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PSYCHIC ORIGINS IN THE FUTURE

By Brian Martin

CONTENTS

PSYCHIC ORIGINS IN THE FUTURE

Brian Martin 1

OBITUARIES

Louisa E. Rhine 8

Arthur Koestler 8

1983 SERPA CONFERENCE REPORT

Debra H. Weiner 10

BOOK REVIEW

Intrusions: Society and the Paranormal by Hilary Evans
Reviewed by Seymour Mauskopf 15

PARASCIENCE CONFERENCE REPORT

Peter Maddock 17

RECENT LIBRARY ACQUISITIONS

. 19

NEWS

Computer Game 7

Information Wanted 7

TV Broadcast 7

SPR Conference 20

Anomalous Study Group 20

Answer Depends on Question 20

Course on Psi 20

PARAPSYCHOLOGY REVIEW

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In 1975 I suddenly found myself working on a theory to explain psychic events with a man named Sandy Donald. I had just submitted my Ph.D. thesis in the Theoretical Physics Department at Sydney University, but was staying on in the department to write research papers while applying for jobs.

Sandy was one of the beginning Ph.D. students in the department. He is one of those rare individuals who actually fits partially the stereotype of the brilliant, but incomprehensible scientist. (In other ways, such as his political activism, he is quite atypical of scientists.) Sandy seems to have an intuitive grasp of physical principles which is rarely found among those who have been taught science the usual way. In talking to Sandy about physics, often I couldn't follow his logic, since he casually skipped over stages of argument which were so obvious to him that he did not realize others might need to struggle to understand each little step.

Sandy and I didn't often talk about physics, since my research was in stratospheric modeling and numerical analysis and his on gravitational singularities. In fact, few people talked to each other about their actual research work, unless they were collaborating or working on very similar topics. It was more usual to discuss "how your research is going" or things unrelated to physics at all.

One day I was talking about some of the experiments on psi I had been reading about. Psi is the term used to cover psychic phenomena such as extrasensory perception (ESP), precognition and psychokinesis (PK). I said that if psychic phenomena were real, then eventually there would have to be a re-evaluation of several branches of physics. Sandy mentioned that psychic events could be explained readily by reverse causality, and that it was fairly easy to slightly generalize thermodynamics to take this into account.

I was excited. From what I had read it seemed to me that the evidence for the existence of psi should convince just about anyone who was willing to look at it. Fewer and fewer scientists were prepared to reject psi out of

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hand, but almost none took the initiative to consider what the evidence meant for science. It seemed to me that one reason for this was the lack of any plausible theory for psi. As Thomas Kuhn argued in his now classic book *The Structure of Scientific Revolutions*, evidence that does not fit in with current theoretical frameworks is seen as anomalous and either rejected or ignored.

Certainly the evidence for psi is of high quality. The rigor of experimental design and statistical analysis apparent in the main journals of experimental parapsychology is easily superior to that in 90 percent of conventional scientific research. Because psi is still seen by many as a suspect field, these journals cannot afford to publish the sloppy sort of work which is so common in most areas of science.

Amazingly, Sandy had thought up his explanation for psi several years previously, mostly in ignorance of the evidence for psi. He had been conscious especially of the need to explain precognition—knowledge of future events not obtainable through known physical means—which is the bugbear of most theories of psi.

I strongly encouraged Sandy to write up his ideas, which he did, and gradually that year we finalized a paper on the theory. My contribution was to make the paper more readable—especially to fill in some of the gaps which Sandy hadn't bothered with—and to relate the theory to experimental evidence on psi, which I began to study more systematically. We managed to identify several further features of psi from the experimental evidence which we had not been aware of before. It was more than satisfying that the theory had no difficulty in explaining them at all!

We finally managed to have the article published in the *European Journal of Parapsychology*. It should have been no surprise that it did not set the world afire. We were unknown in the field and had no personal connections through which to suggest experimental tests. Furthermore, the article itself was an uncomfortable mixture of physics and parapsychology: too much mathematical physics for any but the most committed parapsychologist and far too much mention of psi for physicists, so getting into the physics journals was out of the question. Since the theory was published, there has been one experimental test made of it that I know of—by Gertrude Schmeidler and Randall Borchardt—with inconclusive results.

Our theory is one of several that have been offered in the last decade or so. Which of these is eventually preferred, if any, remains to be seen. But in any case, the implications of psi for other parts of science—and of society—are potentially huge. For this reason, it is valuable to spell out what some of these implications are, for one particular theory. Here I will first give a brief explanation of the theory, followed by some of its implications for history, social science, philosophy and technology.

The PDN Theory of Psi

Consider an event occurring in the present, say a magazine falling on the floor or the radioactive decay of an atom. How can the likelihood of this event be influenced?

One way is through actions taken in the past. If we throw the magazine up in the air it is much more likely to fall to the floor than if we lay it carefully on the table. What we have done is used ordered energy—called negentropy—to change the past, namely the position and velocity of the magazine. Everyone knows that this affects where the magazine ends up in the present. The past order or negentropy is gathered by organisms from other sources, such as food and ultimately the sun.

In the case of the spontaneous radioactive decay of an atom, quantum theory tells us that there is nothing we can do in the past to affect the likelihood that it will decay in the present, aside from some special cases where chemical combinations have a small effect. So once the unstable atom is produced, the conventional wisdom tells us that the likelihood of spontaneous radioactive decay cannot be affected by negentropy or anything else.

Conventional physics thus allows for two processes for the occurrence of events. The first is causal or deterministic, as in the case of the magazine, in which humans can influence the present. The second is acausal or chance, as in the case of radioactive decay, in which humans have no influence. (I ignore here the questions of quantum descriptions of large systems and the question of free will.)

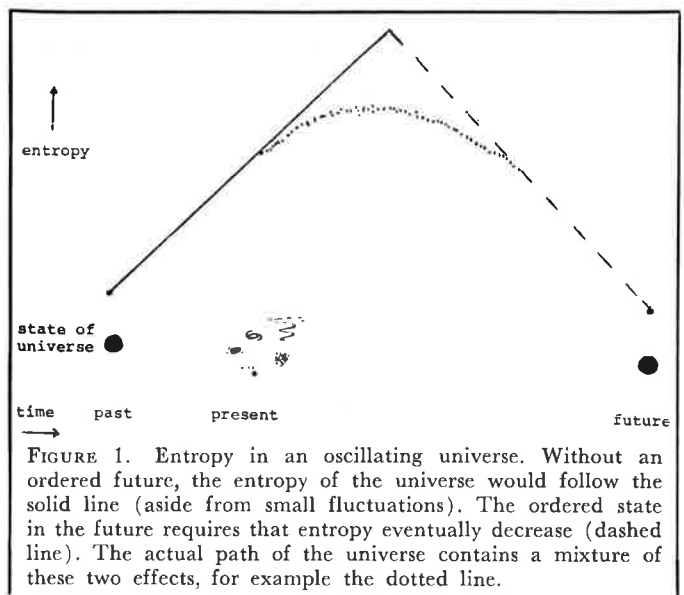


FIGURE 1. Entropy in an oscillating universe. Without an ordered future, the entropy of the universe would follow the solid line (aside from small fluctuations). The ordered state in the future requires that entropy eventually decrease (dashed line). The actual path of the universe contains a mixture of these two effects, for example the dotted line.

In neither case is there any allowance for the possibility that the likelihood that an event will occur in the present could be influenced by events or actions in the future. The conventional wisdom in physics says this is impossible. Possible exceptions, as yet undiscovered, are tachyons (faster-than-light particles) and advanced potentials (electromagnetic propagation backwards in time).

The PDN theory of psi challenges this restriction. The theory is based on the idea that there is a second type of ordered energy, or negentropy. As mentioned before, normal negentropy can be used in the past to affect the present. The second type of negentropy can be used in the future to affect the present. Thus it may be called past-directed negentropy or more simply PDN.

Sandy's idea for a theory of psi was to reformulate thermodynamics—the physics of large systems of particles—so that the present can be affected not only by the past, but also by the future. The mathematics required for this extension of thermodynamics is straightforward. But since we are so used to thinking in terms of influences of the past on the present—or equivalently of the present on the future—the implications of this extension seem fantastic.

What could be the source of order in the future? One possibility arises from the hypothesis of the oscillating universe. The universe is assumed to evolve from an explosion of a giant ball containing all the matter that exists. As the ball expands, the familiar processes of atom formation and galaxy formation occur, all of which lead to less order or higher entropy. The hypothesis of the oscillating universe says that many billions of years in the future the universe will recombine into a single mass.

The single recombined mass would have low entropy, or in other words would be highly ordered, just like the original ball. Between these end points entropy would increase and then decrease. Right now the universe is mainly moving away from past order, but in very small ways it would be moving towards future order. This means that, by and large, entropy increases as enshrined in the second law of thermodynamics, but that there can be instances of spontaneously decreasing entropy due to future order as well as to fluctuations.

A magazine rising into the air for no physical reason is an instance of spontaneously decreasing entropy on a macroscopic scale; a deviation by radioactive decays from statistical expectations is a possible microscopic example. The key point is that negentropy from the future can on occasion influence what happens in the present. Another possible source of PDN, besides the future recombination of an oscillating universe, is the gravitational singularities which Sandy has been studying.

If a human could control the effects of this PDN, the result would look like a psychic event! So the PDN theory of psi requires not only that there be some source of negentropy in the future, but that organisms have developed the capacity to use it. This does not seem unreasonable, since any organism able to do this would appear to act as if it knew the future. The evolutionary advantages of such a capacity should be obvious.

How would the application of PDN work in practice? Since we don't know the microscopic details, we can only give a hypothetical example. Consider a sugar molecule. An existing sugar molecule represents normal negentropy, since it is more ordered than its constituents water and carbon dioxide. By choosing to decompose the sugar molecule some time in the past, an organism affects the present, for example by the influence of the energy released.

Next imagine an organism which has control in the future over whether a sugar molecule will be synthesized out of less ordered constituents. Depending on whether this synthesis resulting from PDN were to take place, the most likely present state of the universe would be altered. For example, the organism might synthesize a sugar molecule

in the future after a certain nuclear decay took place and not synthesize the molecule if the decay didn't take place. By controlling the future synthesis, the occurrence of the nuclear decay in the present thus could be made more likely.

These then are the basic elements of the PDN theory of psi: the existence of past-directed negentropy and its use by organisms to affect the present. What is the experimental evidence on psi which must be explained by the theory?

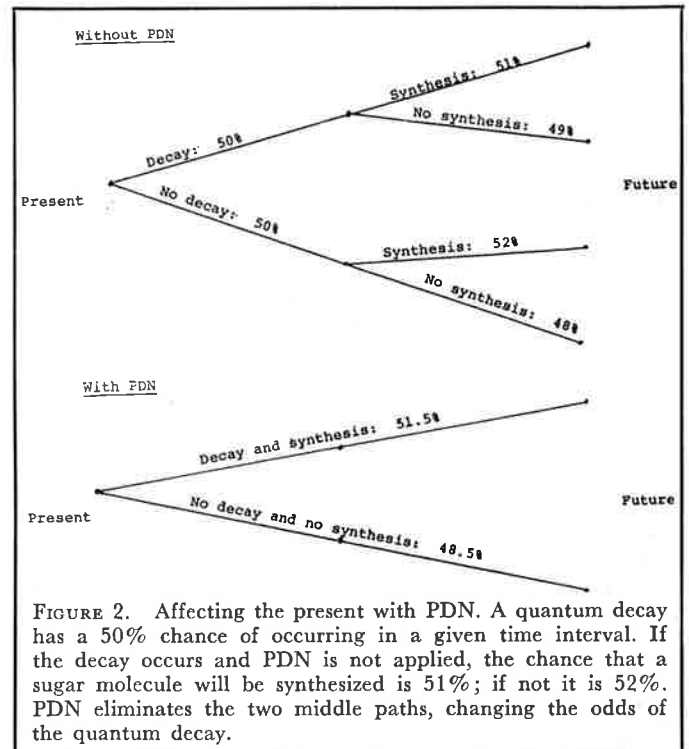


FIGURE 2. Affecting the present with PDN. A quantum decay has a 50% chance of occurring in a given time interval. If the decay occurs and PDN is not applied, the chance that a sugar molecule will be synthesized is 51%; if not it is 52%. PDN eliminates the two middle paths, changing the odds of the quantum decay.

The Experimental Evidence

It is apparent from everyday observation that normal causality—the effect of the past on the present—is overwhelmingly dominant over the effect of time-reversed causality—the effect of the future on the present. In terms of the PDN theory of psi, this means that the utilization of sources of PDN is at most a tiny fraction of utilization of sources of normal negentropy.

This implies that psychic phenomena should be most noticeable in events which are otherwise random or near random, such as guessing cards or influencing radioactive decays. This is because in random events the effect of normal negentropy is minimal, so the effect of PDN can be more readily observed. This requirement agrees well with the results of psi experiments, which show the greatest statistical significance when otherwise random events are involved.

The PDN theory has greater difficulty in explaining events apparently requiring massive utilization of PDN, such as spoon bending, table tapping and levitation. Significantly or not, the evidence for the existence of these phenomena is much more dubious than that for psychic

influence in card guessing or the occurrence of radioactive decays.

In the use of PDN to affect the present, all that is required is that the PDN be applied *after* the event to be influenced. This means that it is no more difficult to explain precognition—knowledge of the future—than psychokinesis or clairvoyance, which are influence on or knowledge of the present.

Helmut Schmidt has carried out many experiments on psychic influences on radioactive decays. One of them shows, amazing as it may seem, that the rate of decay can be changed by people who listen to beeps corresponding to the decays (and so unconsciously try to speed them up) a week after the decays occurred! The decays are recorded on magnetic tapes and stored for a week. The tape, randomly chosen, which subjects listen to afterwards is found to be different than predicted by quantum theory. The tape which is not listened to is found to agree with the predictions of quantum theory. So here is an experiment which shows that what happened in the past is apparently influenced by behavior in the present. This is, of course, equivalent to the future influencing the present.

From the point of view of the PDN theory of psi, there is no extra difficulty in explaining these amazing results. A person merely utilizes PDN to influence the likelihood of events happening earlier. Precisely how much earlier does not matter all that much.

Another experimental result is that psi effects do not appear to depend on the complexity of the apparatus generating the events which are to be influenced. Subjects have about the same influence on the rate of radioactive decay with a very complex quantum random number generator as with a very simple one. This again is what is expected with the PDN theory of psi, since the subjects act in the future to change the likelihood of *outcomes* of events. Knowledge of how the events were generated is unnecessary.

Yet another experimental result on psi is that it does not matter *where* the event being influenced occurred. Results with events occurring many kilometers away, or on another continent, show about the same significance as results obtained when the events and the subjects are close together. This raises a major problem for most theories of psychic phenomena. How does the subject discriminate the target from an infinite number of other events in different locations and indeed at different times in the past and future?

With the PDN theory of psi, there is no difficulty in explaining this result. The basic mechanism postulated by the theory is interaction with the universe in the future which changes the likelihood of events in the present. As long as there is a causal connection between the events in the present and the utilization of PDN, the effect can occur. In the case of spatially separated events, this connection is made simply by the reporting of the results to the subject.

A final important feature of psi is additivity. Schmidt had subjects listen to beeps which indicated when quantum decays occurred and found a deviation from the ex-

pected rate of decay. He then had subjects listen to the same beeps four times—using an ingenious experimental design so they didn't realize the repetition—and found the deviation to be about four times as great. Our theory explains this simply as the result of about four times as much PDN being applied to influence the decays.

The PDN theory of psi thus explains many of the key features of psi experiments: that the most significant results are obtained with events which would normally be random, that the results are independent of when and where the events are generated and independent of the complexity of the apparatus generating the events and that psi effects are additive. For example, precognition of radioactive decays on another continent with a complicated apparatus should give about the same results as postcognition of decays close at hand from a simple apparatus, other things being equal.

The theory also makes some predictions which are yet to be tested. One is that results using truly random events—such as radioactive decays—should be more significant than those using pseudorandom events such as “random” numbers generated by a computer algorithm. Pseudorandom numbers appear random for sufficiently short sequences, but for very long sequences there is repetition and hence further application of PDN should have no additional effect. Another prediction is that if the organism being tested dies or is killed immediately after a psi experiment, the significance of results will be reduced, since the organism will not be around to apply PDN.

As with any theory, there is some evidence which is hard to explain, such as psychokinesis with large objects. As usual in science, those who believe the discrepant evidence are skeptical of the theory, while those who believe the theory tend to discount or explain away the discrepant evidence. My object here is not to make a watertight case for the PDN theory of psi.

After all, some other current theory, or some theory yet to be developed, may turn out to be much better. Rather, my aim has been to give some feeling for the theory before describing a few of its wider implications for history, philosophy, social sciences, natural science and technology. Many of the other theories of psi have similar implications. What will be revealing will be to see how the different disciplines react when finally confronted with the consequences of psychic phenomena.

Implications

If it is possible that action taken in the future can affect what happens in the present, this has extraordinary implications in many areas. Admittedly, this effect as conceived in the PDN theory of psi will mostly have an impact on events whose outcome can be swayed by a random process such as a quantum transition. But then again, events requiring tiny amounts of energy (or, more properly, negentropy) easily can have large scale consequences, as when a decision is swayed by the firing of a neuron in a person's brain. Here I will outline some of the implications of the PDN theory of psi in a variety of areas.

The Discovery of Neptune

After the discovery in 1781 of the seventh planet of the solar system, Uranus, observations began to show that the inverse-square law of gravitation plus the laws of dynamics did not exactly predict the new planet's orbit. One explanation of the discrepancies was the existence of another yet undiscovered planet outside the orbit of Uranus.

In 1846, two mathematicians, Adams in England and LeVerrier in France, completed independent calculations aimed at predicting the orbit of the hypothesized eighth planet, Neptune. The calculations carried out by Adams and LeVerrier were different and each involved a high degree of complexity and the arbitrary specification of many parameters. But when Neptune was discovered later in 1846 using the calculations of Adams and LeVerrier as a guide, their predictions were surprisingly close to the mark. It is fair to say 'surprisingly' because if Adams' or LeVerrier's predictions had been used in the year 1806 or 1886 for example, they would have been quite inaccurate.

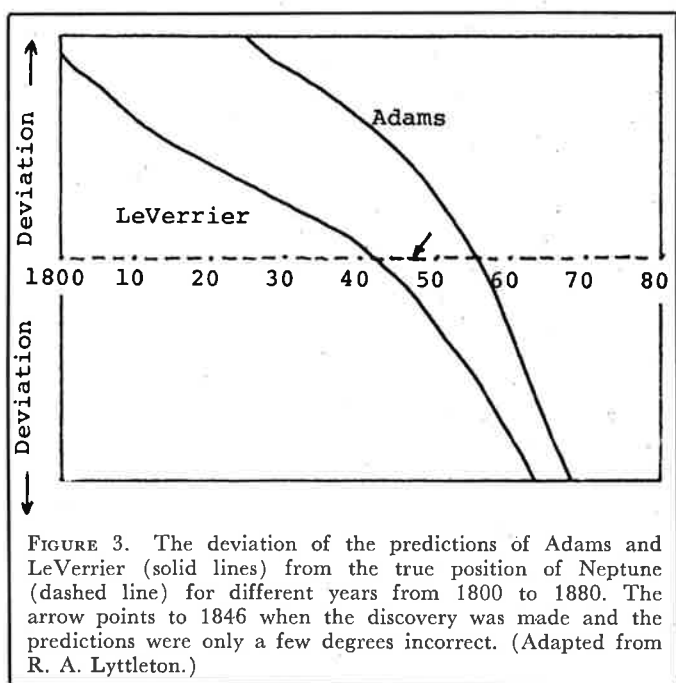


FIGURE 3. The deviation of the predictions of Adams and LeVerrier (solid lines) from the true position of Neptune (dashed line) for different years from 1800 to 1880. The arrow points to 1846 when the discovery was made and the predictions were only a few degrees incorrect. (Adapted from R. A. Lyttleton.)

The astronomer R. A. Lyttleton, who has studied the discovery in detail, comments that "the reasons for the success of the methods used by LeVerrier and Adams have still to be made clear even to this day, and until this is done there must remain a strong suspicion that they were favored by a great deal of good luck, possibly in studying the problem at a time when their methods chanced to work."

The PDN theory of psi provides one possible explanation for the luck of Adams and LeVerrier. Their calculations have been hailed ever since the discovery of Neptune as a "triumph of mathematical physics," and much prestige has resulted not only for Adams and LeVerrier, but also for the community of scientists as well. This favorable result would not have occurred had their predictions been so far off that Neptune could not be found readily. It may

be that PDN was utilized by Adams and LeVerrier and perhaps by many other scientists, long after their calculations, in a way that ensured that they chose values of arbitrary parameters in their calculations which ended up giving fairly good predictions in the year 1846.

History Generally

It is well known that at least in special cases the course of history can be altered by apparently trivial events: the birth or death of a key figure, a decision to implement a new policy or launch a war, or a failure of communications. There is an old saying "For want of a nail, the shoe is lost, for want of a shoe, the horse is lost, for want of a horse, the rider is lost."

This saying may have more implications than it is normally given credit for. PDN makes it possible for contingent events—the precise sperm that fertilizes an ovum, the firing of a few neurons in a brain, or a momentary failure of electronics—to be influenced by the desires, behavior and life of people many days, years or decades after the event. It may even be possible for a person to influence her or his own conception! The more consequential such small events are in the long run, the more likely it is that PDN will be applied by many individuals in an attempt to change them.

There is no guarantee that PDN applied to change the course of history automatically works to the benefit of humankind. It is possible to imagine that small changes in the upbringing or life of Hitler could have led to much less disastrous political developments in Germany in the 1930s and 1940s. Hitler's harmful impact might have been reduced, but on the other hand it was less harmful than it might have been. At the moment there is no sure way of determining the effect of future order on history and many historians would argue that chance events seldom have a lasting impact on historical development anyway. But the very possibility raises intriguing problems for the philosophy of history and indeed for all those who are "making history."

Social Sciences

One of the standard methods in social science research is to choose a sample for investigation using random numbers, for example in selecting people to interview in an opinion poll. The particular random numbers chosen could be affected by the application of PDN. In other words, the researcher, who has a strong stake in the success of the research, could affect the outcome by influencing the choice of random numbers. Hence, positive results could merely reflect the familiar self-fulfilling prophecy.

Not too much should be made of this problem. The likely effects of PDN in distorting the results of social science research are probably small compared to other flaws in experimental design and execution which are known to occur regularly and indeed systematically. For example, in opinion surveys the wording of a question or the attitude of the surveyor can have a strong influence on the response. PDN is likely to make a difference only in the

most rigorous of experiments, or in those in which the results cause a very widespread interest or social impact. Still, the role of PDN poses some fascinating problems for the study of method in the social sciences.

Philosophy

Much of philosophy is an attempt to put what is known about the natural and social world in a rational or logical framework. As a result, we find that principles of physics—which should always be seen as subject to reformulation—become enshrined in philosophy as postulates or fundamental truths.

One example is the doctrine of determinism, which asserts that all activity in the universe is the product of a necessary chain of causation or, in the case of quantum events, of pure chance. A contrary perspective, that the human will affects what happens, is often stigmatized or dismissed as the sin of solipsism. For example, the philosopher Antony Flew writes that it is “utterly paradoxical and preposterous to say that any reality of which we can have knowledge must be in part dependent upon us and our concepts.” If it is possible for events in the future to affect the present, this sort of philosophical dogma must give way.

It is interesting to find that many philosophers have argued that precognition is impossible because it conflicts with any logically consistent explanation of the universe. These objections are precisely the ones which would be used by philosophers against the PDN theory of psi, among other theories. Bob Brier has analyzed the philosophers' arguments and found that they do not stand up to scrutiny: there are no fundamental logical problems involved in the future affecting the present in at least some nontrivial formulations of the issue. Helmut Schmidt has shown that there are no logical contradictions in a framework for psi which is quite similar to our own.

Technology

Sandy Donald thinks that many people will refuse to believe in psychic events until a machine is built to produce them more or less on demand. A machine which collected and applied PDN would appear to be able to know the future and hence could perform tasks astounding to us today, though perhaps no more astounding than electricity, telecommunications, aircraft or computers were to earlier generations.

The basic limitation on psi-technology—at least according to the PDN theory—would be that the only events influenced or predicted would be those otherwise random or nearly random. So it might be possible to develop guidance systems for ships or aircraft, improved systems for weather prediction or medical diagnosis and personal decision consultants to help avoid disastrous consequences—a technological version of a crystal ball! On the other hand, it seems unlikely that PDN could ever serve as a source of energy and hence could not power ships, control the weather or provide personal transport through levitation. Producing energy from PDN would be futile, but

PDN might be useful in discovering conventional energy reserves.

Perhaps the most exciting possible applications lie in relation to brains, both human and electronic. PDN might be used to influence thinking—in the human brain, or in the design or execution of computer programs—so as to lead to desired results. For example, the most fruitful directions in research might be probed, programs for self-education developed and social decision-making improved.

Military Use

The military establishments in the United States and the Soviet Union have already shown considerable interest in psi. For them, reliable psychic communication holds immense possibilities in intelligence and in the monitoring of submarines and missile deployment, among other areas. These uses show that psi is far from being an automatic force for good. As in other areas of science and technology, the usefulness of psi will depend partly on who develops it and on what purposes they have in mind.

Although any technology can be used for good or evil, technologies have their own *selective usefulness*. An axe can be used to butter bread, but it is easier and more natural to use it for more energetic or grievous purposes. Similarly, critics of nuclear power have argued that since nuclear technology by its very nature requires experts, large amounts of money and continued vigilance against accidents, it is not easily compatible with democratic decision-making by workers and the community.

There are some indications that psi is more easily controlled by people than by special interest groups. It seems likely that most people have some capacity to utilize PDN, though at the moment some individuals exhibit special abilities. Once standard methods for learning how to use PDN are developed, it may be found that everyone can improve greatly, rather as in the case of artistic or sporting ability today. Not everyone can be an elite performer, but for those who care to spend the effort great gains are possible.

If psychic ability is reasonably well distributed, then it will be difficult for special interest groups to monopolize PDN. Since the application of PDN is additive, a large group of people with the same aim can counteract any single individual. In this sense PDN might be called intrinsically democratic. But the world is not so simple. Large groups of people might be induced to use their psychic ability to serve special interests, the same way that factory workers or soldiers are mobilized through jobs or nationalism. Furthermore, if technological means for harnessing PDN are developed, the technology might confer immense power on those who control it. Indeed, the possibilities are rather frightening—a future could be shaped which allowed those holding political power to perpetually hold or increase their sway.

Science

The first and most obvious casualty of the PDN theory of psi is the second law of thermodynamics. The idea of the relentless increase in entropy, or disorder, will have to

be modified to allow for local decreases in entropy due to PDN. The implications of these changes in thermodynamics for other branches of physics, such as quantum theory, particle physics or even cosmology, will not necessarily be very great. Most of physical theory is quite compatible with the time-symmetric thermodynamics used in the PDN theory of psi.

Biology could be affected more drastically. The use of PDN by organisms—and its use is by no means restricted to humans—introduces goal-directedness in a very obvious way. Psi provides a clear mechanism for producing and explaining the appearance of design or purpose in nature.

It will no longer be possible to argue that biological phenomena are guided solely by mechanical forces. PDN allows phenomena to be guided by the ends towards which they move, as proposed in the doctrine of teleology. Evolutionary theory could well require some rethinking and reformulation to take this possibility into account. It is intriguing to imagine that changes in human history and the lives of every individual on earth, could have resulted from a few chance events millions of years ago, and thus have been influenced by PDN utilized millenia later.

A much more speculative and wide-ranging possibility raised by PDN is that “laws of nature” themselves might be altered. “Laws of nature” are nothing more than principles hypothesized or deduced to explain regularities in the behavior of the universe as they are observed by humans. It might be possible over a period of many aeons, with a concentrated effort by many organisms, for some of the operating principles of the universe to be altered.

From the point of view of a successful organism—one that utilized PDN far into the future—it would be an advantage to alter “laws of nature” suitably to promote its own survival and success. Whether this is possible depends on whether there were in the past certain contingent events linked to physical principles which can be influenced by PDN. For example, at the moment there are several competing interpretations of quantum theory, some of which might have different implications in special circumstances. PDN applied with great thoroughness in the future might permit the success of one of these interpretations in the present not only within the scientific community, but also “in nature.” The same could apply in areas of particle

physics, cosmology or artificial intelligence. Imagine, for example, the impact of slight changes in nuclear structure which would have made chain reactions impossible—or allowed the atmosphere or oceans to participate in nuclear explosions, as was once feared.

Everyday Life

Some scientific theories have an unexpectedly large impact on public attitudes. When first developed, relativity had only a small direct influence on people outside the community of research physicists. But through its popularization, the idea of relativity came to have a wide social impact, indeed with little connection to the theory itself. The influence of society on science is also possible. The formulation of quantum theory was apparently affected by the anti-determinist social milieu in Germany after World War One.

Both these connections are present in the case of evolutionary biology. The formulation of Darwin's theories was partly a product of Herbert Spencer's theories of society as competitive and Darwin's ideas were used for decades afterwards to justify discrimination and exploitation—the phenomena of Social Darwinism.

Any theory of psi could fall prey to similar uses. The idea of PDN could be used to justify the concept of free will or to promote resignation. It could be used to prop up individualism or to encourage collective efforts.

In my opinion, most of the uses of scientific theories to justify social policies and practices—as the use of IQ or “innate” sex differences to justify discrimination—are illegitimate. All too often the theory used to do this is itself influenced by special interests. The case of Sir Cyril Burt's fraudulent IQ results is only the most blatant example of a phenomenon which is both quite subtle and quite prevalent.

The most obvious implication of PDN for day-to-day attitudes is to provide a scientific basis for the idea that people have the ability to create their own present and future. Personally, I think this is the case whether the theory is correct or not. If a theory of psi encourages people in believing that they can influence their own life, then so far as I am concerned so much the better.

Computer Game

Alan Vaughan, author and psi researcher, has designed a precognition computer game for use on APPLE II or III computers. Interested laboratories or individuals with access to an APPLE may write to: Alan Vaughan, 408 Ivy Street, Glendale, California 91204.

Information Wanted

B. J. Spellman is conducting research concerning the experiences of pet owners who feel they have communicated with a pet after the animal has died. Any such experience, recalled in as much detail as possible, involving animal phantoms, hauntings or other unusual phenomena would be appreciated. Write to: B. J. Spellman, P.O. Box 8483, Parkville, Maryland 21234.

TV Broadcast

Dr. Carroll Nash of St. Joseph's University, Philadelphia, and Dr. Frank Dille, Professor of Philosophy, and Dr. Harry Shipman, Professor of Physics at the University of Delaware, participated October 31, 1982, in the TV show *Discovery* on the Wilmington-Philadelphia PBS station on the topic of parapsychology.