.

Personality of Scientific Charlatans

In September 2018, American philosopher Peter Boghossian and two colleagues wrote and submitted 20 bogus articles to academic journals. Seven were accepted without revision, seven required revisions, and six were rejected (with recommendations for review at other journals). Many of the articles - including "Human Reaction to Rape Culture and Queer Performativity at Urban Dog Parks in Portland, Oregon," which was published and then retracted by *Gender, Place, and Culture* - contained analyses of fabricated data. The school (Portland State University) later sanctioned Boghossian, but not for fraud. He was penalised for his failure to submit an application for ethical approval, and banned from conducting research at the school.

With his phony articles, Boghossian hoped to expose what he saw as a problem with falling standards in scholarly publishing - particularly in the field of gender studies. The Boghossian scandal is reminiscent of the Sokal Hoax from 1996. Alan Sokal published a satirical article in the academic journal *Social Text* (Sokal, 1996a). Sokal's article was "liberally salted with nonsense," and with it he hoped to expose "an apparent decline in the standards of intellectual rigor in certain precincts of the American academic humanities" (Sokal, 1996b, p. 62).

There is no consensus on the significance of the hoaxes in the scientific communities. Some argue that the submission of fabricated data and sham arguments is fraudulent (e.g., the university that employs Boghossian), while others see it as courageous satire with the intention of exposing the nudity of the emperor (which, in this case, is the apparatus of scholarly publishing).

Scientific scandals have been troubling enough to lead to at least one large-scale and grant-funded study. Tijdink, Bouter, Veldkamp, van de Ven, Wicherts and Smulders, (2016) explored the relationship between personality and scientist misbehaviour by subjecting 535 Dutch biomedical scientists to a battery of personality tests. They found that Machiavellian scientists (i.e., scientists who are deceptive and manipulative) were most likely to report having deceived and manipulated their participants, journal reviewers and editors, and grantors.

To the list of scandals in science and scholarship, medical and psychiatric quacks can be added, including the treatments sold by American early 19th century travelling mad doctors (later called alienists before they became nationally organised as psychiatrists (McGovern, 1976), and make-believe cancer cures (e.g., Bohannon, 2013).

The Personality of Good Scientists

While the ethical transgressions above are startling and severe, they represent the minority of scientists. With this we turn in the other direction, and look to the personality and qualities that make for good scientists, upon which volumes have been written. Here are a few scientist-practitioners who have reflected on the qualities of good scientists.

American therapist Carl Rogers regularly tested his person-centred and experiential therapies, and published his findings (*see* Rogers 1961 and 1980 for examples). For many decades, he also worked as a mentor and instructor for therapists-in-training. For training psychologists, Rogers writes that "[w]e should be selecting and training individuals for creative effectiveness in seeking out and discovering the significant new knowledge which is needed" (Rogers & Coulson, 1969, p. 170). He goes on to list autonomy, originality of thought, and scientific creativity as the qualities of an ideal scientist.

Fellow American humanistic psychologist Abraham Maslow (1969) lists the qualities of a poor scientist, which include among others a "compulsive need for certainty," impatience, inflexibility, "the inability to say 'I don't know,' 'I was wrong,'" and "intolerance of ambiguity," (pp. 26-29). Maslow lists 21 negatives in all. Qualities of the good scientist may be found in their opposites.

Scientist-Practitioner, Practitioner-Scientist, or Neither?

Ethical grey areas do remain, however, particularly in the helping professions where research informs practice. For centuries, it was standard medical practice to drain blood from the sick and dying, because doing so was consistent with the dominant medical model of the time (i.e., Humourism). Medicine,

however, has evolved, and infections are treated with Penicillin and antibiotics. The evolution would not have taken place had physicians paid no attention to their patients during or after treatment.

In medicine, research informs practice. A drug company tests the safety and efficacy of a COVID-19 vaccine on tens of thousands before it can be prescribed. In psychology, however, the precise direction of this relationship is less clear. Indeed, it might even be reversed - that is to say, practice informs research, which in turn informs practice, and so on. For this, a practitioner-scientist is needed.

American psychologist James Bugental (1982) presented a paper where he turns on its head the idea that the scientist provides the research and the therapist applies it. "[I]n clinical psychology, we have made more contributions to the body of psychological knowledge from the practitioner's end than have been received by the practitioner from the research investigators" (p. 565). This, however, does not mean that the therapist is free to practice at whim. It does not mean that anything goes. On the contrary, it means that the therapist must be ever more vigilant about the effectiveness of their practice. Therapists and clinicians must be researcher/practitioners or scientist/practitioners. They must ask "Are my clients getting better?" and "How would I know they weren't?" Indeed, these are the questions Eric Berne has left us in his final speech. He explains the world of the therapist as: "There's just two people - that's all there is. And two chairs for comfort. … So a real psychotherapist's problem is: What do I do when I'm in a room with a person who is called a patient if I am called the therapist" (Berne, 1976, p. 16). Such is the laboratory of the therapist.

Rogers integrated practice and research the way Bugental has described, just as Sigmund Freud (1910) and Kurt Goldstein (1934/2000) had done before him. In a candid reflection, Rogers (1980) explains how he was initially impressed by the apparent helpfulness of therapeutic techniques. But then he recognised how the same problems soon resurfaced in the lives of his clients. He continued to examine his results, make changes, and examine results until he found what worked. For Rogers, the solution was unconditional positive regard. Were Rogers to have continued using therapeutic techniques without examining their effectiveness on clients, he would be doing the latter a grave disservice. Judging from the impact his approach to therapy would have on the community of practitioners, he would also have been doing a grave disservice to the fields of clinical and counselling psychologies.

Disinterest in Research

Historically, there has been disinterest in research, although that is changing within the transactional analysis community, as evidenced by this journal and also a requirement that TA training and examination processes include familiarity with the conduct and application of research. However, there is still sometimes an apparent allergy to research.

In the past, Zachar and Leong (1992) found diametrical opposites when comparing personalities of psychological scientists to psychological practitioners. The scientists were more objective and rational than practitioners, and the practitioners were more subjective and tolerant of ambiguity than the scientists. Of the 205 psychologists who were studied, the majority identified as *either* scientist or practitioner - *few identified as both* (i.e., scientist-practitioners).

20 years later, Mark Widdowson (2012) investigated practitioner disinterest in science among transactional analysts. He learned that TA practitioners feel as though they "don't know enough about research"; they find it "complex, boring, and time consuming" but also "important"; and they will do it if "taught about practical research methods"; if "it is practical… and interesting"; and if they "will benefit from doing it" (pp. 182-184). In his article, Widdowson draws on nearly 30 years of scholarship on psychological-practitioner disinterest in research. He cites, for example, Marrow-Bradley and Elliott's (1986) six explanations which boil down to: research is irrelevant to practice and is therefore a waste of time.

Also in the past, and complicating the relationship between research and practice still further, are the personality profiles of scientists and practitioners. Feist (1994) interviewed 99 full professors of physical and human sciences at prominent research universities, and found that scientists who think complexly (their word) about research are hostile and exploitative, whereas scientists who think complexly about teaching (i.e., practice) are warm and gregarious. This divide can be seen in the reception of Rogers' voluminous contributions to psychological science: practitioners were ambivalent about what were, to Rogers, his biggest scientific contributions; and psychological scientists were ambivalent about his contributions to therapy (excluding him from a list of scientific contributions). These he reported in a retrospective essay (Rogers, 1980, pp. 46-69).

The Issue: The Scientist–Practitioner Divide in Psychology

Hidden beneath the scientist–practitioner divide is the question of who is responsible for developing models of health and well-being upon which therapies are based. Is it the scientists who, using the polemic derived by Zachar and Leong, are interested only in statistical analyses? Or is it the practitioner who has no interest in research? Of the first option, Berne (1966) reminds us how "[i]t has long been suspected

in clinical psychiatry that a therapist who starts out with the idea of making statistics will obtain different results from one who does not initially have that in mind" (p.193). About the latter, Berne cautions against using *ex post facto* logic - that is, inventing an explanation after something has occurred in therapy. For this he gives an example of how easy it is to arrive at impressive sounding yet contradictory explanations (pp.186-187).

By examining scientist types, the reader is encouraged to keep the scientist–practitioner divide in mind, and to recognise the importance of each. Scientists of different types can produce equally rational arguments and conclusions, yet still find themselves at odds with one another. Berne (1966) gives the example of thoughtful therapists designing a study on juvenile delinquency. One group vied to protect society from delinquency and another to save the delinquent from society, and so on (p. 189). A scientist typology will be useful in understanding such differences.

The typology which follows provides 14 types of scientist and is intended as a model for understanding the similarities and differences between them. Kuhn, for example, is careful to explain that Normal and Revolutionary scientists are both important, although from his descriptions it is clear which is his favourite. With the typology presented here, the author has three objectives: to identify the admirable (and less so) qualities of each type of scientist; to compare scientists, practitioners, and scientist-practitioners in psychology; and to have a bit of fun.

The typology has been developed by the author using the model of ego states and methods of analysis as they have been outlined by Eric Berne in his work on TA (Berne, 1961, 1964). This tool will be useful for interpreting claims made about the practice of science, claims that would otherwise be ambiguous. This will be demonstrated using Paul Feyerabend's infamous quip, that the only rule in science is that "anything goes." The typology will be described and diagrammed. It will then be used to interpret the breadth of impact of Feyerabend's quip.

Typology of the Scientist's Ego States

Using the TA concept of ego states, the scientist's personality can be diagrammed in three basic forms with variations. They are:

1. Integrated Parent, Adult, Child (with variations in emphasis) (*n*=1)
2. Contaminated Adult: Parent and Child Varieties (with and without exclusion) (*n*=8)
3. Single Ego State with Dual Exclusion (Parent, Adult, and Child varieties) (*n*=5)

Integrated PAC Scientist

The scientist with integrated ego states has Parent, Adult, and Child available, and benefits from each. The Child is creative, curious, spontaneous, and intuitive; the Adult is methodical, rational, and empirical; the Parent is systematic and knows how and for whom the game is played.

The integrated scientist may shift from one ego state to the next depending on which is most beneficial. The Adult has to emerge if work is to get done, the bossy Parent formats references, and only the Child can leap from a bathtub with an epoch-shaking insight. This is the well-rounded and integrated personality of the scientist-practitioner and practitioner-scientist who sees research as more than a feather in the cap and practice as more than the unreflective application of techniques.

To determine which ego state is favoured, the scientist's objectives must be examined. The Parent is eager to demonstrate expertise; the Adult eager to solve a problem or produce something; and the Child to have fun.

The integrated PAC scientist is diagrammed in Figure 2, and is the familiar three stacked circles of Berne's structural model, although described here in terms of behaviour as well as internal motivation.

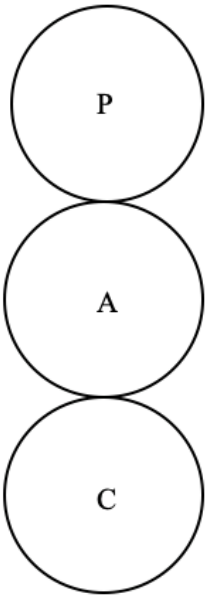


Figure 2: Integrated PAC Scientist

Contaminated Adult Scientist

History reveals, however, that not all scientists have integrated ego states. This unhappy fact is responsible for many inter- and intra-departmental scuffles, methodological squabbles, and hair-raising comments from reviewers of scientific articles (D'Andrea and O'Dwyer, 2017).

When factions emerge, they can usually be traced to crossed transactions. The most common is when the Prejudiced Parent-Adapted Child is met with the identical response, as in "You're wrong!" "No, *you're* wrong." This transaction summarises Galileo's break from the Church, Einstein's break with modern physics, Jung's break with Freud, and so on. The PC-AC/PC-AC crossed transaction is only an issue when scientists have a (Prejudiced) Parent-contaminated Adult, which can occur with or without excluded Child. Were crossed transactions of this sort never to occur in science, however, there would be no variety and no revolution.

The Adult scientist can be contaminated with Parent (Figure 3.a) or Child (Figure 3.b). The scientist with a contaminated Adult is foremost Adult - making observations, solving problems, and so on, but contamination by Parent results in narrowed vision while contamination by Child results in a desk full of research proposals and unfinished manuscripts.

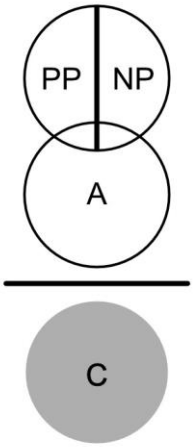


Figure 3.a: Parent-Contaminated Adult (with excluded Child)

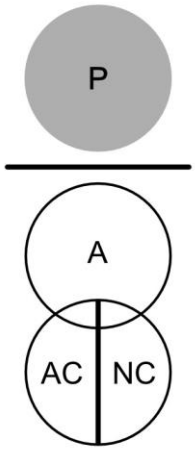


Figure 3.b: Child-Contaminated Adult (with excluded Parent)

Parent-contaminated Adult

The scientist with a Parent-contaminated Adult comes in four types: Prejudiced or Nurturing Parent, each with or without exclusion. This is diagrammed in Figure 3.a (shown with excluded Child).

Prejudiced Parent-contaminated Adult - This scientist makes observations, designs studies, and applies knowledge, but does so with the manuscript already written. Often sponsored by industry bodies or corporations, the prejudiced Parent has begun with the end already in mind. Into this category falls the Machiavellian scientists described by Tijdink, et al. (2016) who exploit others to their benefit.

Nurturing Parent-contaminated Adult - This scientist cultivates the next generation of scientists, and is found training graduate students, writing textbooks, and/or organising conferences to the neglect of their research. It is also the psychological practitioners who have no interest in research, who were described by Widdowson (2012) and Zachar and Leong (1992).

There are two variations of each. With excluded Child, the scientist is cheerless. Without excluded Child, there is the reward of good feelings (Natural Child) or the reward of pleasing mother who may be a dean, supervisor, or organisation (Adapted Child). Into this category falls William Whyte's (1956) organisational scientist, who concentrates on practical application of previous ideas rather than discovery of new ideas, and about whom Whyte wrote that "science means applying ideas; knowing *how,* not asking why" (p. 205, italics in original).

Child-Contaminated Adult

The scientist with a Child-contaminated Adult follows their intuition, takes risks, and is either indifferent (Natural Child) or dis/obedient (Adapted Child) to authority.

Adapted Child-contaminated Adult - This scientist experiences imposter phenomenon (Clance, 1985), and is more comfortable working as research assistant than as primary investigator. Dissertations take ten years but are completed, and the scientist never ventures far from their mentor's work.

Natural Child-contaminated Adult - This scientist is driven by intrinsic motivation. They follow hunches and take risks. Though exciting and inspiring in practice, the unfinished manuscripts begin to pile up and must be taken to the press posthumously by a dedicated family member or student.

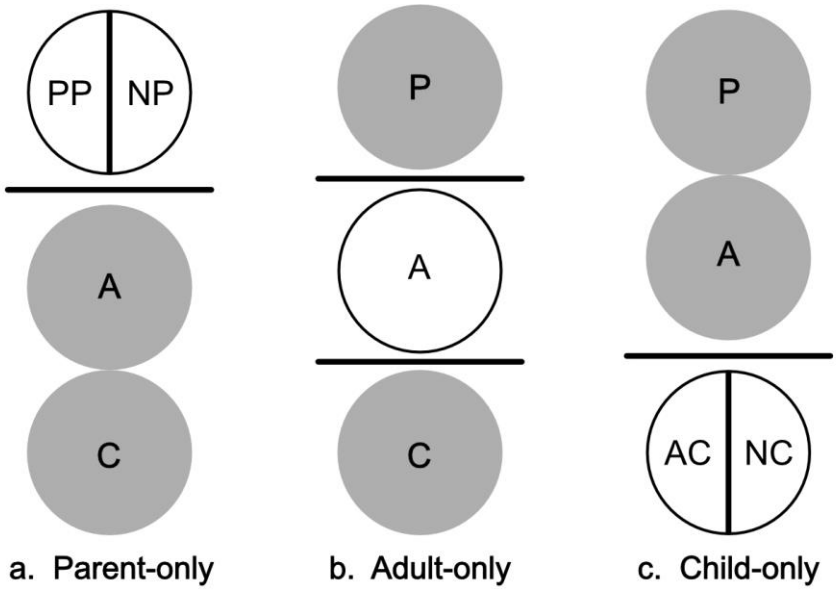
Single-Ego Scientist

The final ego-state category is unlikely in practice, but helpful for understanding and differentiating between preceding variations. It is the scientist with a single ego state with double-exclusion, and comes in three variations (Parent, Adult, or Child).

Parent-only Scientist - The Parent-only scientist is diagrammed in Figure 4.a, and comes in two forms. Both repeat the teachings/findings of a mentor (who is viewed as an infallible sage) or boss-person (e.g., Provost or grant signatory). The Prejudiced Parent-only does so through publication and the Nurturing Parent-only does so through teaching or practice. Both say "I have all of the answers and nothing left to learn."

Adult-only Scientist - The Adult-only scientist is diagrammed in Figure 4.b, and is typified by Alfred North Whitehead's (1958) pure positivist as one who observes the bee alighting on the blossom and nothing more.

Child-only Scientist - The Child-only scientist is diagrammed in Figure 4.c, and comes in two forms.



a. Parent-only

(P)P: “It is as Plato said.” (Written)
(N)P: “It is as Plato said.” (Lectured)

b. Adult-only

A: “A bee has landed”

c. Child-only

(A)C: “I don’t know”
(N)C: “This is fun”

Figure 4: Scientist with Single Ego State

The Adapted Child-only scientist stands in the laboratory in paralysed fear, worried that the microscope will collapse if touched. The Natural Child-only scientist uses the microscope to smash bugs. It is exemplified by Felix Hoenikker, the fictional scientist from the novel *Cat’s Cradle* by Kurt Vonnegut (1963). Hoenikker plays with scientific instruments the way children play with their toys. His employers gave Hoenikker machinery and radioactive materials, and he invented the atomic bomb. Had he been given milk and an icetray, he would have invented soft-serve ice-cream.

Applying the Typology of Scientists to a Case

Feyerabend's quip that the only rule is that “anything goes” (1975, p. 7) was met with exasperated sighs from scientists and scholars whose Prejudiced Parents were in control (see Figure 3.a). Feyerabend (2010) was later forced to revise his statement, limiting its impact.

A transactional analysis of the comment (and its effects) will reveal the full significance of Feyerabend’s observation and, by extension, also reveal the variety of motivations held by some scientists. It will be used to examine the divide between scientists and practitioners in psychology.

The stimulus “Anything goes in science” is at once the opening move of three transactions: Child – Child, Adult – Adult, and Parent – Parent. It is diagrammed in Figure 5. To grasp the full weight of the comment, each must be analysed.

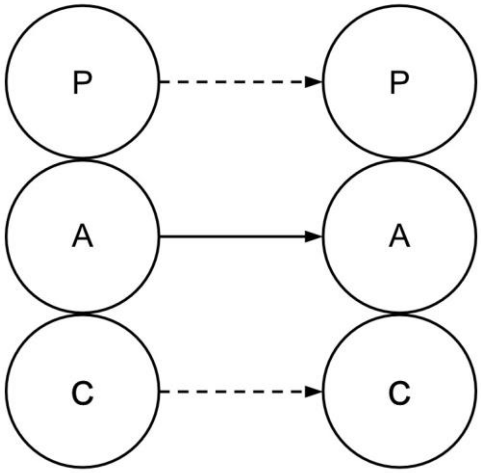


Figure 5: "Anything Goes" Transactional Diagram
Parent–Parent. Psychological Level. (“Scientists shouldn’t take themselves so seriously”)
Adult–Adult. Social Level. (“It seems to me that anything goes”)
Child–Child. Psychological Level. (“No rules!”)

The stimulus “Anything Goes” accomplishes three objectives. At the social level, “Anything goes” is the opening move in an Adult – Adult transaction (“It seems to me that anything goes”). This is represented in Figure 1 as the solid line. Two ulterior or psych-

ological level transactions also occur, represented by the dashed lines: Feyerabend's Child ("No more rules!") and Parent ("Scientists shouldn't take themselves so seriously").

Child – Child

"Anything Goes" may be understood as an expression of Feyerabend's Natural Child. The Natural Child is comfortable following intuition and creativity. It is spontaneous and curious. It says "This is fun" and "I can make of it whatever I want." It gets its hands dirty hunting for lizards and bugs, and does so with full endorsement from Mother (e.g. the sponsoring organisation, university, or institution).

While Natural Child strokes are obtained by following desire ("This looks fun, I think I'll do it"), game-play can easily and quickly evolve. The boundaries of play can be pushed until 'Mother' is forced to put her foot down ("Cops and Robbers") or play can become increasingly reckless until the fMRI machine is broken ("Kick Me!").

The comment was first made in dialogue with Feyerabend's friend, Imre Lakatos (published later as Lakatos & Feyerabend, 1999), who believed that the scientific method could be summarised using rules. In the context of their relationship, "anything goes" in science was a playful jab at Lakatos.

Sample Child – Child Transactions

> Child 1: "No rules"
> Child 2: "Hurray!"
>
> Child 3: "Let's see what we can get away with this time."
> Child 4: "They'll be so mad!"
>
> Feyerabend: "You're an idiot."
> Lakatos: "No, *You're* an idiot."

Adult – Adult

It is clear from Feyerabend's bibliography that "Anything goes" is not whimsical, but the result of serious study. Neither Child nor Parent are interested in using evidence to support opinion. The Child is entitled to its feelings, and to hell with everyone else; the Parent's opinions are beyond question and confirmed by everybody (as in "everybody *knows* scientists are too serious"). Feyerabend wrote books and articles and gave speeches where he outlined his reasoning. Such effort is uniquely Adult.

Elsewhere, but particularly in *Against Method*, Feyerabend (2010) supports his claim that, in science, anything goes.

"[O]ne of the most striking features of recent discussions in the history and philosophy of science is the realization that events and developments, such as the invention of atomism in antiquity, the Copernican Revolution, the rise of modern atomism (kinetic theory; dispersion theory; stereochemistry; quantum theory), the gradual emergence of the wave theory of light, occurred only because some thinkers either *decided* not to be bound by certain 'obvious' methodological rules, or because they *unwittingly broke* them." (p. 7) (italics in original)

Each scientific discovery Feyerabend lists is well-known, although it would be wrong to categorise them together into one homogeneous science. Each scientist broke with scientific convention in order to resolve problems they faced. Feyerabend observes that "This is not just a *fact* of the history of science. It is both reasonable and *absolutely necessary* for the growth of knowledge" (p. 7; italics in original)

Feyerabend (1970) emphasises how important it was to the development of science for these revolutionary scientists to be amateurs. Indeed, it could not have been any other way as the methods upon which they would ultimately depend had not been invented. Thus the amateur scientist is, to Feyerabend, the exemplary scientist.

Sample Adult – Adult Transactions

> Adult 1: "Archimedes relied on his intuition to solve his problem."
> Adult 2: "A famous discovery, yet such intuition is besmirched today as unscientific."
>
> Adult 3: "Galileo and Einstein used personal pronouns and observations in their reports."
> Adult 4: "That would likely be at odds with editors of scientific journals today."
>
> Feyerabend: "It seems that anything goes."
> Lakatos: "Could you show me?"

Parent – Parent

If Feyerabend's hero is the amateur scientist, then his villain is the expert. The expert is the scientist ruled by the Prejudiced Parent. Experts wield their expertise like an axe, swinging at anything resembling a tree. And, for the expert, everything looks like a tree.

Experts are easy to spot because they have the best methods and answers and policies and insights and so on. This is confirmed by virtue of their expertise. Anyone who disagrees with an expert is guilty of lack of expertise (P–C). There is no disagreeing with an expert. Only an expert can understand what an expert is doing.

Controlled by the Prejudiced Parent, the expert is limited in their observations. Only those observations which fit into the approved narrative are acceptable. The expert "has decided to subject [themselves] to standards which restrict [them] in many ways" (p. 389).

When Feyerabend says "anything goes," it is also as a Parent to another Parent. It is the opening move of

"Ain't it Awful?", which is a common pastime between Parents. Feyerabend's Parent is communicating that expert scientists have abandoned science and ought to be admonished.

Sample Parent – Parent Transactions

> Parent 1: "Scientists shouldn't take themselves so seriously."
> Parent 2: "They're being ridiculous."
>
> Parent 3: "Scientists ought to be more spontaneous."
> Parent 4: "Are they competing with undertakers?"
>
> Feyerabend: "Scientists shouldn't take themselves so seriously."
> Lakatos: "Science must be taken seriously" (P-C, P-C crossed transaction)

Discussion

Feyerabend's Amateur Scientist

It is clear that, for Feyerabend (1970), the exemplar scientist must leave room for the Natural Child. He most esteems scientific writing that appeals to the Child, for which he gives examples from Galileo, Newton, and many quantum physicists. Such scientists are creative, exciting, and fun. But this does not mean that these scientists lack Parent. To write in the casually elegant manner of the quantum physicists takes great discipline, as William Zinsser (2006) has explained of all great writers.

Kuhn's Normal Scientist

Feyerabend was not alone in his gripes about expertise in science. Kuhn (1962), the reader will remember from the introduction, has called expert scientists Normal Scientists. The creative amateur scientists he called Revolutionary Scientists. We can now say that so-called Normal Scientists have a Parent-contaminated Adult. Normal scientists are learned in the methods of their fields, but are thereby limited from the breadth of conflicting insights and observations. Like Democrats and Republicans discussing an item in American politics, experts talk past one another in P–C/P–C crossed transactions. The physicist says the helium atom is a molecule. The chemist says it is an atom. Around and around they go.

Revolutionary scientists have a Natural Child-contaminated Adult. They see points of departure, think outside of the (Parental) box, and take risks. In order to develop a research community, however, Revolutionary scientists must develop into Normal scientists - that is, they must shed Natural Child for Prejudiced Parent.

Maslow (1969) magnifies the differences between Normal and Revolutionary scientists in his metascientific treatise. If Kuhn is hard on Normal Scientists for being slow to change their ways, then Maslow is unforgiving (P-C: "You're doing it wrong.")

Inevitability of the Prejudiced Parent – Contaminated Scientist

A world where revolutionary and amateur scientists are in control is unlikely. A new scientific breakthrough, discovery, or revolution always begins with the creativity, enthusiasm, and spontaneity of the Child. But in order to test hypotheses, clarify procedures, and get any work done, the Adult must emerge. As the community grows, a government evolves and with it rules, policies, and regulations. Members of the community must follow the rules or else the community will splinter and fall apart.

Stephen Karpman (1975) has diagrammed the development of an idea/method/revolution/ organisation from Child to Parent in his Parent Percolator An idea begins unformulated, uncertain, and unclear as a Child's playful observation. This germinates into a clear and fine-tuned procedure of the Adult. With clarity comes systematicity, rigor, and common language of practice. Finally, the bureaucrat (Parent) emerges.

Limitations

With any tool that has been derived from a psychotherapeutic method, there is a risk that the tool will be used to overly criticise some and sing praises of others. The purpose of this discussion of science is to better understand ourselves as scientists, scholars, educators, and practitioners.

Please note also that the author has no wish to promote a psychological ethic in the practice of science. Each ego state has its strengths and weaknesses, upsides and downsides.

Though it is easy to conjure an Adult-only scientist who is bereft of Child, who is dedicated to neutral observation, and who sees Others as de-identified units of data, finding one is another story. Philosopher of science Michael Polanyi (1974) has demonstrated that even the rational objectivity of the experimenting scientist finds its roots in the scientist's subjective awareness. The Child is inescapable. So, too, with the Prejudiced-Parent-only scientist (or practitioner) who is incapable of making observations about what seems to be working and what doesn't. Such a scientist or practitioner would have to be unimaginably dense or short-sighted.

What we find instead are scientists and practitioners who temporarily allow wishful thinking and imagination to eclipse perception, or in whom fear of failure or punishment temporarily interrupt awareness. By recognising these moments and addressing them, greater PAC integration is achieved.

The author suspects that the Scientist–Practitioner divide in psychology is less opposite sides of a cavern, and more two sides of a hill. That is to say, the scientist and practitioner are working *towards* the other and on the same problems.

Conclusions

Although the typology developed by this author has been of scientists, the readers of this journal are more likely to be practitioners, albeit that the current professional norm has become researcher/ practitioner. In the spirit of fun within which the typology was originally developed, readers might like to consider where they may fit within the following summary of the 14 types when applied to practitioners:

1. Integrated PAC – how well are you combining your expertise, your problem-solving ability, and your fun (or enthusiastic enjoyment) within your work?
2. Prejudiced Parent-contaminated Adult – how much do you rely on knowing what Berne said?
3. Prejudiced Parent-contaminated Adult with excluded Child – how serious are you as a practitioner?
4. Nurturing Parent-contaminated Adult – how much time do you spend teaching your own version of TA to others?
5. Nurturing Parent-contaminated Adult with excluded Child – how serious are you as a practitioner?
6. Adapted Child-contaminated Adult - how long did it take you (or is it still taking you) to be ready to take your TA examinations?
7. Adapted Child-contaminated Adult with excluded Parent - are you avoiding accepting any role modelling?
8. Natural Child-contaminated Adult - how often are you getting excited by non-TA approaches before you have attained sufficient TA competence?
9. Natural Child-contaminated Adult with excluded Parent - are you challenging any potential role modelling?
10. Prejudiced Parent-only – Adult and Child excluded – are you concentrating on publications rather than practice?
11. Nurturing Parent-only – Adult and Child excluded – are you concentrating on teaching rather than practice?
12. Adult only – Parent and Child excluded – are you so focused on analysing that you are forgetting the significance of relationship?
13. Adapted Child only – Parent and Adult excluded – are you worrying about getting things wrong in the opinions of others?
14. Natural Child only – Parent and Adult excluded – do you think the norms of the profession are too serious and it should be more fun?

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