

Issues in Science and Religion: Publications of the European
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Issues in Science and Theology: Nature – and Beyond

Transcendence and Immanence in
Science and Theology



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ESSSAT

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Chapter 14

A Contingency Interpretation of Information Theory as a Bridge Between God's Immanence and Transcendence



Philippe Gagnon

Abstract This paper investigates the degree to which information theory, and the derived uses that make it work as a metaphor of our age, can be helpful in thinking about God's immanence and transcendence. We ask when it is possible to say that a consciousness has to be behind the information we encounter. If God is to be thought about as a communicator of information, we need to ask whether a communication system has to pre-exist to the divine and impose itself to God. If we want God to be Creator, and not someone who would work like a human being, 'creating' will mean sustaining in being as much the channel, the material system, as the message. Is information control? It seems that God's actions are not going to be informational control of everything. To clarify the issue, we attempt to distinguish two kinds of 'genialities' in nature, as a way to evaluate the likelihood of God from nature. We investigate concepts and images of God, in terms of the history of ideas but also in terms of philosophical theology, metaphysics, and religious ontology.

Keywords Archetype · Complexity · Complication · Divine action · Gnosticism · Information theory · Likelihood · Monopsychism · Participatory observer · Top down causation

'...human understanding of God is directly linked to the collective self-understanding which human beings have of themselves in any given age of the world. When that self-understanding changes, then one can anticipate a corresponding change in the contemporary understanding of God' (Bracken 1979: 25).

'A theory of knowledge that resolutely starts from the case that sets the norm of all knowledge, i.e. the meeting between persons, saves itself a good many false problems' (Urs von Balthasar 1958: 32).

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14.1 Introduction

Why offer information theory as a candidate in exploring the contrasted terms of divine immanence and transcendence? An oft-heard answer is that this theory rules over our world, with its smart phones, databases, big data, and even ‘augmented man.’ In its early days, ESSSAT gave to the proceedings of its third conference the title *The Science and Theology of Information* (1990), but in subsequent conferences this topic has been less emphasised. Besides the viewpoint of the philosopher, what does the theologian have to say about this topic?

The engineer who uses this ill-named theory and finds the capacity of a transmission channel will be satisfied. The philosopher who considers information theory will be interested in highlighting an older problem: what is the optimal adjustment that could exist between a blueprint and its implementation? Between thought and a world that we deem either *resistant* to it, or *made up* of it? The question thus posed seems to be too general, but as soon as we want to transfer it to the context of a discussion on materialism, reductionism and the suggestion that there could be inherent limits to these projects, it arises under a different form. Ontological reductionists will say: ‘give me only one example of a situation where known principles of genetics, of biochemistry, and of neurochemistry have been insufficient to explain thought and language? Why would we postulate a spirit, some sort of ‘ghost in the machine,’ to account for our behaviour and even our language?’

The materialist framework does not admit of a representation which is always and everywhere the same. It cannot even account for the *very notion* of a representation: ‘The counter-causal direction of intentionality not only shows that this cannot be accommodated in physical science (of which neuroscience is a part) but that appearance is not something that the material world, a nexus of causation, affords’ (Tallis 2010: 9). Were I to visualise the chemical processes enabling my thinking process, I would witness them in the *third person*. However, I can only experience thinking in the *first person*, by reaching out with my will to these processes, such that if I consider the processes analysed and categorised as material to be the only realities, I must suppose that what I perceive is an illusory effect. If I am only neuronal connections, there is nothing to observe!

One can try to get out of this challenge by saying that we are not in reality matter and energy, as would be the cadaver of someone who has just died, not even a ‘living torch’ (Popper 1995: 43), but that we exist thanks to dynamical relations between those material elements that we know from other means to subsist in an independent situation outside the composite that the body is – atoms of copper, of zinc, etc., but also molecules. But admitting as such the presence of dynamical bondings and links poses the question of the *independence* of that very substratum. We designate our relations as existing by a concatenation detachable from a support, yet this only makes sense within a broader thesis of multiple-realizability, which *primo* interprets this as an implementation, and *secundo* threatens the materialist vision (see Putnam 1988), since information becomes the blueprint for a composition that it would keep

as its own secret. What is more, that thesis has the same degree of reality as the under-determination of theories by facts.

This helps in asking in a refreshed way the classical question: what do we need to be able to say in order to establish that matter has been ordered by form? Leibniz had already understood that the question of the fine versus the coarse nature of the grain and veins of matter is a precondition of talking about its integratedness to form (Leibniz 1996: 86). It is a fact that we have very incompletely appreciated what matter is. Information theory accounts can always, in virtue of their under-determination, be recast as the normal unfurling of matter and energy, the elusive nature of information perhaps best captured by Keith Devlin's suggestion to think of it as the 'Cheshire cat's grin' (1997: 240–243).

The information about which we are talking when we say that we could understand, and so hold in our mind and memory immaterially the 'informational signature' of a man or a tree, is not Shannon information. It could be if all was due to a random stroke of nature, but there is a measure, which we do not yet possess, that would bridge the relationship between *complexity* and *complication*. The chemist Denbigh argued that, in the absence of a satisfying measure of organisation, a measure of complexity that would still be quantitative would have to resemble what he suggested naming *integrality*, the product of the number of connections in a structure multiplied by the number of parts of a different type, thus suggesting a measure that aims at a generalisation of our understanding of information (Denbigh 1974: 103–106).

For the model to work a simplification has to occur, such that we overvalue a central mechanism and ignore the others. The purpose is getting the message across, and seeing if it can be compressed faithfully. Information theory separates *form* and *meaning*. That of which it can show the conservation by invariance is form, but that form (*forma*) appearing in a Roman context with its juridical and theatrical uses (Breton 1987: 39), had little to do with the tradition of philosophers who meditated on *μορφή*, from Aristotle to Plotinus and beyond. Our duty is to re-articulate the two notions, since speaking about the informational weight of any reality irrespective of its context, scale, and integratedness in a system rapidly becomes meaningless.

Since information integrates not only complexity but also complication – earlier identifications of information with complexity were short-sighted – we are required to start from a 'monadic' unit present in the mind and conserved only there. Some information theorists have estimated that we need to posit an *ideal receiver*, since there is no presuppositionless or contextless deciphering of information (Carnap and Bar-Hillel 1953; Kähre 2002: 12–14, 48). The ideal receiver will have a similar function to the ideal gas in physics. When can we say that a consciousness has to be behind the information we meet? There is no information floating in the air, without a context. Are there 'infons' in the same way that there are gravitons (Devlin 1995: 37–40, 45–48, 97–98)? Keith Devlin states rightly that we can use information way before we know what it is. As Schmitz-Moormann (1990: 172) and von Weizsäcker (1980: 39) recognized, this is akin to the same thought two interlocutors would have in their minds.

To declare the world 'chance-like' is a much easier affair with information as received in engineer's parlance than it is with integrated knowledge. Let us illustrate

it as follows. We have in Fig. 14.1 a spade symbol and need to identify where it is. We'll need to answer left / right \Rightarrow *select* left, answer the same question again \Rightarrow *select* right, and then again \Rightarrow *select* left. This will require three specifications, 2^3 , or 3 bits.



Fig. 14.1

We could imagine someone guessing right, and telling us with only 1 bit where this spade is. That 1 bit would serve itself a free lunch. Suppose we were asked to identify with one, then two words – significant ones like ‘*jeûnes*’ and ‘*opiniâtre*’ – whose verse this is (Fig. 14.2):



Fig. 14.2

Guessing right would not help us much with this verse of Stéphane Mallarmé from ‘Cantique de saint Jean.’ If we do not admit that there is a qualitative difference between mere grid positioning and seeing the *Gestalt* of Mallarmé, we have to explain in a summative way how we can for instance say that the author of a work the key of which is hidden – a verse of Mallarmé, or St. John Perse, or Borgès – could in this second example be identified by bringing the probability to 1/4 or 1/3, while in the ordinary way, starting from the common knowledge of humankind, we would start with a considerably larger figure in the denominator of these fractions.

Can the knowledge we possess be considered a neuronal configuration? It certainly can, but it is one that is *individualised*, or ‘tacit,’ meaning we cannot reconstruct it relying on a general conception of mind. Indeed, the performance, as it is analysed in information theory, has us fish meaningfulness from a common experience of seeing the ‘same form,’ which reminds one of the Stoics’ *semainomenon* (*σημαινωμενον*, or *λεκτων*); it is not equipped to handle Quine’s problem of the indeterminacy of translation – in other words, to account for all the specifics that could lead one to say that it is not really the same form that was grasped.

Materialism denies this personal knowledge. More accurately, it does not deny that whoever worked for years on Mallarmé or Borgès could be credited more chances of identifying this sequence, but by the desire to treat information as a universal currency, it tries to map the capturing of information with a univocal measure,¹

¹As in the model of Fred Dretske (1983: 96–97).

which would allow bypassing Gettier's problem, by assuming without warrant that a justified true belief would have *completely* lifted uncertainty (see Gagnon 2018: 481–484 for the technical reasons why this will not work).

We could look at information theory to give us the ultimate compression of reality, but it is not sure that we would *arrive* at it that way, that we could re-code the world as it is with mere information. There is certainly a road from the patterning of recurrences, the contrasting of hypotheses, and the fading of all significant differences to the retrieval of their information, such as we have in $P(h,e) = P(h | e) \cdot P(e) = P(e | h) \cdot P(h)$, which gives $I(h,e) = I(e) + I(h | e) = I(h) + I(e | h)$ as the relation between Bayesian evaluation and information.

Indeed, if we look for units of functional order, we come to see a difference between very large amounts of living beings hardly ever changing in size or shape but becoming huge in numbers (e.g., bacteria), being distinguished from living beings (metazoans) that are immensely less numerous but break symmetry, invent organised and hierarchically-controlled organs acting through servomechanisms as well as message systems, and, what is more, make use of the very basis of informational analysis, discreteness. That does not preclude them from using analogical – or plus or minus – systems such as endocrine glands. This type of form is not measurable in the way the signals in telephones are. It is a qualitative take on information (Salmon 2010: 760) (Fig. 14.3).

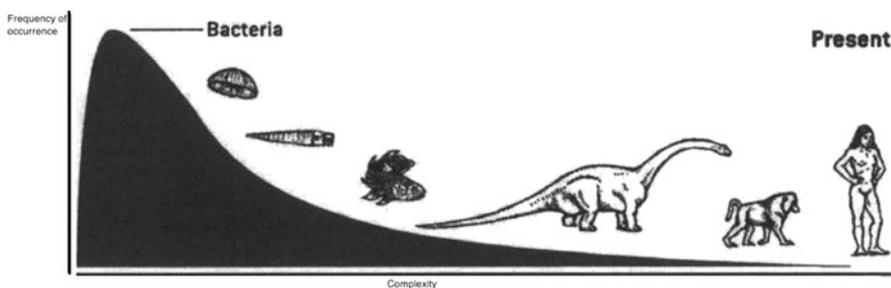


Fig. 14.3 (From Salmon 2010: 761)

Psychologist Susan Pockett has surveyed the literature and highlighted the fact that nearly all the definitions of information are *process*-like and make it exist outside the mind (Pockett 2014). She distinguishes between those theories, which make consciousness depend on certain functional properties of representational vehicles such as the computation in which they engage, and sets them against *vehicle* theories, for which consciousness is determined by intrinsic properties, independently of computational activity.

14.2 Entering the Semantic Realm

The problem when we theorise about the ‘evolution’ of information, as Karl Schmitz-Moormann (1990) or James Salmon have done (Salmon 2010), or when it is considered that information is received, processed, and retransmitted by absolutely everything, as in Michel Serres (2014: 148–9), is that the idea of information does not conserve the same meaning throughout. That in itself would not be overdramatic if it were not for the fact that these lines of reasoning borrow their appeal from the halo that still surrounds the only rigorous definition of information, which is that of Shannon. As Donald Mackay saw, information does not always have an ‘effective’ effect (behavioristically speaking), even if it can modify that which remains a presence in a world of ‘existence₁,’ the existence which we apprehend at the end-point of an intentionality-dependent object of pursuit, as one found in Meinong’s *Gegenstandstheorie*, that need not exist as a two- or three-dimensional physical object. It is to be contrasted to ‘existence₂,’ about which we could call on the more familiar characterisation of that which has indexical referentiality and can fill in for the value of a variable to be bound in a domain of individuals marked by constants (Margolis 2006: 88).

Literature of the last couple of decades has focused on the *flow* of information, but these approaches regulate *effective* exchanges, traceable ones. For instance: we work and earn money, which is information (see Dowek and Abiteboul 2017: 60). We all know that money does not buy everything. Similarly here, we can’t always move to the superior level and make every exchange of information enter into an even more encompassing or general category, which would pre-contain them all, since the translation of any act of cognition, in the sense of being first passively and then actively modified gauged as a value in terms of informational weight, leaves what is essential outside.

As Barwise and Seligman noted, information, if it is to be useful, must capture it all the way down to the *token* (1997: 16–7). We can thus inquire about the abduction that is presupposed in every act of reading (see Aliseda 2007), but the fact that in personally working on Mallarmé, I make his recognition more probable while going out of my field I would be at a disadvantage, has no place where to be inserted in a general theory. This has to do with our perception which does not scan a surface to recompose it according to a pre-given template, but which recognises *Gestalten* and what George Miller called ‘chunks’ (Miller 1956: 81–97) as one would recognise a face (example in Dunstan Martin 2005: 22–3; see also Putnam 1992: 19–34).

14.3 Evolutionary Issues

From the evolution of information we get to the evolution of organisms. Such evolution is a process of keeping information, also with a reusing of recipes, if we think of gene transfers, swapped genomes, and architect genes. Information theory can

shed light on the information processing in living systems: it can measure the information content of DNA with precision. But naturalistic evolutionary theory is an attempt to do more, that is, to explain the origin of this information as ultimately the result of unguided natural processes.

Is the guidance by a 'grammar' of mechanically stabilised forms all that we need in order to account for living forms? We may need to distinguish between the *form* of a species, bearing a certain degree of plasticity to which we have paid more attention since Darwin, and the *archetype* to which this species is a response (see Dumoncel 2009: 7). One can think of J. Scotus Erigenus who called on a division of nature wherein God as 'nature which creates and is not created' interacts with that which 'creates and is created,' and we can add that it links hands with C. S. Peirce's ternarism, in that the *interpretant*, the organism as a sustained memory of that which coded it into existence, the *sign*, i.e. the obstacles, encounters or occasions for the species to manifest its in-built tendencies in an harmonious effort,² is governed by a *signified* or archetype. As A. E. Taylor had it, 'if "God" simply meant the same thing as the forms, or as a supreme form, it would remain a mystery why there should be anything but the forms, why there should be any 'becoming' at all' (1963: 442). As such, the species as transience would have to be situated in that dehiscence between participated creativity and the 'Good beyond,' being only established in existence in an allusive mode.

There is a difference between directly introducing novelty in the world, and seeing to it that the world not be fixed, so that the introduction of novelty is not an impossibility. Would God's only way of informing in such a process be to keep archetypes of rightful solutions available? Where does the cobra get its information on the deer's nervous system when it paralyses its central nervous system (Elitzur 2006: 612; Wagner 2014: 182–186 on genotype networks)? Very often however, examples such as these that front-load much cleverness onto predators and adaptive systems, could look morally outrageous if directly transferred onto God (Myers 2000: 154–155). The Biblical God (who creates by 'separating') is such that he can preserve pathways of efficient integration, seeing to it that there is a multiplicity, but he does not put things together without their consent – at least, that is the crux of the biblical message, which will go as far as to predicate intentionality of non-human processes. There are elements with enough independence that information and messages can be sent.

This gives the world the structure of a frozen record, which is also open to the exploration of unusual and rare patterns (Matsuno 1997). This is important, since both causal determinism and finalism, which Bergson considered an inverted mechanism (1911: 39–40), are in need of a transgression. If God therefore were to let information flow, this would be done according as entities are put in relation with an

² 'A given DNA sequence can change *signifié* depending on the state of the cell: when the interpretant changes, the signification of the gene does too – the relations have shifted, and in this way we have a new gene. There is no such thing as a gene in isolation, every gene being a constituent of a sequential set of genes or other cellular signs, so that apart from membership in this set, a piece of DNA has no meaning – it is *not* a sign' (Emmeche and Hoffmeyer 1991: 35–36).

environment that they use to further their structure, and this creation of information would either feed from noise, under the form of random perturbations, or it would be externally imposed, through God creating new genes, or new switches.

To inquire about God's action in the world, and to ask whether God could be said to govern the world by means of information control or input, may require a step back and a few remarks on the concepts and images of God, not only in terms of the history of ideas, but also in terms of philosophical theology, metaphysics, and religious ontology. There is a pattern to be seen, if we move from a God as *great informer*, which supersedes a God as *winder-up*, and a God as *calculator* in the fashion of Leibniz, sweeping his way across a trajectory that maximises goodness in a world with 'impossible' states of affair. As Jeremy Campbell's book on 400 years of images of God bears out, a general controller of information forces us in the direction of an intellectual Deity and, we could add, manoeuvring a concept that has both a mentalistic side and an integrated capacity in systems distributed with nodes, allows for this same Deity to 'not get wet' with a messy world, to look down from a haughty outlook (2006: 265).³

The construal of the whole of the scientific endeavour thus has a bearing on what we may call 'information'; in the late-80's debate on determinism in France (see Pomian 1990), those thinking in terms of information theory were gathered under the umbrella of chance, chaos, bifurcations, new paradigms, etc. If one however sees science as the deployment of the simplest algorithm for the simplest recurring energy configuration, information is pre-calculation, and pre-ordaining, or it is retrieval by us of the regularities which progressively eradicate their 'chancey' character.

Intelligent Design supporters are right that the means used in nature to transmit genetic information are not so stringent that they would only produce redundancy, the production of which is what 'self-organisation' theories' contribution amounts to, and are not so flimsy that they would not allow the conservation of templates, involving, e.g., weaker bonds than the hydrogen ones. This point as made by Stephen Meyer is cogent (Meyer 2010: 250–251).

A God who would 'use' information to communicate with the world reminds one of those Neoplatonic intermediaries imagined to be entirely spiritual but which are then also capable of using matter. Spinoza's reaction to these unconvincing entities was to collapse creation's very idea in a permanent and ubiquitous self-sustaining causality: *natura naturans*.

³ '[T]he [cosmological] models are purely formal and static, and have no qualities, especially personal qualities, which touch the religious problems of everyday life. ... they do not introduce any value other than those of orderliness, mathematical depth and elegance, particularly not goodness nor human freedom. It follows that they do not even address those paradoxes that have been found in traditional metaphysical theories of God.' (Hesse 1995: 244–245).

14.4 Evaluating God from Nature: Which Standard?

Bayes' use of inverse probability could only be done with an intrinsically symmetric background axiom, that is, there is a precondition to changing $P(h | e)$ into $P(e | h)$, i.e. in moving from the support an hypothesis receives from evidence, to the probability that that same evidence would get should we posit that hypothesis. For Bayes' theorem to work, a precondition is to posit $P(h | e) \iff P(e | h)$, namely the probability of a certain hypothesis on a certain evidence is such if and only if the probability of that evidence on that certain hypothesis is the same. In plainer terms, one will consider all hypotheses that can be adduced, but the point of the endeavour is to come to a situation where only one hypothesis could be valued to the exclusion of all others. In other words, Bayes was into finding the recurrence of nature, the 'constant conjunctions' of David Hume, but with an opposite design: to show nature's omnipresent regularity, and intelligibility (see Bertsch McGrayne 2011: 13–33). If we thus establish how rationality progressively and inductively gets the 'whole picture,' a generalised premiss could, and Laplace saw this well, 'redescend' as a deduction on the whole of nature, such a premiss having been first obtained inductively. Olivier Costa de Beauregard reflected on this (1963: 90) in the following sense: if Bayes can only work provided there is symmetry in joint probabilities, this means that efficient cause is not condemned to stroll along the direction of time, and be agnostic about that which commands the response of nature to our own intervening. The things that nature does, asymptotically always the same way, thus the 'capturing' of this by finding how a hypothesis is progressively strengthened, can shift efficient cause into a knowledge that does not only colligate information off of occurrences, but could also predict, or control, those occurrences by having reached the greatest degree of generality. Finality would be out of the realm of poets or metaphysicians, and land in the province of physicists and mathematicians.

Could God survive an analysis in those terms? We could ask in front of nature: is it awe-inspiring, does it work like there is geniality behind it? Such questions can only be answered if we distinguish two kinds of orders, two kinds of 'genialities' in nature. On this point, as Robert Pennock had seen early on, the intelligent design camp has missed the mark in theorising how human designers would act, how they would assemble propellers, shafts, and the like. Thus, we need to ask:

- Would an engineer, working with our methods of construction, have made this world the way we find it?
- Does this world seem constituted as though a genius-like being could have made it?

The discussion on the merits of God conceived as designer has centred around the first question. If we answer favourably to the second question, we will by the same token acknowledge that the articulation of this to our models of acting with geniality will in all likelihood not be done according to the canons of scientific or philosophical explanation. Without elaborating here, let us recall that this is the reason why Hume inserted the figure of Demea in his *Dialogues Concerning Natural Religion* (a character dependent on his meditating on the writings of

Malebranche). Stephen Unwin (2004: 4) reminds us that no one will be spared having to judge in this matter. We would not benefit from simply recording answers be it from Anselm or Descartes on one side, or from Russell or Schopenhauer on the other side, as if they could answer in a better way than any of us when it comes to asking: ‘Is there, yes or no, a God?’ The error lies in asking mortals such as we are to arbitrate with a definite and unrevisable ‘yes’ or ‘no.’ Unwin advocates using Bayesian reasoning, and thus invites us to a ‘personal knowledge’ on the matter. We know that some, like Richard Swinburne, would conclude that there is a God (even that Christ is resurrected!), while others like Wesley Salmon conclude there to be a greater posterior probability that there be no God.

It is important to see that we are not asking the same question whether we consider $P(h | e)$: ‘Is God highly probable given that there is evil in the world?’ (the calculation weighing what supports theism and filtering this by assessing a value to counter-hypotheses), or instead $P(e | h)$: ‘given such and such evil in the world (not the sum total or conjunction of all evil), is this state of affairs probable given God’s existence?’ The answers can be very different. The second relation is not a probability like the first, but the likelihood, an idea introduced by R. A. Fisher, which is a relation of proportionality in relation to a probability.

Approaches like that of Swinburne make $P(h | e)$ into a posterior probability raising the probability of the God hypothesis, as any evidence would for any other hypothesis. Elliott Sober, himself agnostic, insists that it is the *likelihood*, i.e. the support an hypothesis gives to evidence that matters, which for instance justifies us in keeping the evolutionist hypothesis in the light of theism, but without suggesting that we should at any time abandon or reject the theistic hypothesis or claim to have falsified theism, which sheds better light on some things than does evolution (Sober 2008: 112–113; 2015: 246–8).

If we ask about the probability $P(h | e)$, where a good God is the hypothesis, and the dying of an innocent child, from say heart malformation, the evidence adduced against it, one still has to weigh in the strikingly huge number of births without defects. It certainly makes one hesitate to affirm a God controlling every detail of the world’s goings-on, but it does not make God a being affected by improbability any less than driving in a country can be deemed ‘safe’ without denying that occasional accidents take place.

Now Ivan Karamazov famously objected that if the death of innocents is needed for the truth to come about, we might as well reject a truth like this (*Brothers Karamazov*, 5.4.21). For us, using the likelihood relation to think through the problem, we would find that $P(e | h)$ asks whether the God hypothesis, independently established, could withstand this test: would God allow an innocent to die of heart malformation? The evidence for which we assess the likelihood would have to be evidence *for*, while the evidence for alternate incompatible hypotheses would be dealt with in the denominator according to

$$P(h|e) = \frac{P(eh) \cdot P(h)}{P(eh) \cdot P(h) + P(eh^c) \cdot P(h^c)}$$

Since this kind of confirmational logic only runs numbers in the end, our remarks about God being dealt a favorable hand in virtue of the sheer outnumbering of viable and healthy organisms against the number of birth defects and the like would still stand. It is more likely that God wants his glory to be manifested in healthy organisms and with their numbers high as they are. The only interesting feature to be had out of this exercise would require that we make a *qualitative* judgment indeed.

For instance, we could imagine how one would react if asked whether the Jewish *shoah* of WWII, as a positive fact that happened, could be made likely in view of the God hypothesis: $P(S|G)$, with S for 'shoah' and G for 'God hypothesis.' Many will think: a loving God, faithful to his people, would not let that happen. Yet, if the problem be read dispassionately, and with the narrative logic of the Hebrew prophets, many biblical texts could be adduced that would threaten with just this sort of destruction the people that does not honour God anymore. One could still say of many of those who died that they were innocent, but the problem of the suffering of innocents has more to do with our contemporary mindset reacting to classical theodicies than it has with God's protection versus the delivery of his people in the hands of their oppressors as we have in the Bible. Or else, seen in a different light, any *positive* fact that could be said to refute the God hypothesis, could do just the *opposite*. For instance, *without* the order of value (in other words without the addition of God to this evaluative framework), i.e. the axiological realm which condemns forever and without appeal behaviour such as that of the Nazi regime, and which identifies God and absolute Value, the ultimate value of human existence as a good could be doubted. In the face of the horrors of this world, one could think, far from being denied, God is posited (see Chatfield in Bartholomew 1988: 163–164; Bridge 1985: chap. 7).

Logician Wesley Salmon, from the very onset of his career, reflected on the probability that this universe, although it contains human-designed objects, might not in itself be designed, since what dominates in it is not akin to watches or artefacts bearing the mark of human technology. He reasoned from the assumption that, among the objects around us that we can qualify as 'natural,' even if some of them are 'conceived' (such as sky-scrapers or watches), very many others do not stem from the intelligent activity of beings like us, such as atoms and molecules, or planets. Since the later category seems to contain immensely more tokens, one would have to raise the posterior probability that they would have come into existence without any preconception (Salmon 2005: 154–158). The French philosopher of science Raymond Ruyer would have countered this by saying that things hang by force, and that mind is force; indeed, atoms react with instantaneity (1957: 283), justifying Bohm's take that the universe exists as a whole with ubiquitous enfolded order: 'Ultimately the entire universe has to be understood as a single undivided whole, in which analysis into separately and independently existent parts has no fundamental status' (2005: 221).

14.5 A Fruitful Theological Endeavour?

Stéphane Lupasco once observed that the analysis of our main question has been conducted in two directions: either the complete eradication of finality, as postulated for instance by the Monod-Jacob-Lwoff group through a reuse of the tools of information theory applied to the cybernetics of the cell, or a quasi-religious opening into forms being transcendent, immaterial, and thus in a sense ‘pattern,’ but communicated by an immaterial being (Lupasco 1970: 93–4).

To claim that a measure of negative logarithm of the probability mass function for the value could be seen to be a signature of God or an immaterial designer is difficult, in that it makes this designer inevitably an ‘intra-muros’ being of this world, poking and typing in it, or on it, and doing so as one of us would.⁴ Now, in the living world what constituted complex forms communicate is ultra-precise instructions for building-up proteins, and they are not a mere reflection of Shannon’s measure. There are multiple such measures possible. Those can tell us what a channel can transmit and support, but we intuitively understand the danger of God putting fingers into the mechanism of enzymes interaction: why would he not ‘protect’ us better from so many malfunctions? If God was meddling with enzymes or nucleic acids, would it not be easy to restore situations where, for example, all we need for the occurrence of sickle-cell anemia is the substitution (respectively the anti-substitution), in the formation of haemoglobin, of an adenine molecule for a thymine in the sixth codon? (see Dobzhansky 1996: 462; see also Avise 2010: 90–92).

There are three ways to imagine God, information and the world: (1) A pre-specification of every encounter, or pre-established harmony as in Leibniz’s metaphysics, where information does not happen thanks to interplay, freedom, or indeterminacy which are precisely repressed from the beginning of time. One needs to add that Leibniz reused for the divine *concursum* the very idea of exceptional, or miraculous causality, since at every instant, no matter the perturbation, God has preordained one that would be harmonious (Wolfson 1961: 204); (2) An unavoidable use of a messenger, translating between one set of assumptions and compressible signs to convey it to another, also implying the presence of a mandatory rate of exchange between information signatures, which are in reality patterned energies, all of which poses that problem in the same way that energy conversions do, there being a toll to pay such that we don’t have perpetual motion/information contraptions; (3) A presence in the midst of the ‘flesh of the world’ of matter freed from Cartesian de-spiritualisation, where the medium in its multiplicity would not toss away and destroy the message, but would turn systematic obstruction into inter-translatability through the work of the Spirit.

Souls inform *prime* matter (*πρωτη υλη*) to constitute a living body: they don’t just inform ‘matter,’ otherwise their unity would not be as intimate as possible but merely accidental. With this correction in mind, one could reconsider the model of

⁴This is reflected in my review of W. Dembski’s ‘metaphysics of information’ in his *Being as Communion* of 2014 (Gagnon 2015: 23).

God acting as soul, but then precisely there is no place for such a God 'inputting' or 'imparting' information, since the archetype of a God in charge from the top down needs purifying. A Trinitarian God will create by organising space (original meaning of *παντοκράτωρ*), look at the *λογος* as repository of all order and beauty, and work hand in hand with the Spirit in 'fluttering' or 'brooding over' (פִּרְרָ – see Gesenius 1990: 766) any matter that comes to the dignity of being a 'thing.' God's highest achievement would be to account for the presence of existence₂ from existence₁, an object to sustain in being as attractor. One has to consider how God often will act *on* souls, rather than taking their place.

Saint Thomas Aquinas, while commenting on *Hebrews*, recalls how a message either can come from outside, laterally introduced into our head, or it can adopt the regime of the New Law, and stem from within sentient and thinking beings:

The manner in which it was given is twofold: in one way by externals, by proposing words suited to their understanding. This man can do; and that is the way the Old Testament was given. In another way by acting inwardly, and this is peculiar to God: 'the inspiration of the Almighty gives understanding' (Jb. 32:8). This is the way the New Testament was given, because it consists in the outpouring of the Holy Spirit, Who instructs inwardly (2012, 8-2, §404).

In attempting to think together about immanence and transcendence, to find a communicating pathway between the two, as we initially stated information theory seems pre-adapted, because we find in it what are in fact points of specification for the construction of a decisional scale that remains imaginary, but which precisely contains *ipso facto* the position and arrangement of units of matter, and which would be indicative for the mind that would use it to guide itself.

But there is a knot where things don't run as planned, since a specification of nature 'from the top down' all the way to the subatomic level is not a possibility. Information and causation are involved in the failure of physical theories to account for complex states of the world without pre-writing their initial conditions, and as Walker and Davies explain:

the manner in which biological systems implement state-dependent dynamics is by utilising information encoded locally in the current state of the system, that is, by attributing causal efficacy to information. It is widely recognised that coarse-graining (which would define the relevant 'informational' degrees of freedom) plays a foundational role in how biological systems are structured, by defining the biologically relevant macrovariables [...] However, it is not clear how those macrostates arise, if they are objective or subjective, or whether they are in fact a fundamental aspect of biological organisation – intrinsic to the dynamics (i.e. such that macrostates are causal) rather than merely a useful phenomenological descriptor (2017: 33–34).

In summary, when we want God to communicate information, we encounter this problem: is God going to type in something, as though using a keyboard? Will there be a system that imposes itself on God? What would a creation in context mean? This is what we must think of if we want God to be creator of the whole system, and not someone who would work like a human user; creating will mean sustaining in being the channel and the material system, as much as being the author of a message. An author not only of notes, as we'd have were we playing the bars of a score,

but of the instrument too; this is why models of God's action tying it to the mind/brain interaction are problematic, as well as those imposing form on chaos, as we read in Arthur Peacocke (borrowing from a quote of Popper that is emotionally charged but epistemologically meaningless, see Peacocke 1993: 161–162, 173).

The account of information in relation to God stemming from many apologists of the Christian religion, or intelligent design supporters, is not consistent with its eventual measurement. If it cannot be measured, does information become a metaphor? On one end, one could say that there is nothing that isn't metaphorical, yet if, with Barwise and Seligman, we make it the logic of distributed systems, it will have to be construed as circuit completion. The dilemma between God using general laws or being the author of a uniquely special providence, which baffled C. S. Lewis in his posthumous work on prayer (Lewis 1992: 53), rests on a false alternative; it neglects that it is never an obstacle for God to make the Kingdom happen locally, and that, furthermore, to do it God does not need to pull away some strait jacket of laws of nature that would enclose the universe (these laws are called laws of nature only due to a lazy use of language: they should be referred to as laws *of science*).

Yet, to emphasise the informational nature of a world that makes sense to us, one must not do like William Dembski and make of reality's stepwise channels something entirely made of thought. Many informational ontologies are denseless, and bodiless: think of Polkinghorne and 'patterns that carry the soul' (2002: 104–106), of C. S. Lewis' letter on the resurrection where the 'the soul reassuming the corpse' is declared 'absurd' (1992: letter xxii), or of Dembski's 'patterns all the way down' (2014: chap. 11): in all these cases one is an hair's breadth away from a monopsychic cosmology.

To use information theory directly on the world, descending from orders emitted by God, or to aim in his direction starting from messages emitted by our communication, is in both cases to invent a world of patterns, but in the sense of mathematics, an empty, ghostly world;⁵ and I would even say, encouraged by the *Placuit Deo* letter from the Catholic Church's Congregation for the Doctrine of the Faith (2018: §3, 8), a gnostic world, such that this reconstruction suffers from the same defects as other time-bound meta-images of God.

14.6 Conclusion

We have to assert a position that would recognise the formidable novelty of the information-turn, since it realises an unthought-of physical dissemination of cues and orders, in other words it can broadcast over space decisional lattices that are on the side of mind. Our only access to this will be one of retrieval. Information retrieval comes with certain conditions. In so doing, it also shatters forever the 'view

⁵ Here we echo the creed of the xith council of Toledo, where it is stated that we will not rise in some æthereal body: '*Nec in aërea vel qualibet alia carne (ut quidam delirant) surrecturos nos credimus, sed in ista, qua vivimus, consistimur et movemur*' (Denzinger-Schönmetzer 1976: §540).

from nowhere' of a scientific subject or observer that would observe without acting or disturbing, as though behind a glass. The analytical imagination, seeking mindless components of a machine-universe, is disavowed, and as Wheeler observed, one has to assess the power of the loop that this contains:

One view holds that as we keep on investigating matter, we will work down from crystals to molecules, from molecules to atoms, from atoms to particles, from particles to quarks – and mine forever greater depths. A very different concept might be called the 'Leibniz logic loop.' According to this view the analysis of the physical world, pursued to sufficient depth, will lead back in some now-hidden way to man himself, to conscious mind, tied unexpectedly through the very act of observation and participation to partnership in the foundation of the universe (1974: 689).

One of the lessons we have learned from the quantum world is that the answer we get depends on the type of question we are asking, or the type of apparatus we interrogate nature with. It is fitting that there be a reminder in this last quote of the fact that this observational road that leads back to man, and is self-implicational, also is hidden. This is true for the Word of God. The structure of our inductive experience can only carry with it a 'worldliness' that God will call into judgment; whether we use information, or any other category, to apprehend his action on our world and in our world, it will be true that 'God has shown up human wisdom as folly' (1 Cor 1:20). As such, when we are reminded that 'He is present in our request and its fulfilment alike, [that h]e is both question and answer' (Wiesel 2010: 104), we need to remember that the human soul is of such depth that no one will plumb deep down into it and touch its bottom, no more than that of the physical universe (as Heraclitus had it: 'You will not find the boundaries of soul by travelling in any direction': see Thatcher 2004: §71, 151).

If we interpret our problem with reference to a foundational action of Christ, we will see that there is no faculty of connotation in human beings that could be deemed theirs and could be protected from the intrusion of the Spirit. God's action, if it is real, will make extremes converge such that it will not be possible to think of reaching out to it by deploying the virtues of a form of natural necessity. However, we can confidently say that information theory has been valuable in helping establish that a world of complete free-flow is not and cannot be a world. Can God control the world by natural laws? Aren't generalities a human way of acting and creating by-products? As Thomas Aquinas maintained against the thesis of the plurality of worlds, we do not only need information for there to be world, we need a *oneness* of perspective, a concretely universal reality: we need matter, in other words an embodiment that secures actuality from potentiality (see Gelernter 2001: 31).

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