

Science and Torah

Learning the thought of Rabbi Lord Jonathan Sacks זצ"ל

The shiur this week is sponsored by
Anshel & Esther Weiss
on the yahrtzeit of Anshel's father,
Chaim Weiss, Chaim ben Asher Anshil, ע"ה

Astronomy

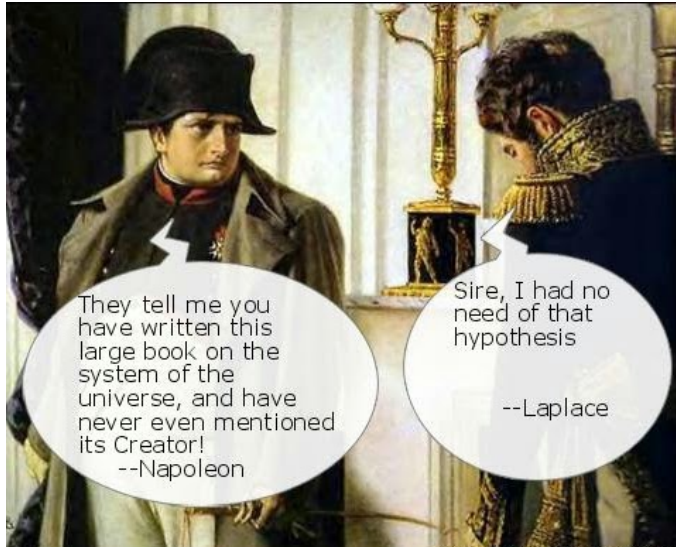


1. William Herschel, Britannica

He discovered the [planet Uranus](#), hypothesized that [nebulae](#) are composed of [stars](#), and developed a theory of stellar evolution. He was knighted in 1816.

...
When William's interest in nebulae developed in the winter of 1781–82, he quickly found that his most powerful telescope could resolve into stars several nebulae that appeared “milky” to less well equipped observers. He was convinced that other nebulae would eventually be resolved into individual stars with more powerful instruments. This encouraged him to argue in 1784 and 1785 that all nebulae were formed of stars and that there was no need to postulate the existence of a mysterious luminous fluid to explain the observed facts. Nebulae that could not yet be resolved must be very distant systems, he maintained, and, since they seem large to the observer, their true size must indeed be vast—possibly larger

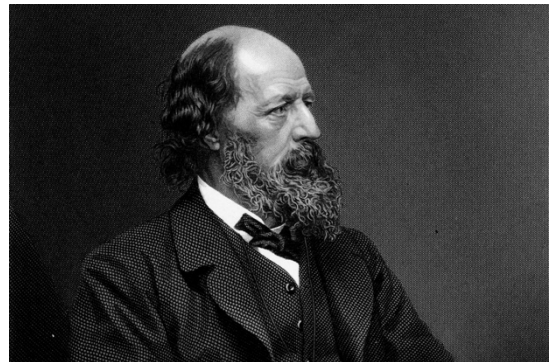
even than the star system of which the Sun is a member. By this reasoning, William was led to postulate the existence of what later were called “island universes” of stars.



Evolution

2. In Memoriam Section LVI, Alfred Lord Tennyson

From scarp'd cliff and quarried stone
 She cries, "A thousand types are gone:
 I care for nothing, all shall go.
 "Thou makest thine appeal to me:
 I bring to life, I bring to [death](#):
 The spirit does but mean the breath:
 I know no more." And he, shall he,
 Man, her last work, who seem'd so fair,
 Such splendid purpose in his eyes,
 Who roll'd the psalm to wintry skies,
 Who built him fanes of fruitless prayer,
 Who trusted God was love indeed
 And love Creation's final law —
 Tho' Nature, red in tooth and claw
 With ravine, shriek'd against his creed —
 O life as futile, then, as frail!
 O for thy voice to soothe and bless!
 What hope of answer, or redress?
 Behind the [veil](#), behind the veil.



Science and Religion

3. Future Tense, pages 221–222



We can now state the difference between the two modes of knowledge. Chochmah is the truth we discover; Torah is the truth we inherit. Chochmah is the universal heritage of humankind; Torah is the specific heritage of Israel. Chochmah is what we attain by being in the image of God; Torah is what guides Jews as the people of God. Chochmah is acquired by seeing and reasoning; Torah is received by listening and responding. Chochmah tells us what is; Torah tells us what ought to be. Chochmah is about facts; Torah is about commands. Chochmah

yields descriptive, scientific laws; Torah yields prescriptive, behavioural laws. Chochmah is about creation; Torah is about revelation...

...We can now state the following. Chochmah has an honourable place within the Jewish worldview. It has religious dignity. It is the gift of God. It is available to everyone, because everyone is in the image of God. We can also hazard the following definition: chochmah is what allows us to understand the world as God's work (science) and the human person as his image (the humanities).

4. The Great Partnership, pages 2–3

I want... to argue that we need both religion and science; that they are compatible and more than compatible. They are two essential perspectives that allow us to see the universe in its three-dimensional depth. The creative tension between the two is what keeps us sane, grounded in physical reality without losing our spiritual sensibility. It keeps us human and humane.

The story I am about to tell is about the human mind and its ability to do two quite different things. One is the ability to break things down into their constituent parts and see how they mesh and interact. The other is the ability to join things together so that they tell a story, and to join people together so that they form relationships. The best example of the first is science, of the second, religion.

Science takes things apart to see how they work. Religion puts things together to see what they mean. Without going into neuroscientific detail, the first is a predominantly left-brain activity, the second is associated with the right hemisphere.

Both are necessary, but they are very different. The left brain is good at sorting and analysing things. The right brain is good at forming relationships with people.

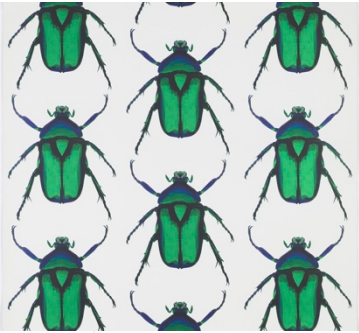
5. Morality, page 243

Science cannot, in and of itself, give an account of human dignity, because dignity is based on human freedom. Freedom is a concept that lies outside the scope of science. Science cannot locate freedom, because the scientific world is one of causal relationships. A stone is not free to fall or not to fall. Lightning does not choose when and where to strike. A scientific law links one physical phenomenon to another without the intervention of will and choice. To the extent that there is a science of human behaviour, there is an implicit denial of the freedom of human behaviour. That is precisely what Spinoza, Marx and Freud were arguing: that freedom is an illusion. But if freedom is an illusion, then so is the human dignity based on that freedom. Science cannot but deconsecrate the human person, thereby opening the gate to a possible desecration.

At this point, the voice of morality – the very voice that has been progressively weakened over the past fifty years – has to intervene, and explain explicitly what is unique about humankind, and what we must cultivate and protect in the coming years.

Lessons from Darwin

Lesson 1: God Delights in Diversity



Beetles (Order Coleoptera) are known to include some 350,000 described species. In the United States, there are nearly 30,000 kinds of beetles known. These figures are rising constantly due to the naming of new species by taxonomists.

6. Tehillim 104:24-5

כַּד מָה-רַבּוֹ מַעֲשֵׂיךָ, יְהוָה-
- כָּלָם, בְּחָכְמָה עָשִׂיתָ;
מְלֵאָה הָאָרֶץ, קִנְיֶנְךָ.

24 How manifold are Thy works, O LORD! In wisdom hast Thou made them all; {N} the earth is full of Thy creatures.

כֹּה זֶה, הַיָּם גָּדוֹל-- וְרַחֲב
יָדָיִם:
שָׁם-רִמָּשׁ, וְאִין
מִסְפָּר; חַיּוֹת קִטְנוֹת, עִם-
גְּדֵלוֹת.

25 Yonder sea, great and wide, {N} therein are creeping things innumerable, living creatures, both small and great.

Lesson 2: The Creator made *creation creative*

7. Bereishis 2:8-9,15

ח וַיִּטַע יְהוָה אֱלֹהִים, גֶּן-בְּעֵדֶן--
מִקְדָּם; וַיִּשֶׂם שֵׁם, אֶת-הָאָדָם
אֲשֶׁר יָצַר.

8 And the LORD God planted a garden eastward, in Eden; and there He put the man whom He had formed.

ט וַיִּצְמַח יְהוָה אֱלֹהִים, מִן-
הָאֲדָמָה, כָּל-עֵץ נֹחַמַד לְמַרְאֵה,
וְטוֹב לְמֵאֲכָל--וְעֵץ הַחַיִּים, בְּתוֹךְ
הַגֶּן, וְעֵץ, הַדַּעַת טוֹב וְרָע.

9 And out of the ground made the LORD God to grow every tree that is pleasant to the sight, and good for food; the tree of life also in the midst of the garden, and the tree of the knowledge of good and evil.

טו וַיִּקַּח יְהוָה אֱלֹהִים, אֶת-
הָאָדָם; וַיִּנְחָהוּ בְּגֶן-עֵדֶן, לְעִבְדָּהּ
וּלְשָׁמְרָהּ.

15 And the LORD God took the man, and put him into the garden of Eden to dress it and to keep it.

8. Bereishis 2:3

ג וַיְבָרֶךְ אֱלֹהִים אֶת-יוֹם הַשְּׁבִיעִי, וַיְקַדֵּשׁ אֹתוֹ: כִּי בּו שֶׁבֶת מְכֹל-מְלֵאכְתּוֹ, אֲשֶׁר-בָּרָא אֱלֹהִים לַעֲשׂוֹת. {פ}

3 And God blessed the seventh day, and hallowed it; because that in it He rested from all His work which God in creating had made. {P}

9. Ibn Ezra, ad loc.

וכפי 'אשר ברא אלהים לעשו'. 'השרשי' בכל המיני' שנתן בהם כח לעשות דמותם.

10. Abarbanel, ad loc.

וכנגד הברכה אמר מלת לעשות ר"ל שברך את היום השביעי למה שנתן לבריאותיו ביום ההוא ברכה מעליא להתמיד הויתם בהולדת דומיהם והוא אמרו לעשות כי נתן כח בשרשים אשר ברא לשיעשו כמותם. וכבר שאלה מטרוניתא לר' יהושע (ב"ר פרשה ס"ח) בכמה ימי' ברא הקב"ה את עולמו והשיבה בששה ימים אמרה ומשם ואילך מהו עושה והשיבה רבי יהושע שהיה מזווג זוגים ר"ל שבששת הימים ברא ה' חדשה בארץ דברים שלא היו קודם לכן ומשם ואילך התמידה אותה ההויה והיא הזוגים להזדווג הפשוטים בהרכבה והחומר והצורה בהויה והותרה בזה השאלה הששית.

Lesson 3: All life derives from a single source

11. Matt Ridley, Genome: The Autobiography of a Species in 23 Chapters, Fourth Estate, 2000

'The three letter words of the genetic code are the same in every creature – CGA mean arginine and GCG means alanine in bats, beetles, beech trees, bacteria, even in archaeobacteria living in boiling temps in sulphurous springs, or viruses - wherever in the world, whatever animal, plant, bug, you look at, if it is alive it will use the same dictionary and know the same code. All life is one. Seaweed is your distant cousin, and anthrax one of your advanced relatives. The unity of life is an empirical fact.'

12. Bereishis 1:12

יב וַתּוֹצֵא הָאָרֶץ דָּשָׁא עֵשֶׂב מִזְרִיעַ זֶרַע, לְמִינֵהוּ, וְעֵץ עֹשֶׂה-פְּרִי אֲשֶׁר זֶרְעוֹ-בוֹ, לְמִינֵהוּ; וַיֵּרָא אֱלֹהִים, כִּי-טוֹב.

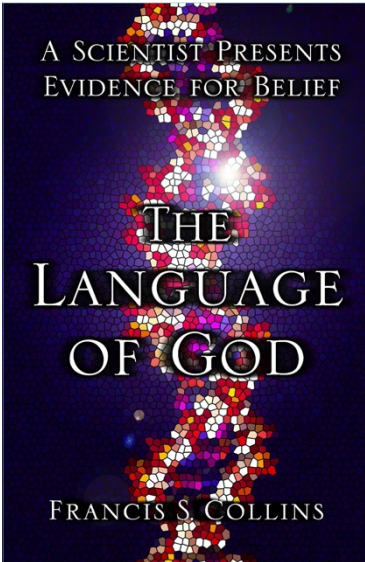
12 And the earth brought forth grass, herb yielding seed after its kind, and tree bearing fruit, wherein is the seed thereof, after its kind; and God saw that it was good.

Lesson 4: Life is Linguistic

13. Bereishis 1:3

ג וַיֹּאמֶר אֱלֹהִים, יְהִי אוֹר; וַיְהִי-אוֹר.

3 And God said: 'Let there be light.' And there was light.



14. Avos 5:1

בעשירה מאמרות נברא העולם. ומה תלמוד לומר, ונהלא במאמר אחד יכול להבראות, אלא להפרע מן הרשעים שמאבדין את העולם שנברא בעשירה מאמרות, ולתן שכר טוב לצדיקים שמקימין את העולם שנברא בעשירה מאמרות:

With ten utterances the world was created. And what does this teach, for surely it could have been created with one utterance? But this was so in order to punish the wicked who destroy the world that was created with ten utterances, And to give a good reward to the righteous who maintain the world that was created with ten utterances.

Lesson 5: The Interconnectedness of all life

15. Yeshayahu 40:6

קול אמר קרא ואמר מה אקרא כל־הבשר חציר וכ־חסדו כצפיר השדה:

A voice rings out: “Proclaim!”

^aIQIsa and Septuagint read “And I asked.” Another asks, ^a “What shall I proclaim?”

“All flesh is grass,

All its goodness like flowers of the field:

16. Kohelles 3:19-20

כי מקרה בני־האדם ומקרה הבהמה ומקרה אדם לזה נה נה ומומר האדם מן־הבהמה אין כי הכל הבל:

For in respect of the fate of man and the fate of beast, they have one and the same fate: as the one dies so dies the other, and both have the same lifebreath; man has no superiority over beast, since both amount to nothing.

הכל הולך אל־מקום אחד הכל הנה מן־העפר והכל ישוב אל־העפר:

Both go to the same place; both came from dust and both return to dust.

17. Charles Darwin, The Origin of Species (1860)

There is grandeur in this view of life, with its several powers, having been originally breathed by the Creator into a few forms or into one; and that, whilst this planet has gone cycling on according to the fixed law of gravity, from so simple a beginning endless forms most beautiful and most wonderful have been, and are being, evolved.

The Blind Watchmaker

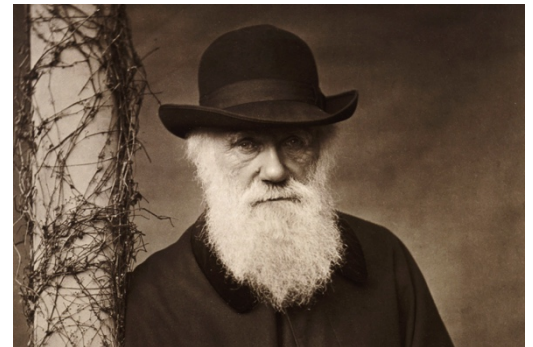
18. William Paley, Natural Theology (1802)

In crossing a heath, suppose I pitched my foot against a stone, and were asked how the stone came to be there; I might possibly answer, that, for anything I knew to the contrary, it had lain there forever: nor would it perhaps be very easy to show the absurdity of this answer. But suppose I had found a watch upon the ground, and it should be inquired how the watch happened to be in that place; I should hardly think of the answer I had before given, that for anything I knew, the watch might have always been there. ... There must have existed, at some time, and at some place or other, an artificer or artificers, who formed [the watch] for the purpose which we find it actually to answer; who comprehended its construction, and designed its use. ... Every indication of contrivance, every manifestation of design, which existed in the watch, exists in the works of nature; with the difference, on the side of nature, of being greater or more, and that in a degree which exceeds all computation.



19. Charles Darwin, The Autobiography of Charles Darwin 1809–1882

Although I did not think much about the existence of a personal God until a considerably later period of my life, I will here give the vague conclusions to which I have been driven. The old argument of design in nature, as given by Paley, which formerly seemed to me so conclusive, fails, now that the law of natural selection has been discovered. We can no longer argue that, for instance, the beautiful hinge of a bivalve shell must have been made by an intelligent being, like the hinge of a door by man. There seems to be no more design in the variability of organic beings and in the action of natural selection, than in the course which the wind blows. Everything in nature is the result of fixed laws.



20. Richard Dawkins, The Blind Watchmaker: Why the Evidence of Evolution Reveals a Universe Without Design

“Things exist either because they have recently come into existence or because they have qualities that made them unlikely to be destroyed in the past.”

“The Bishop goes on to the human eye, asking rhetorically, and with the implication that there is no answer, 'How could an organ so complex evolve?' This is not an argument, it is simply an affirmation of incredulity.”



“In the case of living machinery, the ‘designer’ is unconscious natural selection, the blind watchmaker.”

21. Bereishis 37:13-17

<p>יג וַיֹּאמֶר יִשְׂרָאֵל אֶל-יוֹסֵף, הֲלוֹא אָחִיךָ רֹעִים בְּשָׂכְמ--לָכָה, וְאֶשְׁלַחְךָ אֲלֵיהֶם; וַיֹּאמֶר לוֹ, הֲנִנִּי.</p>	<p>13 And Israel said unto Joseph: 'Do not thy brethren feed the flock in Shechem? come, and I will send thee unto them.' And he said to him: 'Here am I.'</p>
<p>יד וַיֹּאמֶר לוֹ, לָךְ-נָא רְאֵה אֶת-שְׁלוֹם אָחִיךָ וְאֶת-שְׁלוֹם הַצֹּאן, וְהֵשִׁבְנִי, דָּבָר; וַיִּשְׁלַחְהוּ מֵעֵמֶק הַחֲבֵרוֹן, וַיָּבֹא שְׂכֵמָה.</p>	<p>14 And he said to him: 'Go now, see whether it is well with thy brethren, and well with the flock; and bring me back word.' So he sent him out of the vale of Hebron, and he came to Shechem.</p>
<p>טו וַיִּמְצָאֵהוּ אִישׁ, וְהָיָה תֹעָה בַּשָּׂדֶה; וַיִּשְׁאַלְהוּ הָאִישׁ לֵאמֹר, מַה-תִּבְקֶשׁ.</p>	<p>15 And a certain man found him, and, behold, he was wandering in the field. And the man asked him, saying: 'What seekest thou?'</p>
<p>טז וַיֹּאמֶר, אֶת-אָחִי אֲנֹכִי מִבְּקֶשׁ; הֲגִידָה-נָא לִּי, אֵיפֹה הֵם רֹעִים.</p>	<p>16 And he said: 'I seek my brethren. Tell me, I pray thee, where they are feeding the flock.'</p>
<p>יז וַיֹּאמֶר הָאִישׁ, נִסְעוּ מִזֶּה--כִּי שָׁמַעְתִּי אֲמָרִים, נִלְכָּה דִּתְיָנָה; וַיֵּלֶךְ יוֹסֵף אַחֲרֵי אָחִיו, וַיִּמְצָאֵם בְּדוֹתָן.</p>	<p>17 And the man said: 'They are departed hence; for I heard them say: Let us go to Dothan.' And Joseph went after his brethren, and found them in Dothan.</p>

22. Ramban, ad loc.

וימצאהו איש והנה תעה בשדה יאמר כי הוא תועה מן הדרך ולא היה יודע אנה ילך ונכנס בשדה כי במקום המרעה היה מבקש אותם ויאריך הכתוב בזה להגיד כי סיבות רבות באו אליו שהיה ראוי לחזור לו אבל הכל סבל לכבוד אביו ולהודיענו עוד כי הגזרה אמת והחריצות שקר **כי זמן לו הקב"ה מורה דרך שלא מדעתו** להביאו בידם ולזה נתכוונו רבותינו (**ב"ר פד יד** (באמרם כי האישים האלה הם מלאכים שלא על חנם היה כל הסיפור הזה להודיענו כי עצת ה' היא תקום:

23. Bereishis 45:5-8

<p>ה וְעַתָּה אֶל-תִּעַצְבוּ, וְאֶל-יַחַר בְּעֵינֵיכֶם, כִּי-מִכְרַתֶּם אֹתִי, הִנֵּה: כִּי לְמַחִיָּה, שְׁלַחְנִי אֲלֵהֶם לִפְנֵיכֶם.</p>	<p>5 And now be not grieved, nor angry with yourselves, that ye sold me hither; for God did send me before you to preserve life.</p>
<p>ו כִּי-זֶה שְׁנַתִּים הָרָעַב, בְּקִרְבַּי הָאָרֶץ; וְעוֹד חָמֵשׁ שָׁנִים, אֲשֶׁר אֵין-חֲרִישׁ וְקָצִיר.</p>	<p>6 For these two years hath the famine been in the land; and there are yet five years, in which there shall be neither plowing nor harvest.</p>

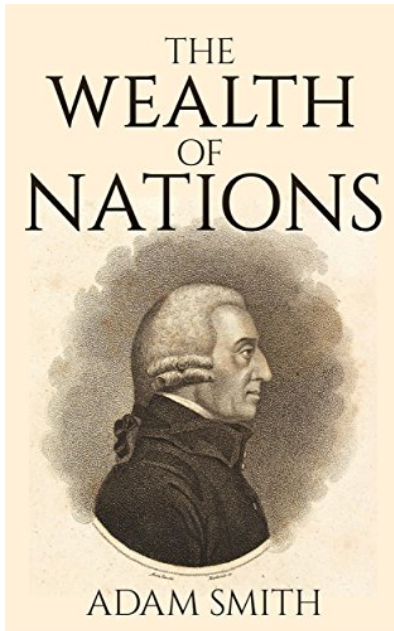
ז וַיִּשְׁלַחַנִי אֱלֹהִים לְפָנֵיכֶם, לָשׂוּם
לְכֶם שְׂאֵרִית בְּאֶרֶץ, וּלְהַחְיֹת לְכֶם,
לְפָלִיטָה גְדוֹלָה.

7 And God sent me before you to give you a remnant on the earth, and to save you alive for a great deliverance.

ח וְעַתָּה, לֹא-אַתֶּם שְׁלַחְתֶּם אֵתִי
הִנֵּה, כִּי, הָאֱלֹהִים; וַיִּשְׁיִמְנֵי לְאַב
לְפָרְעָה, וּלְאֲדוֹן לְכָל-בֵּיתוֹ, וּמֹשֶׁל,
בְּכָל-אֶרֶץ מִצְרָיִם.

8 So now it was not you that sent me hither, but God; and He hath made me a father to Pharaoh, and lord of all his house, and ruler over all the land of Egypt.

24. The Wealth of Nations, Book IV, Chapter II, paragraph IX Adam Smith



But the annual revenue of every society is always precisely equal to the exchangeable value of the whole annual produce of its industry, or rather is precisely the same thing with that exchangeable value. As every individual, therefore, endeavours as much as he can both to employ his capital in the support of domestic industry, and so to direct that industry that its produce may be of the greatest value, every individual necessarily labours to render the annual revenue of the society as great as he can. He generally, indeed, neither intends to promote the public interest, nor knows how much he is promoting it. By preferring the support of domestic to that of foreign industry, he intends only his own security; and by directing that industry in such a manner as its produce may be of the greatest value, he intends only his own gain, and he is in this, as in many other cases, led by an **invisible hand** to promote an end which was no part of his intention. Nor is it always the worse for the society that it was not part of it. By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it. I have never known much good done by those who affected to trade for the public good. It is an affectation, indeed, not very common among merchants, and very few words need be employed in dissuading them from it.

25. The Great Partnership, page 227

Darwinian biology does not entail the absence of design. What Darwin refuted was not the argument from design but Paley's version of it. The natural universe is not like a watch. It is not mechanical, a predetermined arrangement of interlocking parts. *But who thought the universe was like a watch to begin with?* Not the theologians, but the natural scientists and philosophers of the seventeenth and eighteenth centuries: Newton, Leibniz, Laplace and Auguste Comte. They believed that all physical phenomena were determined by, and could be predicted on the basis of, simple laws like those of Newton. What was wrong with Paley's argument was not the theology but the science. Good science refutes bad science. It tells us nothing at all about God.

26. The Great Partnership, page 229

“Why would a Creator choose to operate this way, allowing species and eventually humankind to emerge obliquely rather than directly? For the same reason that the planned economies of the Soviet Union and Communist China failed and the market economies of the West succeeded. A planned economy fails to liberate energies. It does not grant freedom. It does not generate creativity. It is predictable, ungenerous, dictatorial, precisely the things the God of Abraham is not.

Darwinian evolution precisely fits the model I argued for in chapter 1, in the case of Abrahamic monotheism and the meaningfulness of life. *The meaning of the system lies outside the system.* That, I argued there, applied to systems in general and to the universe as a whole. Any system is made up of rules that govern events within the system. Those rules explain how the system works, but not why it was created or evolved. That is why Darwinism fulfils an important function for Abrahamic monotheism. It tells us that God, having created the conditions for life, transcends life as he transcends the universe. The idea that we should look for God in nature is essentially pagan and constitutes a pagan residue even within the great Aristotle himself. Faith says, all that breathes praises God. It does not say, all that breathes proves the existence of God.

The Hebrew Bible is simply uninterested in *Homo sapiens* the biological species. It is even relatively uninterested in *Homo faber*, the tool-making, environment-changing life-form. It passes over, in short order, Jabal, ‘father of those who live in tents and raise livestock’, Jubal, the first to ‘play the harp and flute’, and Tubal-Cain who ‘forged all kinds of tools out of bronze and iron’. It is interested exclusively in *Homo religiosus*, the first humans to hear and respond to the Divine voice.

“Science takes things apart to see how they work. Religion puts things together to see what they mean.”

Rabbi Lord Jonathan Sacks

