

A Random Universe?

Order and Chance in Nature and Scripture

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O rder and chance are an inescapable fact of life on Planet Earth. As this is written, the news of freedom in Eastern Europe and the Soviet Union is being replaced with the threat of war in the Persian Gulf.

What causes these events? Is life guided by a divine hand or is it the result of random processes? Or do the two intermingle in some way? We may not be able to answer this question completely. However, we can look at the role of order and chance in Scripture and in the scientific study of nature from the 16th century to the present. This overview should provide some insights as we attempt to cope with an unpredictable world.

Recent developments in both science and religion have raised fundamental questions that can no longer be ignored. Torrance confirms this point:

In our day we have reached a turning point in the history of thought at which natural science and theological science are confronted each in its own way with the need to adopt a fundamental attitude to the universe as a whole.¹

It is becoming clear that science and religion act as partners in helping to solve the riddle of life.

Although there are many possible ways of defining order and chance² we will adopt the following general definitions:

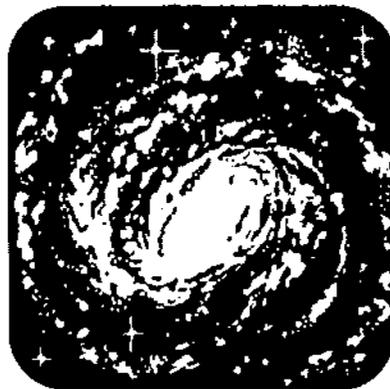
Order: a structure or event that is symmetrical, patterned, predictable, or expected—for example, the operation of a well-constructed clock.

Chance: an event which is unpredictable or unexpected, for example, the result of tossing a non-biased die.

Order and Chance in Nature

The Greeks believed that external order existed only in the heavens. The processes of earth were characterized by change and instability. Thus they believed that empirical investigation of earthly processes would be useless. However, in the 16th and 17th centuries Galileo and Newton demonstrated that many earthly and heavenly processes could be described by mathematical equations. For example, when a ball rolls down an inclined plane, one can use an equation to predict the location of the ball five seconds after or five seconds prior to the moment of observation. Toffler, reviewing the developments of science at this time, says: "It was a world in which chance played no part, in which all pieces came together like cogs in a cosmic machine."³

Because many of the early scientists were also devout Christians, the universe came to be regarded as a great clock ticking away with machine-like precision, having God as its rational master. This



model of nature was later shattered by discoveries about the properties of small objects like atoms and molecules.

Scientists in the 17th and 18th centuries first attempted to categorize the properties of a gas in terms of rigid, orderly molecular arrangements. When this was unsuccessful, they fashioned a model in which molecules moved with uniform velocity, as described by Newton's laws of motion. Although this approach achieved some success, it proved inadequate to describe all the properties of a gas.

Finally, in the 19th century Maxwell and Boltzmann⁴ used the laws of probability to develop a kinetic theory, which successfully described gas properties from the microscopic level. This theory showed that gas properties were best described in terms of molecules moving at varying velocities in rapid random (chance-like) motion. Although Newton's laws could accurately predict the position and velocity of a tennis ball rolling down an incline, they could not predict the position and velocity of a molecule in a gas. However, scientists could calculate the probability that the molecular velocity would fall within a certain range. Bronowski points out that "this is a revolutionary thought in modern science. It replaces the concept of the inevitable effect by that of the probable trend."⁵

As a result of this and other research, scientists began to view chance, rather than order, as fundamental to nature.

Recent developments in chaos theory regard nature as being neither ordered nor chaotic but a combination of the two.⁶ In

describing new developments in chaos theory, Ian Stewart speaks of "designer chaos" to illustrate how order and chance can coexist in natural systems.⁷ James Gleick's *Chaos*⁸ describes the theory in terms of a dripping tap. The dripping may be periodic for a time. However, as the flow rate increases, the system changes. Drops begin to fall in pairs (period-doubling) with two possible intervals between drops. As the flow increases, the flow seemingly becomes chaotic. But the chaotic data actually has a hidden structure, a pattern. As Gleick reports:

Here was one coin with two sides. Here was order, with randomness emerging, and then one step further away was randomness with its own underlying order.⁹

Thus, although scientists formerly regarded order and chance as incompatible, they now see that within nature there is an uncanny partnership between the two.

Order and Chance in Scripture

Although God uses the incomprehensibility of nature to direct Job's thoughts to a higher power,¹⁰ the Bible writers must have seen certain aspects of God's creation as patterned, predictable, or expected. Genesis 1 declares that there was "evening and morning." This obviously implies a regular cycle of night and day. When God outlined to Israel the consequences of obedience and disobedience in terms of blessing and curse, He was describing the cause-and-effect relationship characteristic of many ordered systems.

We find the element of chance in the biblical practice of the "casting of lots." In the Old Testament the Israelites cast lots in choosing goats for the Day of Atonement, allocating land, settling criminal cases, choosing forces for battle, appointing persons to high office, and allotting cities to the priests

and Levites.¹¹ In New Testament times the apostles cast lots to select Judas' replacement.¹² They felt confident that the Lord would show them which of these two men had been chosen to take over this apostolic ministry. Clearly, the



biblical writers believed God's providence was revealed in the "casting of lots." *The Seventh-day Adventist Bible Commentary* confirms this view, while offering a caution:

In the beginnings of religious life and occasionally since, God may have honored our developing faith by giving us remarkable answers by such means, but this does not imply that He wants us consistently to depend upon this method.¹³

Thus when Donald Mackay asks, "Is the antithesis between God and chance a genuinely biblical one?"¹⁴ we must answer, No. Scripture affirms that God's providence can be revealed through the processes of chance as well as by His ordered creation. Mackay goes on to say:

God is declared in the Bible to be creatively active and supreme in every twist and turn of this Great Drama, whether "chance" or "law-abiding" in the scientific sense, which he has thought into being by the word of His power. It is a theological blunder to speak of his "designer's

mind" as an alternative, rival explanation to what the scientist may technically classify as "operation of chance"; or to regard the success of such scientific explanation as discrediting the Bible.¹⁵

Just as science has revealed an uncanny relationship between order and chance, so Scripture affirms this relationship particularly in its apocalyptic portions. Commenting on Ezekiel's vision of a wheel within a wheel (chapter 1) *The Seventh-day Adventist Bible Commentary* says:

What to the unskilled observer appears to be hopeless confusion, the outworking of chance, the result of human ambition and caprice, is here presented as a harmonious pattern wrought out and guided by an infinite hand toward predetermined ends.¹⁶

Thus both nature and Scripture see a partnership between order and chance. Human experience also testifies to this relationship.

Human Experience

How can one cope with a universe that is both rational and contingent, a universe that brings pain and happiness, order and chance, the expected and the unexpected? Lesslie Newbigin¹⁷ says that the incarnation of Christ and the way of the cross provide the clue to the dilemma. Newbigin suggests that a correct understanding of these precludes any shortcuts to meaning that ignore the radical contingency of things. It becomes clear that everything cannot be explained in organismic or mechanical terms, and that everything is not necessarily controlled in the interests of the good.

On the other hand, these concepts protect against irrationalism, which holds there is no meaning in the world and everything is an incomprehensible accident. Newbigin proposes that,

following the way of the cross in the light and power of the

resurrection enables one to acknowledge and face the reality of evil, of that which contradicts God's good purpose in the confidence that it does not have the last word.¹⁸

Faith in a God that will ultimately bring a positive outcome enables one to cope with a world imbued simultaneously with order and chance, a world that can appear both hostile and friendly.

Events that happen to us in this world tend to have either a coherent rational origin or an unexpected contingent origin. In both cases what happens may contribute to good or evil purposes.

Rational processes such as counseling or medical treatment may restore us from the effects of evil. On the other hand, God's contingency such as He exhibited at the cross, may restore us from the evil that has beset us.

The issue of free-will and determinism often surfaces in a discussion of order and chance. Jewish thought, according to Sandmel,¹⁹ held both in tension without carrying either to an extreme. However, scientists such as Farmer find in chaos theory an operational way to reconcile free-will with determinism. In their view, "the system is deterministic, but you can't say what it's going to do next."²⁰

Conclusion

This brief article has attempted to look at reality as it is perceived through the lens of science and the witness of Scripture, with reference to the concepts of order and chance. These concepts offer an organizing principle for achieving a dialogue between science and religion, nature and Scripture. Faith in Christ and His sacrifice provides the means of coping with the expected and the unexpected at the world level and in our personal lives.

Since the time of Newton our understanding of nature has changed dramatically. The farther we peel back the layers of nature the more profound our study be-

comes. This is not a cause for despair, however, as C. S. Lewis concluded long ago:

Reality, in fact, is usually something you could not have guessed. That is one of the reasons I believe Christianity. It is a religion you could not have guessed. If it offered us



just the kind of universe we had always expected, I should feel we were making it up. But in fact, it is not the sort of thing anyone would have made up.²¹

It may be that the distinction between order and chance will become fuzzier as science continues to penetrate the cosmos. However, we must remember the distinction between our perceptions of reality and reality itself. Scripture affirms that God's abiding providence links order and chance. Consequently, faith in the Jesus of the cross guarantees that evil does not have the final say.

NOTES

1. T. F. Torrance in A. R. Peacocke (ed.), *The Sciences and Theology in the Twentieth Century* (Stockfield: Oriel Press, 1981), p. 81.

2. See for example, J. Polkinghorne, *One World: The Interaction of Science and Theology*, (Princeton: Princeton University Press, 1986), p. 72, and D. M. Mackay, *The Clockwork Image: A Christian Perspective on Science* (London: InterVarsity Press, 1974), p. 48.

3. A. Toffler in I. Prigogine and I. Stengers, *Order out of Chaos: Man's*

New Dialogue with Nature, (London: Flamingo, 1984), p. xiii.

4. L. P. Williams & H. J. Steffens, *The History of Science in Western Civilization* (Lanham, MD.: Univ. Press of America, 1978), vol. 3, p. 226.

5. J. Bronowski, *The Common Sense of Science* (London: Heinemann, 1966), p. 92.

6. C. Birch, *On Purpose* (Kensington: New South Wales University Press Ltd., 1990), p. 69.

7. I. Stewart in D. Calhoun (ed.) *The 1990 Yearbook of Science and the Future* (Chicago: Encyclopedia Britannica, 1989), p. 54.

8. J. Gleick, *Chaos: Making a New Science* (Cardinal: Sphere Books, 1988), p. 265.

9. *Ibid.*, p. 252.

10. Job 36-38.

11. Leviticus 16:5-10; Nehemiah 10:34; Joshua 7:14,18; 1 Samuel 14:41,42; Judges 20:8-10; 1 Samuel 10:19-21; 1 Chronicles 6:54-65.

12. Acts 1:23-26.

13. F. D. Nichol (ed.), *The Seventh-day Adventist Bible Commentary* (Washington D.C.: Review and Herald, 1976), vol. 2, p. 210.

14. D. M. Mackay, *op. cit.*, p. 48.

15. *Ibid.*, p. 55.

16. *SDA Bible Commentary*, vol. 4, p. 578.

17. L. Newbigin, *Foolishness to the Greeks: The Gospel in Western Culture* (World Council of Churches, 1986).

18. *Ibid.*, p. 91.

19. S. Sandmel, *Judaism and Christian Beginnings* (New York: Oxford University Press, 1978), p. 226.

20. J. Gleick, *op. cit.*, p. 251.

21. C. S. Lewis, *Mere Christianity* (Glasgow: W. Collins, 1952), p. 44.

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