

TF Torrance

'The Integration of Form in Natural and in Theological Science',
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also in same journal, another on the Thought of Michael Polanyi and the
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'Ultimate Beliefs and the Scientific Revolution'

Cross Currents, vol.1.xxx, 1980, New York, pp??

HERETIC: Quasar Maverick May Lose Access to Observ

from First Page
hat, but there are other aspects as well.

far from the mainstream field can a scientist wane he has effectively cut from his colleagues?

confident can any group discipline be that their grasp of truth is stronger than fellow who just happens to be right? To be sure, there are a series of scientists who in an unfashionable theory at hand who later were proven to be nearly correct than their many critics.

criteria do committees, in allocating resources, judgment on the adequacy of their colleagues' proposals?

Shift Controversy'

ux of the issue that has Arp, the members of the Location Committee (as the three Hale and three Caltech astronomers is known), and directors of the Hale observatories and of Caltech's Palomar Observatory, to this juncture

is the so-called "Red Shift Controversy."

"Red shift" refers to the apparent change in the frequency of a light or sound wave given off by a moving source. If the source is moving toward an observer, the frequency of the wave will seem to be shifted toward the blue end of the electromagnetic spectrum; if the source is moving away, the shift will be toward the red end of the spectrum.

Astronomers have known for more than 50 years that the light from other galaxies is red-shifted. This means that all galaxies are receding from both ourselves, tucked away in our own Milky Way Galaxy, and each other; this finding has become the basis for the concept of an expanding universe.

In the early 1960s, astronomers stumbled onto quasars—bright, mysterious objects that seemed to have most of the properties of a galaxy crammed into the volume of a large star. Most had very large red shifts, which indicated that the quasars were very distant objects, far beyond most galaxies.

Astronomers theorized that qua-

sars are fantastically energetic objects—perhaps the nuclei of galaxies during the earliest, most violent phases of a galaxy's evolution—that were created shortly after the universe had begun to expand from its "Big Bang" start.

Findings Reinforce Theory

Subsequent findings in recent years have tended to reinforce this theory. It is, in fact, the most widely accepted explanation for quasars among astronomers today, except for Arp and a small circle of his supporters.

Arp has found several dozen instances where a galaxy and one or more quasars all seem to be cheek-by-jowl in the same tiny patch of sky. Some even appear to be joined by a luminous bridge of gas or dust.

And yet the galaxies have comparatively low red shifts while the quasars typically have much higher values. If you interpret the red shifts according to conventional astronomical wisdom, Arp says, you must conclude that the galaxies are fairly close to us and the quasars far, far away—and yet here they are, joined together like Siamese

twins. How can this be?

Arp argues that the red shift of the quasars in these odd-couple pairings is illusory, caused *not* by the fact that they are streaking away in the cosmic hinterlands at very high speeds, but rather by some intrinsic properties within the quasars.

One possibility he has raised is that the quasars are "blobs" of matter ejected from the center of their associated galaxy, blobs so dense that their density distorts the light they are emitting and makes them appear to be farther off and faster than they really are.

If Arp is correct in this contention, then a great deal of modern astronomy is badly wrong.

Roundly Criticized

Arp has been roundly criticized by his colleagues for his heretical ideas. Other astronomers say they have looked at some of his cosmic odd couples and cannot find clear evidence for his bridges connecting galaxies and quasars of discrepant red shifts.

Instead, they argue that Arp's galaxy-quasar pairings really are as

different in space and in velocity as their red shifts indicate, but appear to be neighbors because they happen to fall more or less along the same line-of-sight.

Arp admits that this alignment could explain one of two such "associations," as he refers to the pairings, but not several dozen. "Statistically," he said, "the odds against finding so many associations that are just accidental alignments are absolutely staggering."

The argument has gone on between Arp and his fellow astronomers for a decade. It was at first exciting and stimulating because, as one astronomer put it, "quasars were new and exciting and stimulating and there wasn't a whole lot of evidence in hand that would settle these questions one way or the other."

The situation is different today, at least as far as many astronomers are concerned. A little more than 2,000 quasars have been identified and a few hundred of that number have been studied intensively. The majority view is that quasars are extremely distant and are echoes of a

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For the last few years, Arp and his peers have cohabited under the same professional roof as uneasily as a couple whose marriage is rapidly disintegrating. Indeed, the Time Allocation Committee's advisory to Arp, written last November but not known outside astronomical groups until last week, could well be considered a separation notice.

In a single page statement, addressed to George W. Preston and Gerry Neugebauer, the directors, respectively, of the Hale Observatories and the Palomar Observatory, the committee said that it regarded Arp's research projects as lacking focus and specific goals.

Wanting to avoid the appearance of suppressing an unorthodox view, the report continued, the committee had been allocating Arp generous blocs of observing time on the Hale and Caltech telescopes over the years, even though the members unanimously felt that there was little scientific merit in doing so.

The committee said, finally, that it would give Arp time again this year (1982) in consideration of his senior

'He enjoys much wider respect elsewhere than . . . in his own backyard.'

standing in the community, but that it might be the last such grant unless Arp made substantive changes in his research goals.

Arp, widely known by the nickname "Chip," admits that he feels wounded by the committee's comments about his work—and the pained look on his face and his nervous pacing of the floor during a recent interview clearly testified to the hurt.

'Particularly Upsetting'

"What was particularly upsetting," he said, his brow knotting into an unhappy frown, "was their statement that they couldn't see where (my) research is leading."

The distance that separates Arp and his colleagues has grown quietly, civilly and without any personal unpleasantness on anyone's part. For all that, relationships that were relaxed and playful just a few months ago are today strained. Now, when Arp and one of the committee members happen to cross paths in the carpeted hallways of the Hale Observatories headquarters building, they exchange little more than curt nods.

The criticism leveled at his work has put a lot of pressure on him, Arp said, even as he is trying to get ready for this year's observing. He said he is not losing sleep over the criticism, but he does find it distracting as he plans for those upcoming nights.

Arp refused to speculate about next year. He might be granted a few nights of observing time, although almost certainly not as many as he has received this year. Or the committee could make good its warning and deny him any time at all.

If the latter happens—or as Arp himself put it, "worse comes to worse"—he could apply for time on other American and foreign telescopes. Many of his colleagues think Arp would have no difficulty winning time at, say, the European Southern Observatory located in Chile. "He enjoys much wider respect elsewhere than he does in his own backyard," said one.

But the Kitt Peak National Observatory in Tucson, Ariz., has previously rejected Arp's requests for time, despite the fact that Geoffrey Burbidge, the director of Kitt Peak, is a personal friend and a vigorous, even outspoken, supporter of Arp's challenges to conventional wisdom in astronomy.

Many astronomers believe . . .

"You realize that they've isolated themselves," this professor said, "when you recognize that the position that they have staked out for themselves is a discordant one, one that doesn't make too many connections to other findings in their own field."

Other, less reliable indices of a scientist's isolation are the number of citations to his research that crop up in other scientists' papers and the numbers of graduate students or post-doctoral fellows who apply to the scientists for further training. In both cases, Arp has not fared too well.

"I don't know about post-docs," said a physicist. "Einstein didn't have many students and those who did work with him didn't enjoy it much. Citations are a better index, but far from a perfect one."

As for the confidence with which committee members hand down recommendations, like the advisory to Arp, another physicist-astronomer said that such decisions are reached only after a great deal of self-doubting and reappraisal. "No committee member is ever 100% certain he's right," said this man. "Everyone is aware of cases where a scientist regarded as 'wrong' later proved to be 'right.' It boils down to this: You make a judgment and you simply do the best you can at that time and place."

Membership Changes

As for the criteria that scientists use in judging each other's work, Preston noted that the membership of the Time Allocation Committee changes periodically so that any possible biases, for or against a particular colleague, tend to be averaged out over the years. Here again, Arp came up a little short.

"He's been advised (that his work has become repetitive) not only by this committee," Preston said, "but also at other times by individual friends, privately."

The Hale and Caltech telescopes are over-subscribed and not all requests for observing time can be fulfilled, he added. And should he and Neugebauer decide later this year that Arp's proposals are not as scientifically competitive as those of other astronomers, Preston indicated that Arp might well have to seek time from other observatories in the United States and abroad.

Would such an action discourage younger astronomers from striking out on bold new lines of inquiry? Quite the opposite, replied Preston and others to whom this question was put; they might be discouraged if they

Astronomers

see their own requests denied while those in some general disfavor continued to be given telescope time. At the moment, all parties are trying to remain as quiet as possible and avoid taking positions that might prove difficult to defend later this year when the final

resolution has to be made. "From time to time, I say to myself: Arp, are you right?" the astronomer said. "I go back and check my results and review the evidence and try to make a fresh, unbiased conclusion. So far I've always concluded that I've been right."

There is nothing immodest or self-deceptive about that assessment. But many of Arp's colleagues are undoubtedly saying nearly the same thing to themselves.

Astronomers Warn Maverick

Quasar Heretic May Lose Access to Observatories

By GEORGE ALEXANDER, Times Science Writer

For the last 15 years or so, astronomer Halton C. Arp of the Hale Observatories in Pasadena has doggedly pushed his contention that quasars—those very bright, energetic and baffling objects that appear to be at the farthest fringes of the universe—are not all that they seem to be to so many of his fellow astronomers.

Because he has persistently

nas, Chile, telescopes has advised him that, unless he either proves his case or takes a new research tack, he might not be granted time at those facilities after this year.

Such a move, if it happens next November when the committee meets to assign telescope opportunities for 1983, would jeopardize Arp's career just as much as the loss

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principle can not itself be verified is by now one of the slightly worn points in graduate seminars. Further, it is not merely a methodological assumption, but contains a hidden metaphysics—and they are the most dangerous metaphysics of all!

• Finally, there is the related question of philosophical responsibility—what have been called “the breakdown of philosophy” and its sterility point to something worse than trivializing. What American philosophers, from James forward, were trying to do was to go beyond the clarification of language and meaning to show how philosophy may make meaningful and justificatory statements in the spheres of ethics, aesthetics, politics, education—even metaphysics as a description of the generic traits of reality. If linguistic analysis is to assist American philosophy, it must become more aware of the rich history of philosophy and of its social responsibility.

Existentialism

Of the other prevailing school of philosophy, existentialism, one can be quite brief without being superficial.

• Like linguistic analysis, existentialists and phenomenologists are protesting philosophy as they knew it. They rebel against the abstractions of rationalism and idealism, and equally against the reductionism and narrowness of the positivists and analysts. Philosophy which is aseptic is usually insipid.

• Existentialism, as Paul Tillich always stressed, is not a set of doctrines, but a manner or way of philosophizing. Proof of this is contained in any table of contents of a text on existentialism—Sartre on meaninglessness and atheism is juxtaposed to Marcel on creativity and faith, while Camus on absurdity stands beside Tillich or Buber on authenticity and meaningfulness. Hence, again like linguistic analysis, one deals with an alleged methodology or manner devoid of commitment or pre-specified content—or does one?—this is again a question. Philosophers should observe and describe, but they should (as American philosophers have in the past!) inform and guide.

• Granted that man, his nature and his destiny, has, since the Greeks, been a central, but now neglected, concern of philosophy, what justification is there for forcing philosophy into the categories of alienation and anxiety, of nothingness and dread? Why are these moods and experiences the clue to understanding human existence any more than others? It was said of Kierkegaard that, with the sun of Denmark streaming through his window and the beauty of its women all around him, he pulled down his shade and wrote of fear and trembling. Put differently, do not the terms employed by existentialist philosophers tell us more about the philosophers and their loneliness than about man and the sweep of his experiences?

• Existentialists resent, often for good reasons, the analysts' and scientists' preoccupation with objectivity, pure reason, and presumed value-free study, but their own call for passionate commitment is alarming. If the language analysts abhor decision, involvement, and the

plea for relevance, what is to prevent existentialist philosophy from making Decision king? The world has suffered enough at the hands of those who, rejecting reason, engage in affirmation and action.

An Option?

Both prevailing schools of philosophy—linguistic analysis and existentialism—offer American philosophers ways of doing their job. Both ways combine advantages and disadvantages, opportunities and dangers. The trouble is, both movements contain a paradoxical weakness. On the one hand, they express a distressing neutrality concerning the perennial problems of philosophy; on the other hand, depending on what philosophers one cites, they contain a frightening subjectivism and arbitrariness concerning those same problems. One interesting suggestion can be made on the basis of a hitherto neglected feature of American philosophy. Pragmatism in America anticipated the main thrusts both of linguistic analysis and of existentialism, and embodied them in a different context. Thus, James' “What Pragmatism Means,” Charles S. Peirce's “How to Make Our Ideas Clear,” and a host of additional essays stressed conceptual clarity, but never merely for the sake of analyzing—mistaking the tool for that for which it was intended—which tends toward sterility. On the contrary, they aimed at employing the process of clarification in the whole range of inquiry, from scientific and philosophical thinking to everyday life and work. Pragmatism also recognized the importance of the individual *person* and his role as a person in perception and experience. However, neither Peirce, James, nor Dewey fell into the trap of subjectivity so characteristic of much existentialism. Rather, they achieved a kind of relative objectivity, recognizing at once both the fact that perspectives are, to a degree, chosen, but also that there are objective and rational tests for all claims to knowledge.

There may be untapped resources, therefore, in American philosophy for wrestling in a distinctive and responsible way with the basic issues in philosophy. It remains to be seen whether these or new ways will be used.

Notes

¹ Charles W. Kegley, “In Defense of American Philosophy,” *Worldview*, November, 1973, pp. 49-53.

² Ernest Gellner, “Reflections on Philosophy, Especially in America,” *Worldview*, June, 1973, p. 49.

³ Harvey Gates Townsend, *Philosophical Ideas in the United States* (New York: American Book Co., 1934). See pp. 3-5 and chapters 1-9.

⁴ Herbert Schneider, *Sources of Philosophical Realism* (Indianapolis, Ind.: Bobbs-Merrill, 1962), p. xvi.

⁵ A.J. Ayer, et al., *The Revolution in Philosophy* (London: Macmillan, 1957).

⁶ Gilbert Ryle, *Plato's Progress* (Cambridge, England: Cambridge University Press, 1966).

⁷ H.D. Lewis, ed., *Clarity Is Not Enough* (London: George Allen & Unwin, 1963). See, also, A.C. Ewing, *Non-Linguistic Philosophy* (London: George Allen & Unwin, 1968).